



Translation

(1) **EC-Type Examination Certificate**

(2) **- Directive 94/9/EC -**

**Equipment and protective systems intended for use
in potentially explosive atmospheres**

(3) **BVS 06 ATEX E 029**

(4) **Equipment: Temperature Sensor und Transmitter Type TSP** and TTF 300****

(5) **Manufacturer: ABB Automation Products GmbH**

(6) **Address: 63755 Alzenau, Germany**

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the schedule to this type examination certificate.




(8) The certification body of EXAM BBG Prüf- und Zertifizier GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in the test and assessment report BVS PP 06.2057 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:
EN 50281-1-1:1998 +A1 Dust explosion protection

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

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

 II 1D IP6X T see 15.3.2	or	Type TSP***-*. *.....* *
 II 1/2D IP6X T see 15.3.2		
 II 1D IP6X T 135 °C		Type TTF...-**

EXAM BBG Prüf- und Zertifizier GmbH

Bochum, dated 17. May 2006

Signed: Dr. Jockers

Signed: Dr. Eickhoff

Certification body

Special services unit

(13)

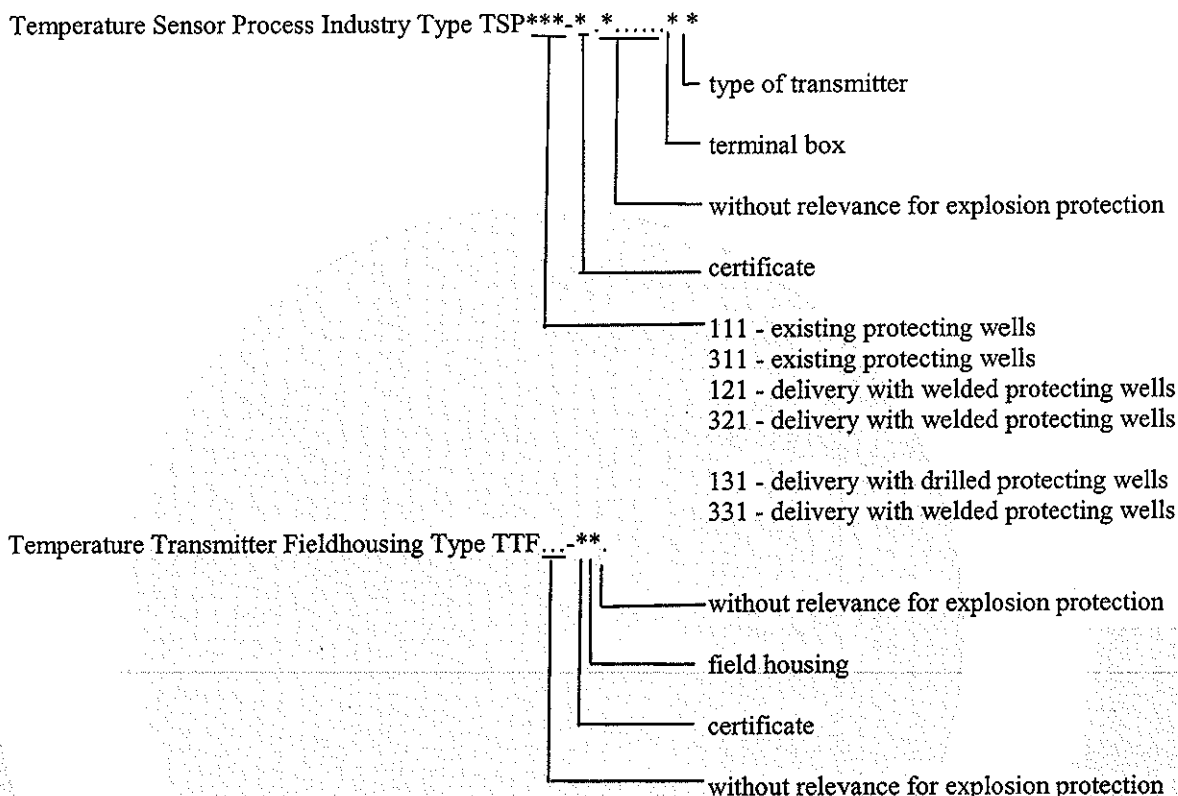
Appendix to

(14)

EC-Type Examination Certificate

BVS 06 ATEX E 029

(15) 15.1 Subject and type



15.2 Description

The Temperature Sensor Process Industry Type TSP***.*.....** is used for measuring the temperature in containers in which granular or powdery materials are stored.

The temperature sensor consists of a terminal box and a protection tube with measuring element (thermocouple or resistance thermometer). It is mounted in the wall of the container.

The control and evaluation electronic is located either in the terminal box or outside the hazardous area.

The supply can be realised either by a power supply with intrinsically safe output circuit EEx ia IIB or EEx ia IIC or non intrinsically safe. In case the supply is non - intrinsically safe the current will be limited by a series fuse with a rated current of 32 mA.

The Temperature Transmitter Fieldhousing Type TTF*** serves the purpose to record, enforce and transfer thermal data used together with other transmitters.

It consists of either a terminal box of one of the following types: AGL, AGLH, AGLHD, AGS, AGSH or AGSHD respectively; or a field housing of one of the following types: AGSF, AGSFH, AGLF, AGLFH, AGLFD or AGSFD respectively with the electronics inside. Both the head-mounted as well as the field-mounted types can house two transmitters maximum.

Terminal box and field housing in the light metal and stainless steel versions are constructed in the same way. The light metal version is certified for gas in type of protection Flameproof Enclosure "d" (PTB Ex 99-19133, PTB Ex 01-11103).

Type TTH*** temperature transmitter is used as non intrinsically safe and intrinsically safe version with EC-Type examination certificate. In case the supply is non-intrinsically safe the current will be limited by a series fuse with a rated current of 32 mA.

15.3 Parameters

15.3.1 Electrical data

15.3.1.1 Type TSP***-*. *.....* *

Version with transmitter in type of protection Intrinsic Safety level of protection „ia“ built in or with external transmitter with measuring circuit in type of protection Intrinsic Safety „ia“.
 The electrical parameters of the respective EC-Type Examination Certificate are relevant.
 In case of one built in transmitter with or without display or two transmitters without display the max. power loss in the terminal box is 2.3 W (4.6 W).

15.3.1.1.1 Intrinsically safe version

The electrical data U_o , I_o and P_o of the intrinsic safe measuring circuit of the used transmitter shall not exceed the following input data of the measuring circuit of the sensor.

measuring circuit / sensor circuit in type of protection Intrinsic Safety EEx ia IIB/IIC maximum values:

U_i	=	30	V
I_i	=	101	mA
P_i	=	0,5	W
L_i	=	15	per meter
C_i	=	280	per meter

15.3.1.1.2 Non - intrinsically safe version

supply voltage		
for external transmitter secured by an IEC fuse,		
non - intrinsically safe)		42 V DC
max. power loss (2 transmitter or 1 transmitter + display)		≤ 3 W
max. power loss measuring insert (sensor)		≤ 0,5 W

15.3.1.2 Type TTF...-**.

Temperature transmitter type TTH*** in type of protection Intrinsic Safety built in Level of protection “ia” supplied by a power supply having an output circuit in type of protection Intrinsic Safety Level of protection “ia”

max. supply voltage	U_i	DC	30 V
max. input power	P_i		800 mW

15.3.2 Thermal data

15.3.2.1 Type TSP***_*. *.....* *

	permitted ambient temperature at the terminal box	permitted process temperature at the protection tube	max. temperature at the flange on the side of the terminal box	max. surface temperature at the terminal box	max. surface temperature at the protection tube
Category 1D or Category 1/2D with built in transmitter in intrinsic safety "ia"	-40°C...+ 85°C	-40 °C... +85 °C -40 °C...+200 °C* -40 °C...+300 °C* -40 °C...+400 °C*	85 °C 164 °C 251 °C 346 °C	120 °C	133 °C 200 °C 300 °C 400 °C
Category 1D or Category 1/2D with built in transmitter secured by an external IEC fuse	-40 °C... +85 °C	-40 °C... + 85 °C -40 °C...+200 °C* -40 °C...+300 °C* -40 °C...+400 °C*	85 °C 164 °C 251 °C 346 °C	133 °C** 150 °C ***	133 °C 200 °C 300 °C 400 °C
category 1D or category 1/2D measuring circuit in intrinsic safety "ia", transmitter extern or non intrinsic safe with external IEC-fuse in the supply circuit of the external transmitter	-40 °C... +85 °C -40 °C...+200 °C -40 °C...+200 °C -40 °C...+200 °C	-40 °C... +85 °C -40 °C...+200 °C -40 °C...+300 °C -40 °C...+400 °C	85 °C 200 °C 251 °C 346 °C	85 °C 200 °C 200 °C 200 °C	133 °C 200 °C 300 °C 400 °C

* by adequate means the user avoids the max. permitted ambient temperature of 85 °C at the terminal box from being exceeded

** equipped with one transmitter with or without display

*** equipped with two transmitters

15.3.2.2 Type TTF...-**.

permitted ambient temperature range
maximum surface temperature T

$$-40\text{ °C} \leq T_{\text{amb}} \leq +85\text{ °C}$$

$$135\text{ °C}$$

15.3.3 Degrees of protection according to EN 60529

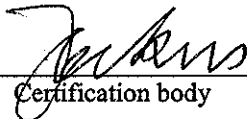
IP 6X

- (16) Test and assessment report
BVS PP 06.2057EG as of 17.05.2006
- (17) Special conditions for safe use
none

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 17.05.2006
BVS-Hk/Mi A 20060097

EXAM BBG Prüf- und Zertifizier GmbH



Certification body



Special services unit