IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx PTB 11.0111X**	Page 1 of 5	Certificate history:
Status:	**Current**	Issue No: 1	Issue 0 (2012-03-09)
Date of Issue:	2020-11-26		
Applicant:	**ABB Automation Products GmbH** Schillerstraße 72, 32425 Minden **Germany**		
Equipment:	**Temperature sensor, type SensyTemp TS...**		
Optional accessory:			
Type of Protection:	**Intrinsic Safety "i"**		
Marking:	Ex ia IIC T6...T1 Ga or Ex ib IIC T6...T1 Gb or Ex ib IIC T6...T1 Ga/Gb		

Approved for issue on behalf of the IECEx Certification Body: **Dr.-Ing. F. Lienesch**

Position: **Department Head "Explosion Protection in Sensor Technology and Instrumentation"**

Signature: (for printed version)

Date: 10.12.20

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 www.iecex.com or use of this QR Code.

Certificate issued by:

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

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Issue No: 1

Manufacturer: **ABB Automation Products GmbH**
Schillerstr. 72
32425 Minden
Germany

Additional manufacturing locations:

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 equipment 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 60079-0:2017 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-11:2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-26:2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga

This Certificate **does not** indicate compliance with 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/PTB/ExTR11.0094/01

Quality Assessment Report:

DE/TUN/QAR06.0012/06

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The thermocouples or resistive thermometers are used for temperature measurements in various applications. The temperature sensors may be used with or without isolating element (protective tube). The temperature sensors may be manufactured with diameters of 3 mm to 8 mm. For diameters of 6 mm or more 2 intrinsically safe circuits may exist in one temperature sensor. Thermocouples may be connected as follows, single thermocouple and double thermocouple. Resistive thermometers may be connected in 2-wire, 3-wire and 4-wire connection. For diameters of 6 mm or more double 2-wire and double 3-wire circuits may be connected.
The measured process temperature affects the temperature rise inside the temperature sensor. Therefore, the required tube length shall be determined using the operating instructions manual and in consideration of the temperature class. Special attention shall be paid to the notes listed in the manual.
The maximum permissible ambient temperature ranges from -40 °C to 80 °C.
Combinations of operational modes, thermal and electrical data see attachement

SPECIFIC CONDITIONS OF USE: YES as shown below:
All possible combinations of operation modes and mounting methods of the temperature sensors of type series SensyTemp TS... shall be listed in the operating instructions manual.
(see Attachement)

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Adaptation to the current state of standards
- Revision of the operating instructions, the safety-relevant description and the type labels regarding the modifications made and the heating behaviour
- Extension of the marking regarding the temperature classes
- Heating performance measurements to investigate the influence of the neck tube length on the temperature at the bottom of the transmitter element have been performed
- Change of the type label material to "ACE 99W" from Marschall
- Update of various technical drawings regarding the current production status
- Revision of the specific conditions of use No. 1 and 2

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Issue No: 1

Additional information:
For further information see schedule

Annex:

COCA110111-01.pdf

Applicant: ABB Automation Products GmbH

Electrical Apparatus: Temperature sensor, type SensyTemp TS...

Description of equipment

The thermocouples or resistive thermometers are used for temperature measurements in various applications. The temperature sensors may be used with or without isolating element (protective tube). The temperature sensors may be manufactured with diameters of 3 mm to 8 mm. For diameters of 6 mm or more 2 intrinsically safe circuits may exist in one temperature sensor. Thermocouples may be connected as follows, single thermocouple and double thermocouple. Resistive thermometers may be connected in 2-wire, 3-wire and 4-wire connection. For diameters of 6 mm or more double 2-wire and double 3-wire circuits may be connected.

The measured process temperature affects the temperature rise inside the temperature sensor. Therefore, the required tube length shall be determined using the operating instructions manual and in consideration of the temperature class. Special attention shall be paid to the notes listed in the manual.

The maximum permissible ambient temperature ranges from -40 °C to 80 °C.

Electrical data

Supply ..... type of protection Ex ia IIC or Ex ib IIC
only for connection to a certified intrinsically safe circuit

Maximum values:

U_i = 30 V
I_i = 101 mA

L_i = 15 µH/m
C_i = 280 pF/m

or

U_i = 25 V
I_i = 158 mA

L_i = 15 µH/m
C_i = 280 pF/m

or

U_i = 20 V
I_i = 309 mA

L_i = 15 µH/m
C_i = 280 pF/m

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Specific conditions of use

1. All possible combinations of operation modes and mounting methods of the temperature sensors of type series SensyTemp TS... shall be listed in the operating instructions manual.
2. Temperature sensors of category 1 G shall be connected to only one to intrinsically safe circuit of protection level "ia".
3. When the temperature sensors are connected to an intrinsically safe circuit of protection level "ib" the application as category 1 G equipment is only permissible if the temperature sensors are mounted into a protective tube or if separating elements are used. In this case the minimum wall thickness is ≥ 1 mm for stainless steels and ≥ 3 mm for other steels.
4. Temperature sensors of category 2 G with a minimum diameter of 3 mm may be designed with Pt 100 in 2-, 3- or 4-wire connection, wire-wound measuring resistance or sheet measuring resistance or as single or double thermocouple. Wire-wound measuring resistances may also be installed as double 2-wire or double 3-wire circuitry. Sensors having a minimum diameter of 6 mm may also be operated in double 4-wire connection using wire-wound or sheet measuring resistances or double thermocouples.
5. When double sensors are connected to two intrinsically safe circuits the summation of voltage or current respectively shall be taken into consideration due to small clearances. For permissible maximum values in case of voltage- or current-summation, reference is made to the pairs of values specified in the electrical data.
6. Near the terminals the permissible range of the ambient temperature is -40 °C up to +80 °C.
7. Enclosures made of non-metallic materials shall provide a surface resistance of $< 10^9$ Ohm according to EN 60079-11.
8. The alloy of light-metal enclosures shall not contain more than 7.5 % Mg by mass.
9. Only cable glands for which an EC-type examination certificate is available shall be used as cable entry elements.
10. The temperature sensors shall be included in the local equipotential bonding system.

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