



# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: IECEx IBE 09.0001X issue No.:3  
Status: **Current**  
Date of Issue: **2013-03-14** Page 1 of 6

Certificate history:  
Issue No. 3 (2013-3-14)  
Issue No. 2 (2010-11-30)  
Issue No. 1 (2009-8-21)  
Issue No. 0 (2009-1-28)

Applicant: **PHOENIX CONTACT GmbH & Co.KG**  
Flachmarktstraße 8  
32825 Blomberg  
Germany

Electrical Apparatus: **Temperature Measurement Transducer MACX MCR-SL-RTD-I(-SP)**  
*Optional accessory:*

Type of Protection: **Intrinsic Safety, Type 'n'**

Marking: **[Ex ia Ga] IIC  
[Ex ia Da] IIIC  
Ex nA ic [ia Ga] IIC T4 Gc**

Approved for issue on behalf of the IECEx  
Certification Body:

Prof. Dr. Tammo Redeker

Position:

Head of Certification Body

Signature:  
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

**IBExU Institut für Sicherheitstechnik GmbH**  
Certification Body  
Fuchsmühlenweg 7  
09599 Freiberg  
Germany



# IECEx Certificate of Conformity

Certificate No.: IECEx IBE 09.0001X

Date of Issue: 2013-03-14

Issue No.: 3

Page 2 of 6

Manufacturer: **PHOENIX CONTACT Electronics GmbH**  
Dringenauer Straße 30  
31821 Bad Pyrmont  
**Germany**

Additional Manufacturing location  
(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

#### STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

<b>IEC 60079-0 : 2011</b> Edition: 6.0	Explosive atmospheres - Part 0: General requirements
<b>IEC 60079-11 : 2011</b> Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
<b>IEC 60079-15 : 2010</b> Edition: 4	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

#### TEST & ASSESSMENT REPORTS:

*A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in*

#### Test Report:

[DE/IBE/ExTR08.0009/00](#)  
[DE/IBE/ExTR08.0009/03](#)

[DE/IBE/ExTR08.0009/01](#)

[DE/IBE/ExTR08.0009/02](#)

#### Quality Assessment Report:

[NL/DEK/QAR11.0009/00](#)



# IECEx Certificate of Conformity

Certificate No.: IECEx IBE 09.0001X

Date of Issue: 2013-03-14

Issue No.: 3

Page 3 of 6

## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The Temperature Measurement Transducers MACX MCR-EX-SL-RTD-I(-SP) / BTT253-E0 are used for measuring temperatures by using resistive thermometers in hazardous areas and to transfer the measuring results as a normalized signal into the safe area. The intrinsically safe input circuit of the transducer has a safe galvanic separation from the output and the supply circuit. This separation is useful for voltages up to  $375 V_{peak}$ . The equipment is provided for installation in zone 2 or in the safe area. It can supply in areas of zone 0 or zone 20. A customized connector in the front of the module serves for special configuration or display tasks. This connection is energy limited in protection type ic and can be used in zone 2.

The transducers differ only in the kind of connection:

Module designation	Kind of connection
MACX MCR-EX-SL-RTD-I	screw connectors
BTT253-E0 (gray housing; ABB design)	screw connectors
MACX MCR-EX-SL-RTD-I-SP	spring pressure connectors

### Environmental Data:

Ambient temperature range                      -20°C to +60 °C  
Degree of protection of the enclosure                      IP 20

### CONDITIONS OF CERTIFICATION: YES as shown below:

1. The Temperature Measurement Transducer MACX MCR-EX-SL-RTD-I(-SP) / BTT253-E0 has to be installed in zone 2 in a certified housing fulfilling the requirements of IEC 60079-15 in protection category at least IP 54 according to IEC 60529.
2. Connecting and disconnecting of not intrinsically safe circuits are not allowed in energized state of the Temperature Measurement Transducer MACX MCR-EX-SL-RTD-I(-SP) / BTT253-E0.
3. Only appropriate devices from PhoenixContact may be connected at the configuration interface in zone 2.



# IECEx Certificate of Conformity

Certificate No.: IECEx IBE 09.0001X

Date of Issue: 2013-03-14

Issue No.: 3

Page 4 of 6

## EQUIPMENT(continued):

### Technical Data:

#### 1. Power Supply

Supply voltage	$U_B$	19.2...20 V DC
Power dissipation	$P$	max. 0.9 W
Maximum r.m.s. or d.c. voltage	$U_m$	253 / 125 V
Galvanic separated up to a peak voltage		375 V

#### 2. Intrinsically safe sensor circuit X4, X7

Level of protection		ia
Maximum output voltage	$U_o$	6.0 V
Maximum output current	$I_o$	6.3 mA
Maximum output power	$P_o$	9.4 mW
Characteristic		linear
Internal capacitance, inductance	$C_i, L_i$	negligible

The following maximum external values apply if there are capacitances and inductances:

Ex ia IIC				
$C_o$	1.4 $\mu$ F	1.9 $\mu$ F	2.7 $\mu$ F	11.0 $\mu$ F
$L_o$	100 mH	10 mH	1.0 mH	0
Ex ia IIB				
$C_o$	6.9 $\mu$ F	9.4 $\mu$ F	15 $\mu$ F	97 $\mu$ F
$L_o$	100 mH	10 mH	1.0 mH	0
Ex ia IIA				
$C_o$	10 $\mu$ F	13 $\mu$ F	21 $\mu$ F	150 $\mu$ F
$L_o$	100 mH	10 mH	1.0 mH	0



# IECEx Certificate of Conformity

Certificate No.: IECEx IBE 09.0001X

Date of Issue: **2013-03-14**

Issue No.: **3**

Page 5 of 6

**DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):**

Replacement of QAR and using of current standard editions.



# IECEx Certificate of Conformity

Certificate No.: IECEx IBE 09.0001X

Date of Issue: 2013-03-14

Issue No.: 3

Page 6 of 6

## Additional information:

### 3. Intrinsically safe interface circuit X2:1...11

Level of protection ic  
Maximum output voltage  $U_o$  3.5 V  
Maximum output current  $I_o$  250 mA  
Maximum output power  $P_o$  840 mW  
Characteristic rectangular  
Internal capacitance  $C_i$  50  $\mu$ F  
Internal inductance  $L_i$  negligible

The following maximum external values apply if there are capacitances and inductances:

Ex ic IIC				
$C_o$	28 $\mu$ F	120 $\mu$ F	-	-
$L_o$	7 $\mu$ H	2 $\mu$ H	-	-
Ex ic IIB				
$C_o$	21 $\mu$ F	110 $\mu$ F	200 $\mu$ F	1000 $\mu$ F
$L_o$	0.5 mH	0.1 mH	50 $\mu$ H	5 $\mu$ H
Ex ic IIA				
$C_o$	24 $\mu$ F	180 $\mu$ F	330 $\mu$ F	1000 $\mu$ F
$L_o$	1 mH	0.1 mH	50 $\mu$ H	15 $\mu$ H

### 3. (Continuations for supply pin X2:12)

Maximum input voltage X2:12  $U_i$  7.0 V  
Maximum input current X2:12  $I_i$  100 mA