



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 PTB 12.0039X

Issue No: 2

Certificate history:

Issue No. 2 (2018-10-10)

Status: **Current**

Issue No. 1 (2018-03-21)

Date of Issue: **2018-10-10**

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Issue No. 0 (2012-07-27)

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

Equipment: **Temperature sensors TSP..., Measuring inserts TSA..., Temperature transmitters
TTF200 and TTF300**

Optional accessory:

Type of Protection: **Ex d**

Marking:
Ex db IIC T6/T4 Ga/Gb

Approved for issue on behalf of the IECEx
Certification Body:

Dr.-Ing. Detlev Markus

Position:

Head of Department "Explosion Protection in Energy Technology"

Signature:
(for printed version)

Date:

25.10.18

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:

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





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Manufacturer: **ABB Automation Products GmbH**
Schillerstraße 72
32425 Minden
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 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 : 2017 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
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 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/PTB/ExTR12.0053/02](#)

Quality Assessment Report:

[DE/TUN/QAR06.0012/04](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The product family consists of Temperature sensors TSP..., Measuring inserts TSA... and Temperature transmitters TTF200 and TTF300 .

For the technical data, please refer to the attachment.

SPECIFIC CONDITIONS OF USE: YES as shown below:

Repairs on flameproof joints may only be performed in accordance with the manufacturer's design specifications. A repair on the basis of the values in the tables 1 resp. 2 of EN 60079-1 is not permitted.



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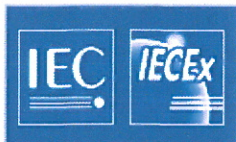
Page 4 of 4.

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

See attachment!

Annex:

[Attachment to IECEx PTB 12.0039X-02.pdf](#)



Applicant: ABB Automation Products GmbH
Schillerstr. 72
32425 Minden/Germany

General product information

The product family TSP, TSA and TTF consists of resistance thermometers and thermocouples with the corresponding connection heads as well as various field enclosures.

The connection heads are to accommodate the thermocouples and resistance thermometers, as well as transducers and display elements.

The field housings only accommodate transducers and display elements.

The Flameproof Enclosure type of protection will only be produced when a – separately certified – screwed cable gland is properly mounted as specified in the standards shown on the cover sheet.

When an enclosed conduit is used for zone separation, the system may also be employed for measuring temperatures in zone 0. Only the measuring sensor may in connection with the conduit be employed in zone 0. The connection head and temperature sensor without separate conduit may only be employed in zone 1.

The TSP can be used as follows according to the marking:
In the wall between Zone 0 and Zone 1 (EPL Ga/Gb) in the explosion groups IIA, IIB and IIC
In Zone 1 (Gas-Ex, category 2G, EPL Gb) in the explosion groups IIA, IIB and IIC

Temperature class ¹	T6	T4 ... T1
Ambient temp. – Connecting head with base	-40 °C ... 75 °C	-40 °C... 125 °C
Ambient temp. – Connecting head with Temperature transmitter	-40 °C... 67 °C	-40 °C... 117 °C

¹The working temperatures may be limited depending on the temperature resistance of the cable entries used.

Media temperatures and temperature classes:

	Temperature class	Max. adm. media temperature
Use in zone 0	T1	358 °C
	T2	238 °C
	T3	158 °C
	T4	106 °C
	T5	78 °C
	T6	66 °C
Use on zone 1	T1	438 °C
	T2	288 °C
	T3	193 °C
	T4	128 °C
	T5	93 °C
	T6	78 °C

Changes in regard to previous issues

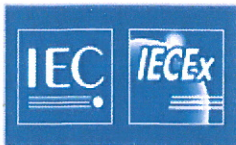
The following types are manufactured (new types are marked with black letters):

- TSP341-N-.... Temperature Sensor for non invasive (surface) temperature measurement
- TSP311-*5.....xx Temperature Sensor, without thermowell
- TSP321-*5.....xx Temperature Sensor, with tubular thermowell
- TSP331-*5.....xx Temperature Sensor, with drilled thermowell
- TSA101-* Exchangeable Measuring Inset, for resistance thermometers and thermocouples
- TSA302-* Flameproof extension tube with integrated insert and flamepath

*) A = ATEX
H = IECEx

- TTF 200-** A.H: TTH 200-*1H.. in single-chamber housing (AGLF) / without Display
- TTF 200-** B.H: TTH 200-*1H.. in single-chamber housing (AGSF) / without Display
- TTF 200-** E.H: TTH 200-*1H.. in single-chamber housing (AGLFD) / with Display HMI type BS
- TTF 200-** F.H: TTH 200-*1H.. in single-chamber housing (AGSFD) / with Display HMI type BS
- TTF 300-** A.H: TTH 300-*1H.. in single-chamber housing (AGLF)/ without display
- TTF 300-** B.H: TTH 300-*1H.. in single-chamber housing (AGSF)/ without display
- TTF 300-** C.H: TTH 300-*1H.. in single-chamber housing (AGLFD)/ with LCD display HMI type B
- TTF 300-** D.H: TTH 300-*1H.. in single-chamber housing (AGSFD)/ with LCD display HMI type B

**) E3 = flameproof enclosure ATEX- Approval
H5 = flameproof enclosure IECEx-Approval



Constructive changes

The changes are:

- A new type TSP341-N is introduced.
- A new measuring insert will be introduced.
- The hole in the bottom of the base part is drilled from 6 mm to 10 mm. The material thickness of the bottom is not changed, so that the length of the flame gap remains the same.
- An approved type A or AS display is used. (PTB 05 ATEX 2079 X)
- A new potting of the type Elan-tron® SK 6210 / SH 6900 for casting the sleeve of the measuring inset is introduced.
- Partially changed type code of the TTF200.

Technical data

TSP3x1, TSP341-N and TTFx00:

- Voltage: $\leq 30 \text{ V}$
- Current: $\leq 32 \text{ mA}$, limited by a fuse with a rating of 32 mA in accordance to IEC 127
- Power: $\leq 1,65 \text{ W}$

Measuring element:

- Voltage: $\leq 6,5 \text{ V}$
- Current: $\leq 17,8 \text{ mA}$
- Power: $\leq 29 \text{ mW} / 39 \text{ mW}$

Main Type Designator

Type coding TSPx1

TSP 3x1 – A 5 H 4 A U 1
TSP 456 7 8 9 10 11 12 13 14

TSP = Temperature Sensor Process Industry

456 = 311 Temperature Sensor, without thermowell
321 Temperature Sensor, with tubular thermowell
331 Temperature Sensor, with drilled thermowell

8 = A = flameproof enclosure ATEX-Approval
H = flameproof enclosure IECEx-Approval
blank = ATEX- and IECEx-Approval with one label

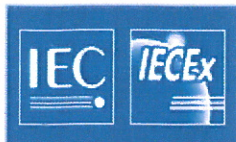
9 = 5 = flameproof

10 11 = Y1 without transmitter, with ceramic terminal
Y2 without transmitter, with flying leads
H4 TTH300 HART
H6 TTH200 HART
P6 TTH300 PA
F6 TTH300 FF

12 13 = U1 1 x M20 x 1,5, without cable gland

Physikalisch-Technische Bundesanstalt (PTB)

Bundesallee 100, 38116 Braunschweig, Germany
Postfach 33 45, 38023 Braunschweig, Germany
Telephone +49 531 592-0, Telefax +49 531 592-3605



- U2 1 x 1/2 in. NPT, without cable gland
- U4 2 x M20 x 1,5, without cable gland
- U5 2 x 1/2 in. NPT, without cable gland
- UA 1 x M20 x 1,5, with Ex-d cable gland
- UC 2 x M20 x 1,5, with Ex-d cable gland
- UF 1 x 1/2 in. NPT-PE ADE 4F Capri Codec
- UL 1 x 1/2 in. NPT Capri Codec, with strain relief

Type coding TSP341-N

TSP341-N- D 7 L 2 H 8 U 1
TSP456789 10 11 12 13 14 15 16 17

TSP = Temperature Sensor Process Industry

45678 = 341-N non-invasive measurement

10 11 = D7 Flameproof enclosure ATEX
J7 Flameproof enclosure IECEx

12 13 = L1 AGL enclosure Aluminium without display
L4 AGLD enclosure Aluminium with display Type A / AS
S1 AGS enclosure stainless steel without display
S4 AGSD enclosure stainless steel with display Type A / AS

14 15 = H8 non-Ex Transmitter HART

16 17 = U1 Thread M20x1,5 without cable gland
U2 Thread 1/2"NPT with cable gland

Type coding TTF

TTF 200 – E 1 A 1 H
TT3 456 7 8 9 10 11 12

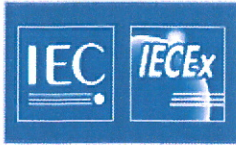
TT = Temperature transmitter

3 = F = field housing

456 = 200 = one channel
300 = two channels

89 = E3 = flameproof enclosure, ATEX-Approval
H5 = flameproof enclosure, IECEx-Approval

10 = A = single-compartment housing (aluminum) / without display
B = single-compartment housing (stainless steel) / without display
C = single-compartment housing (aluminum) / with LCD-display HMI (only TTF 300)
D = single-compartment housing (stainless steel) / with LCD-display HMI (only TTF 300)
E = single-compartment housing (aluminum) / with LCD-display HMI (only TTF 200)



F = single-compartment housing (stainless steel) / with LCD-display HMI (only TTF 200)

- 11 = 1 = Thread 2x M20 x 1.5 (size of cable bushing), not ex-relevant
 2 = Thread 2 x ½ in. NPT
 3 = Thread 2 x ¾ in. NPT
 4 = Cable gland 2 x M20 x 1.5 (plastic version with limited temperature range)
- 12 = H = Hart-Protocol
 P = Profibus PA (only TTF 300)
 F = Foundation Fieldbus (only TTF 300)

Type coding TSA

TSA 101 – A5..
TSA 456 7 89.

TSA = Temperature Sensor Accessories

- 456 = 101: Inset with flying leads, pressed flange or crimped flange
 302: Flameproof extension tube with integrated insert and flamepath

- 8 = A = ATEX-Approval
 H = IECEx-Approval

- 9 = 5 = Flameproof enclosure

Special conditions for safe use

Repairs on flameproof joints may only be performed in accordance with the manufacturer's design specifications. A repair on the basis of the values in the tables 1 resp. 2 of EN 60079-1 is not permitted.

Additional notes for safe operation:

Components attached or installed (e.g. terminal compartments, bushings, cable glands, connectors) shall be of a technical standard that complies with the specifications on the cover sheet. They shall be suited for the operating conditions and have a separate examination certificate. The special conditions specified for the components shall be complied with, and the components shall be included in the type test, if necessary. This equally applies to the components mentioned in the technical description.

For installation and operation of the housings, the specifications in the operating instructions shall be complied with. For zone-0 operation, conduits shall be used that are suited for zone separation in compliance with IEC 60079-26. For the maximum permissible media temperatures, reference shall be made to the tables included in the operating instructions.

Connection conditions

1. The Temperature sensors TSP..., Measuring inserts TSA..., Temperature transmitter TTF200 and 300 shall be connected by means of suitable cable entries or conduit systems, which meet the requirements of IEC 60079-1, sections 13.1 and 13.2, and for which a separate examination



certificate has been issued. Should the Temperature sensors TSP..., Measuring inserts TSA..., Temperature transmitter TTF200 and 300 be connected by means of a conduit entry which has been approved for this purpose, the required sealing device shall be provided immediately at the device.

2. Cable entries (conduit threads) and sealing plugs of simple designs must not be used.
3. Any openings not used shall be sealed as specified in IEC 60079-1, section 11.9.
4. The connecting cable of the Temperature sensors TSP..., Measuring inserts TSA..., Temperature transmitter TTF200 and 300 has to be connected inside an enclosure, which complies with the requirements of an accepted type of protection acc. to IEC 60079-0, clause 1, if connection is made in a hazardous location.
5. The connecting wire of the Temperature sensors TSP..., Measuring inserts TSA..., Temperature transmitter TTF200 and 300 shall be installed to provide for permanent wiring and adequate protection against mechanical damage..
6. If the temperature at entry fittings should exceed 70 °C, the connecting cables used have to be of the temperature-resistant type.
7. The Temperature sensors TSP..., Measuring inserts TSA..., Temperature transmitter TTF200 and 300 are to be included into the local equipotential bonding solution of the hazardous location.

These notes shall accompany each apparatus in an adequate form.

Warning note

The enclosure cover has to be provided with the following warning note:

WARNING – DO NOT OPEN WHEN CIRCUITS ARE ALIVE