

## SD241-B (Contrac)

### Motor temperature monitoring unit



For monitoring of the motor temperature of Contrac control actuators in explosion-proof design.

—  
SD241-B

### Introduction

Motor temperature monitoring unit SD241-B

- For Contrac control actuator in explosion-proof design
- Thermistor control unit for monitoring the motor temperature
- Integrated contactor for interrupting the power supply
- Test button on the front
- Signal contact to monitor the tripping function

### Additional Information

Additional documentation on SD241-B (Contrac) is available for download free of charge at [www.abb.com/actuators](http://www.abb.com/actuators).

Alternatively simply scan this code:



## Table of contents

<b>1</b>	<b>Safety</b> .....	<b>3</b>
	General information and instructions .....	3
	Warnings .....	3
	Intended use.....	4
	Improper use.....	4
	Warranty provisions.....	4
	Manufacturer's address .....	4
<b>2</b>	<b>Design and function</b> .....	<b>4</b>
	Principle of operation .....	4
	Assemblies.....	5
<b>3</b>	<b>Product identification</b> .....	<b>5</b>
	Name plate .....	5
<b>4</b>	<b>Transport and storage</b> .....	<b>5</b>
	Inspection .....	5
	Storing the device .....	5
	Returning devices.....	5
<b>5</b>	<b>Installation</b> .....	<b>6</b>
	Mounting.....	6
	Installation instructions.....	6
	Electrical connections .....	7
	Safety instructions.....	7
	Line lengths in sensor circuit .....	8
<b>6</b>	<b>Operation</b> .....	<b>8</b>
	Safety instructions.....	8
	Displays and operating elements.....	8
<b>7</b>	<b>Repair</b> .....	<b>9</b>
	Returning devices.....	9
<b>8</b>	<b>Recycling and disposal</b> .....	<b>9</b>
	Notice on RoHS II-Directive 2011/65/EU.....	9
<b>9</b>	<b>Specification</b> .....	<b>9</b>
<b>10</b>	<b>Additional documents</b> .....	<b>9</b>
<b>11</b>	<b>Appendix</b> .....	<b>10</b>
	Return form .....	10

# 1 Safety

## General information and instructions

These instructions are an important part of the product and must be retained for future reference.

Installation, commissioning, and maintenance of the product may only be performed by trained specialist personnel who have been authorized by the plant operator accordingly. The specialist personnel must have read and understood the manual and must comply with its instructions.

For additional information or if specific problems occur that are not discussed in these instructions, contact the manufacturer.

The content of these instructions is neither part of nor an amendment to any previous or existing agreement, promise or legal relationship.

Modifications and repairs to the product may only be performed if expressly permitted by these instructions.

Information and symbols on the product must be observed.

These may not be removed and must be fully legible at all times.

The operating company must strictly observe the applicable national regulations relating to the installation, function testing, repair and maintenance of electrical products.

## Warnings

The warnings in these instructions are structured as follows:

### **DANGER**

The signal word '**DANGER**' indicates an imminent danger. Failure to observe this information will result in death or severe injury.

### **WARNING**

The signal word '**WARNING**' indicates an imminent danger. Failure to observe this information may result in death or severe injury.

### **CAUTION**

The signal word '**CAUTION**' indicates an imminent danger. Failure to observe this information may result in minor or moderate injury.

### **NOTICE**

The signal word '**NOTICE**' indicates possible material damage.

#### **Note**

'**Note**' indicates useful or important information about the product.

## ... 1 Safety

### Intended use

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

### Improper use

The following are considered to be instances of improper use of the device:

- Material application, for example by painting over the housing, name plate or welding/soldering on parts.
- Material removal, for example by spot drilling the housing.

### Warranty provisions

Using the device in a manner that does not fall within the scope of its intended use, disregarding this manual, using underqualified personnel, or making unauthorized alterations releases the manufacturer from liability for any resulting damage. This renders the manufacturer's warranty null and void.

### Manufacturer's address

#### ABB Automation Products GmbH Measurement & Analytics

Schillerstr. 72  
32425 Minden  
Germany

Tel: +49 571 830-0

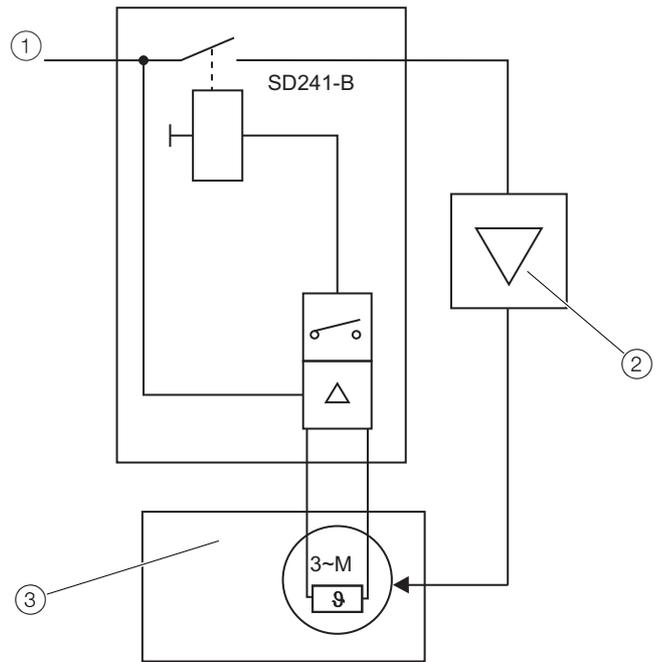
Fax: +49 571 830-1806

#### Customer service center

Tel: +49 180 5 222 580

Email: [automation.service@de.abb.com](mailto:automation.service@de.abb.com)

## 2 Design and function



- ① Power supply
- ② Contrac electronic unit
- ③ Contrac Ex actuator

Figure 1: Switching concept

### Principle of operation

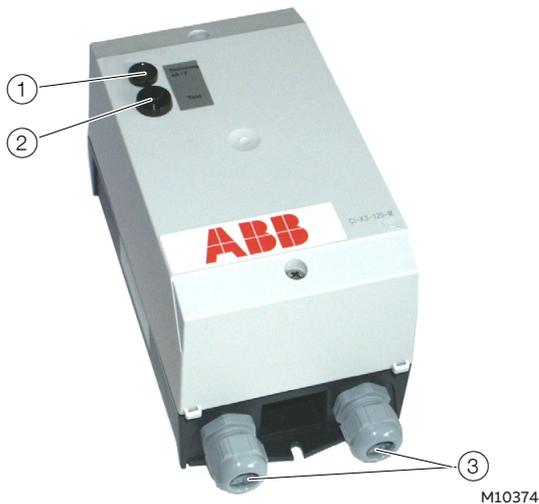
The PTCs integrated in the winding are calibrated to the max. permissible temperature limit of the motor. Once the rated operating temperature is reached, the PTCs suddenly increase their resistance.

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

The SD241-B (Contrac) monitoring unit works in accordance with the 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 device is reset using the internal blue reset button.

## Assemblies



- ① Fuse
- ② Test switch
- ③ Cable entry

Figure 2: Assemblies

## 3 Product identification

### Name plate

①	Überwachungseinheit SD241-B		CE
②	Best-Nr.: ...		
③	B.-Nr.: ...	Jahr:	
④	U = 230 V ...	Schaltleistung max. ... kW	
⑤	Mit Auslösegerät Prüf-Nr. ....		
⑥	Für Kaltleiter - Summenwiderstand < ... KOhm		
	ABB Automation Products GmbH		
	Schillerstrasse 72		
	D-32425 Minden		
	Made in Germany		

- ① Type
- ② Ordering number
- ③ Serial number
- ④ Voltage / switching capacity
- ⑤ Inspection number
- ⑥ Cumulative resistance

Figure 3: Name plate

## 4 Transport and storage

### Inspection

Check the devices immediately after unpacking for possible damage that may have occurred from improper transport.

Details of any damage that has occurred in transit must be recorded on the transport documents.

All claims for damages must be submitted to the shipper without delay and before installation.

### Storing the device

Bear the following points in mind when storing devices:

- Store the device in its original packaging in a dry and dust-free location.
- Observe the permitted ambient conditions for transport and storage.
- Avoid storing the device in direct sunlight.
- In principle, the devices may be stored for an unlimited period. However, the warranty conditions stipulated in the order confirmation of the supplier apply.

### Returning devices

For the return of devices, follow the instructions in **Repair** on page 9.

## 5 Installation

### Mounting

#### Installation instructions

- The motor temperature monitoring unit is suited for installation on a vertical wall ( $\pm 22^\circ$  from vertical).
- Make sure that the maximum ambient temperature of  $60^\circ\text{C}$  ( $140^\circ\text{F}$ ) is not up-scaled. If required, provide a sunshield to protect against direct sunlight.
- Select the installation location such to avoid direct exposure to rain, snow and other environmental influences.
- When mounting the actuator close to heat sources use an insulating layer or shielding.

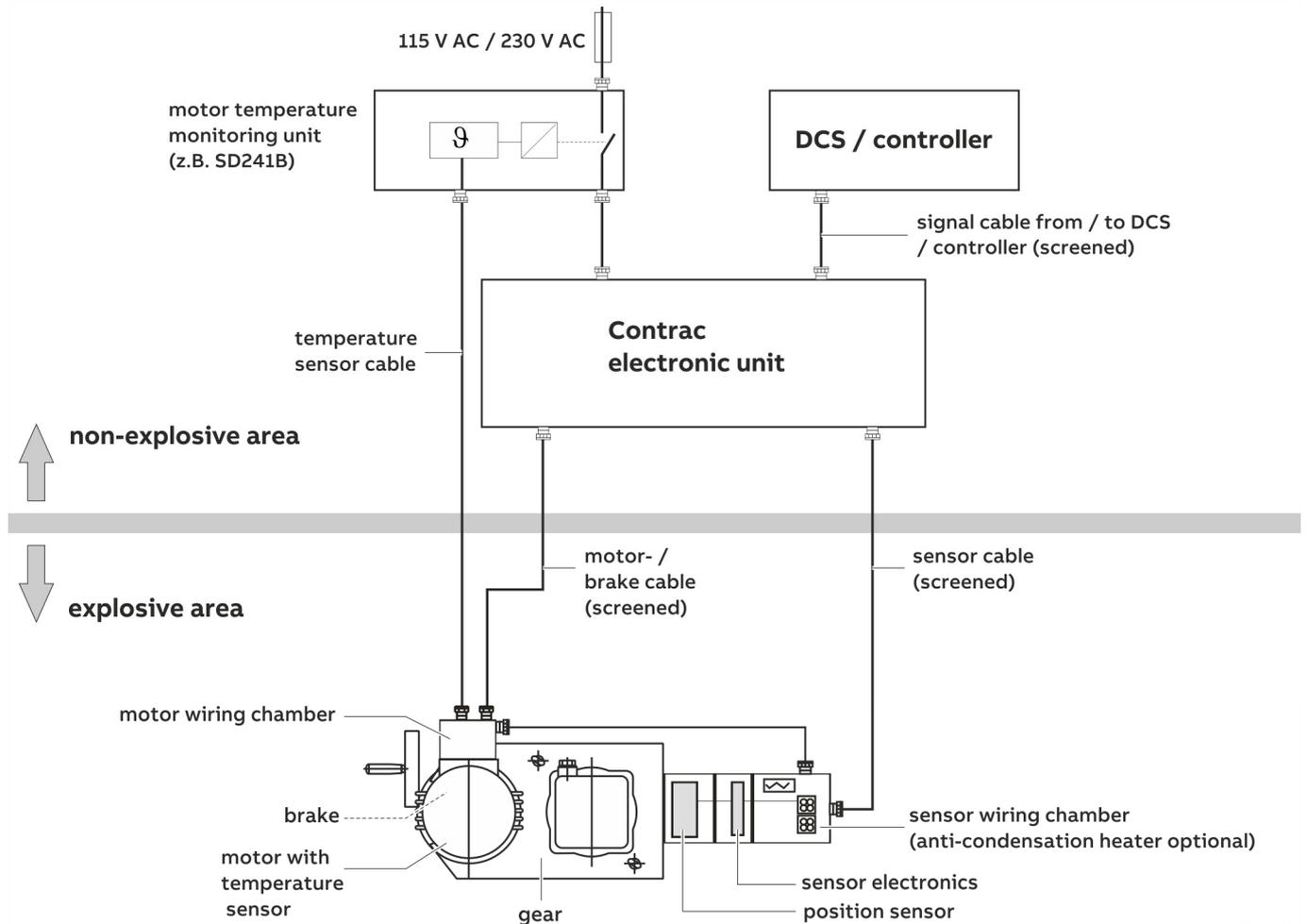


Figure 4: Ex Concept

## Electrical connections

### Safety instructions

#### **⚠ WARNING**

##### **Risk of injury due to live parts.**

Improper work on the electrical connections can result in electric shock.

- Connect the device only with the power supply switched off.
- Observe the applicable standards and regulations for the electrical connection.

The electrical connection may only be established by authorized specialist personnel.

Notices on electrical connection in this instruction must be observed; otherwise, electric safety and the IP-rating may be adversely affected.

Safe isolation of electric circuits which are dangerous if touched is only guaranteed when the connected devices fulfill the requirements of EN 61140 (basic requirements for secure separation).

To ensure safe isolation, install supply lines so that they are separate from electrical circuits which are dangerous if touched, or implement additional isolation measures for them.

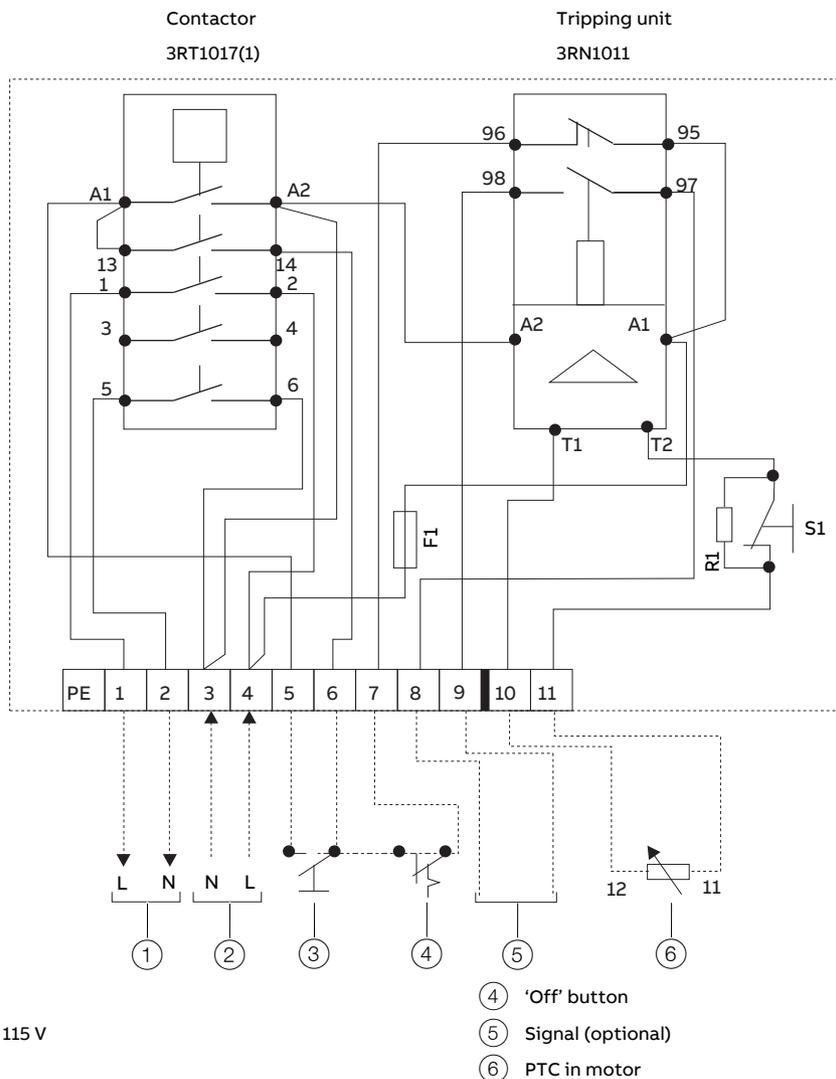


Figure 5: Circuit diagram

## ... 5 Installation

### ... Electrical connections

#### Information

- The line for temperature monitoring must not be routed through the supply voltage line of the motor.
- If extreme inductive or capacitive interference is expected, use shielded signal lines.
- Prior to commissioning, test the sensor resistance using a suited measuring device.
- The cumulative cold resistance may not up-scale 1.5 k $\Omega$ .
- For resistances < 50  $\Omega$  check for a short-circuit in the sensor circuit.
- Seal unused cable entries using suited sealing plugs.

### Line lengths in sensor circuit

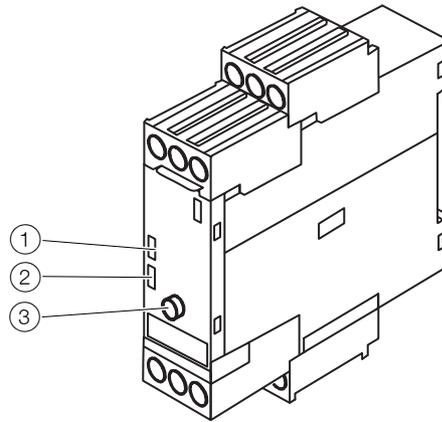
Cross section	Line length
2.5 mm <sup>2</sup> (14 AWG)	2 × 2,800 m (9,185 ft)
1.5 mm <sup>2</sup> (16 AWG)	2 × 1500 m (4920 ft)
0.5 mm <sup>2</sup> (20 AWG)	2 × 500 m (1640 ft)

## 6 Operation

### Safety instructions

- Before power-up, make sure that the ambient conditions specified in the data sheet are complied with and that the power supply corresponds with the information specified on the name plate of the motor temperature monitoring unit.
- If it can be assumed that safe operation is no longer possible, take the unit out of operation and secure against unintended startup.
- When mounting the motor temperature monitoring unit in work and traffic areas which may be accessed by unauthorized persons, the user is required to take the required protective measures.

### Displays and operating elements



M10373

- ① Green 'Ready' LED
- ② Red 'Tripped' LED
- ③ Blue 'Test / Reset' button

Figure 6: Displays and controls

- After opening the housing cover, the internal displays and controls of the 3RN1011 tripping unit become visible.
- After supply voltage of 115 V or 230 V (see name plate) is applied, the green 'Ready' LED shows that the unit is ready for operation.
- The red 'Tripped' LED indicates the tripped condition.
- The blue 'Test / Reset' button is used for testing and/or resetting.  
For testing, press and hold the blue button for approximately 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' button briefly one more time resets the device.  
The red LED extinguishes and terminals 8 and 9 are permanently open.

## 7 Repair

Repair and maintenance activities may only be performed by authorized customer service personnel.  
When replacing or repairing individual components, use original spare parts.

### Returning devices

Use the original packaging or a secure transport container of an appropriate type if you need to return the device for repair or recalibration purposes.

Fill out the return form (see **Return form** on page 10) and include this with the device.

In accordance with the EU Directive governing hazardous materials, the owner of hazardous waste is responsible for its disposal or must observe the following regulations for shipping purposes:

All devices delivered to ABB must be free from any hazardous materials (acids, alkalis, solvents, etc.).

Please contact Customer Center Service acc. to page 4 for nearest service location.

## 8 Recycling and disposal

### Note



Products that are marked with the adjacent symbol may **not** be disposed of as unsorted municipal waste (domestic waste).

They should be disposed of through separate collection of electric and electronic devices.

This product and its packaging are manufactured from materials that can be recycled by specialist recycling companies.

Bear the following points in mind when disposing of them:

- As of 8/15/2018, this product will be under the open scope of the WEEE Directive 2012/19/EU and relevant national laws (for example, ElektroG - Electrical Equipment Act - in Germany).

- The product must be supplied to a specialist recycling company. Do not use municipal waste collection points. These may be used for privately used products only in accordance with WEEE Directive 2012/19/EU.
- If there is no possibility to dispose of the old equipment properly, our Service can take care of its pick-up and disposal for a fee.

### Notice on RoHS II-Directive 2011/65/EU

As of 7/22/2019, the products provided by ABB Automation Products GmbH fall within the scope of regulations on hazardous substances with restricted uses or the directive on waste electrical and electronic equipment in accordance with ElektroG.

### Note

Detailed information on the RoHS Directive is available in the ABB download area.

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

## 9 Specification

SD241-B	
Line voltage / control voltage	AC 230 V (196 to 253 V) AC 115 V (94 to 121 V) depending on design; see order information / name plate
Frequency	50/60 Hz
Backup fuse	16 A; time-lag
Fuse	4 A; fast-acting
Operating temperature	-25 to 60 °C (-13 to 140 °F)
Transport and storage temperature	-25 to 70 °C (-13 to 158 °F)
Relative humidity	75 % annual average 95% of 30 days; condensation not permitted
IP rating	IP 54

## 10 Additional documents

### Note

All documentation, declarations of conformity and certificates are available in ABB's download area.

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

# 11 Appendix

## Return form

### Statement on the contamination of devices and components

Repair and/or maintenance work will only be performed on devices and components if a statement form has been completed and submitted.

Otherwise, the device/component returned may be rejected. This statement form may only be completed and signed by authorized specialist personnel employed by the operator.

#### Customer details:

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Contact person: \_\_\_\_\_ Telephone: \_\_\_\_\_

Fax: \_\_\_\_\_ Email: \_\_\_\_\_

#### Device details:

Type: \_\_\_\_\_ Serial no.: \_\_\_\_\_

Reason for the return/description of the defect: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

#### Was this device used in conjunction with substances which pose a threat or risk to health?

Yes  No

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

biological  corrosive / irritating  combustible (highly / extremely combustible)

toxic  explosive  other toxic substances

radioactive

Which substances have come into contact with the device?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

We hereby state that the devices/components shipped have been cleaned and are free from any dangerous or poisonous substances.

\_\_\_\_\_  
Town/city, date

\_\_\_\_\_  
Signature and company stamp

## Notes



—  
**ABB Limited**

**Measurement & Analytics**

Howard Road, St. Neots  
Cambridgeshire, PE19 8EU  
UK

Tel: +44 (0)870 600 6122

Fax: +44 (0)1480 213 339

Email: [enquiries.mp.uk@gb.abb.com](mailto:enquiries.mp.uk@gb.abb.com)

**ABB Inc.**

**Measurement & Analytics**

125 E. County Line Road  
Warminster, PA 18974  
USA

Tel: +1 215 674 6000

Fax: +1 215 674 7183

**ABB Automation Products GmbH**

**Measurement & Analytics**

Schillerstr. 72  
32425 Minden  
Germany

Tel: +49 571 830-0

Fax: +49 571 830-1806

[abb.com/actuators](http://abb.com/actuators)

—  
We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail.

ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB.

Copyright© 2018 ABB

All rights reserved

3KXE191001R4201