



(1) **EU-TYPE EXAMINATION CERTIFICATE**  
(Translation)

(2) Equipment or Protective Systems Intended for Use in  
Potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

**PTB 01 ATEX 2200 X**

**Issue: 1**

(4) Product: Temperature sensor, type SensyTemp TS...

(5) Manufacturer: ABB Automation Products GmbH

(6) Address: Schillerstraße 72, 32425 Minden, Germany

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential Test Report PTB Ex 20-20015.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN IEC 60079-0:2018**

**EN 60079-11:2012**

**EN 60079-26:2015**

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:



**II 1 G Ex ia IIC T6...T1 Ga or II 2 G Ex ib IIC T6...T1 Gb or**  
**II 1/2 G Ex ib IIC T6...T1 Ga/Gb**

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, December 3, 2020

On behalf of PTB:

Dr.-Ing. F. Lienesch  
Direktor und Professor



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EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

(13)

## SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 01 ATEX 2200 X, Issue: 1**

(15) Description of Product

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:

$$\begin{aligned}U_i &= 30 \text{ V} \\I_i &= 101 \text{ mA}\end{aligned}$$

$$\begin{aligned}L_i &= 15 \text{ } \mu\text{H/m} \\C_i &= 280 \text{ pF/m}\end{aligned}$$

or

$$\begin{aligned}U_i &= 25 \text{ V} \\I_i &= 158 \text{ mA}\end{aligned}$$

$$\begin{aligned}L_i &= 15 \text{ } \mu\text{H/m} \\C_i &= 280 \text{ pF/m}\end{aligned}$$

or

$$\begin{aligned}U_i &= 20 \text{ V} \\I_i &= 309 \text{ mA}\end{aligned}$$

$$\begin{aligned}L_i &= 15 \text{ } \mu\text{H/m} \\C_i &= 280 \text{ pF/m}\end{aligned}$$

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## SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 01 ATEX 2200 X, Issue: 1

### Changes with respect to previous editions:

- 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 condition of use No. 2
- Summary of the original EU-type Examination Certificate, the supplements issued and the above-mentioned modifications to represent the current state of production

(16) Test Report      PTB Ex 20-20015

### (17) Specific conditions of use

1. All possible combinations of operation modes and mounting methods of the temperature sensors of type series 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  $\geq 1$  mm for stainless steels and  $\geq 3$  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.

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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.

(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

According to Article 41 of Directive 2014/34/EU, EC-type examination certificates which have been issued according to Directive 94/9/EC prior to the date of coming into force of Directive 2014/34/EU (April 20, 2016) may be considered as if they were issued already in compliance with Directive 2014/34/EU. By permission of the European Commission supplements to such EC-type examination certificates and new issues of such certificates may continue to hold the original certificate number issued before April 20, 2016.

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, December 3, 2020

On behalf of PTB:

  
Dr.-Ing. F. Lienesch  
Direktor und Professor

