



(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 99 ATEX 1144 X

Issue: 02

(4) Product: Temperature sensors TSP..., Measuring inserts TSA..., Temperature transmitters TTF200 and TTF300

(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 18-18072.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0:2012+A11:2013 EN 60079-1:2014 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.

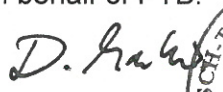
(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

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

 **II 1/2 G Ex db IIC T6/T4 Ga/Gb**

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Braunschweig, October 25, 2018


Dr.-Ing. D. Markus
Direktor und Professor



(13)

SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 99 ATEX 1144 X, Issue: 02**

(15) Description of Product

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.

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.

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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 in 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

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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 enclosure

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

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12 13 =	U1	1 x M20 x 1.5, without cable gland
	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

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- 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 1/2 in. NPT
3 = Thread 2 x 3/4 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

(16) Test Report PTB Ex 18-18072

(17) Specific conditions of 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.

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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

(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

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examination certificates and new issues of such certificates may continue to hold the original certificate number issued before April 20, 2016.

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Braunschweig, October 25, 2018



Dr.-Ing. D. Markus
Direktor und Professor

