



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

Certificate No.: IECEx IBE 09.0002X issue No.:3
Status: **Current**
Date of Issue: **2013-03-08** Page 1 of 6

Certificate history:
Issue No. 3 (2013-3-8)
Issue No. 2 (2010-11-30)
Issue No. 1 (2009-8-21)
Issue No. 0 (2009-2-25)

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

Electrical Apparatus: **Temperature Converter MACX MCR-EX-SL-TC-I**
Optional accessory:

Type of Protection: **Intrinsic Safety; Typ 'n'**

Marking: **[Ex ia Ga] IIC/IIB**
[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



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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:

IEC 60079-0 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-15 : 2010 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/ExTR09.0001/00](#)
[DE/IBE/ExTR09.0001/03](#)

[DE/IBE/ExTR09.0001/01](#)

[DE/IBE/ExTR09.0001/02](#)

Quality Assessment Report:

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



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The temperature converter MACX MCR-EX-SL-TC-I / BTT 263-E0 is used for measuring temperatures by using thermo couples in hazardous areas and to transfer the measuring results as a normalized current signal into the safe area. The intrinsically safe input circuit of the converter is galvanically separated up to $375 V_{peak}$ from the output and the supply circuit. The device is an associated apparatus having an input circuit of the protection type Intrinsically Safety of category ia.

The device may be operating in zone 2, if it is installed in a housing, which is suitable for this area (see General remarks). 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 type BTT 263-E0 is a temperature converter like the MACX MCR-EX-SL-TC-I with a different type marking and a different colour of the housing.

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 Converter MACX MCR-EX-SL-TC-I / BTT263-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 Converter MACX MCR-EX-SL-TC-I / BTT263-E0.
3. Only appropriate devices from PhoenixContact may be connected at the configuration interface in zone 2.



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EQUIPMENT(continued):

Technical Data:

1. Power Supply

Supply voltage	U_B	19.2...30 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 (4.1/4.2)

Level of protection		ia
Maximum output voltage	U_o	6.0 V
Maximum output current	I_o	4.7 mA
Maximum output power	P_o	7.0 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	1.5 μ F	1.9 μ F	2.7 μ F	11.0 μ F
L_o	100 mH	10 mH	1.0 mH	0
Ex ia IIB				
C_o	7.0 μ F	9.4 μ F	15 μ F	97 μ F
L_o	100 mH	10 mH	1.0 mH	0
Ex ia IIA				
C_o	10 μ F	13 μ F	21 μ F	150 μ F
L_o	100 mH	10 mH	1.0 mH	0



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

Replacement of QAR and using of current standard editions.



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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 μ F
Internal inductance	L_i	negligible

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

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