Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(1) # EC-TYPE-EXAMINATION CERTIFICATE

(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 99 ATEX 1144

(4) Equipment: Product Line SensyTemp Ex d

(5) Manufacturer: ABB Automation Products

(6) Address: Borsigstraße 2, D-63755 Alzenau

(7) This equipment and any acceptable variation thereto are 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 9 of the Council Directive 94/9/EC 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 confidential report PTB Ex 99-19133.

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

EN 50014:1997 **EN 50018:1994** **EN 50284:1997** **EN 1127-1:1997**

(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 and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

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

II 1/2 G EEx d IIC T4 resp.T5 resp. T6

Zertifizierungsstelle Explosionsschutz
By order

Braunschweig, December 6, 1999

Dr.-Ing. U. Klausmeyer
Regierungsdirektor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 24

EC-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.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

(13) # SCHEDULE

(14) ## EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1144

(15) Description of equipment

The Sensy Temp Ex d product family comprises resistance thermometers and thermocouples with the required connection heads, types AGL, AGLH, and AGLHD. The product family also comprises field housings of types AGLF, AGLFH, and AGLFD.

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.

Maximum permissible operating temperatures for different maximum power ratings, and resultant temperature classes:

Max. perm. power P_{max}		W	2.0	4.0	6.0	8.0	10.0
Max. resultant heating rate		K	7	14	21	28	35
Temperature class			°C	°C	°C	°C	°C
T4	130	°C	123	116	109	102	95
T5	95	°C	88	81	74	67	60
T6	80	°C	73	66	59	52	45

Voltage rating U_B	60 V AC or 60 V DC
Max. power P_{max}	shown in above table
Fuse current rating	P_{max}/66 V

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SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1144

(16) Test report PTB Ex 99-19133 (4 pages)

(17) Special conditions for safe use

none;

additional notes for safe operation:

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 EN 50284:1997. For the maximum permissible media temperatures, reference shall be made to the tables included in the operating instructions.

(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, December 6, 1999

(signature) *L.S.*

Dr.-Ing. U. Klausmeyer
Regierungsdirektor

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Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

1st SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1144

(Translation)

Equipment: Product family Sensy Temp Ex d

Marking: Ⓔx **II 1/2 G EEx d IIC T4 or T5 or T6**

Manufacturer: ABB Automation Products

Address: Borsigstrasse 2
63755 Alzenau, Germany

Description of supplements and modifications

Sylgard 567 sealing compound may optionally be used for fitting the glass panes in cover types AFGFD and AGLHD.

Test report: PTB Ex 01-11103

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, July 9, 2001

(signature) *L.S.*

Dr.-Ing. U. Klausmeyer
Regierungsdirektor

4 pages, correct and complete as regards content.
By order:

Dr.-Ing. U. Klausmeyer
Regierungsdirektor

Braunschweig, February 10, 2004

Sheet 1/1

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Braunschweig und Berlin

2nd SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1144

(Translation)

Equipment: Product family Sensy Temp Ex d

Marking: **II 1/2 G EEx d IIC T1 - T6**

Manufacturer: ABB Automation Products GmbH

Address: Borsigstraße2, 63754 Alzenau, Germany

Description of supplements and modifications

The type name is changed to: TSP311-A5..... .xx
TSP321-A5..... .xx
TSP331-A5..... .xx
Temperature **S**ensor **P**rocess Industry
TTF300-E3.....
Temperature **T**ransmitter **F**ield housing

The technical data in approval certificate change as follows:

Max. adm. ambient temperature: -40 °C to 60 °C

Working temperatures:

	Temperature class	Max. working temperature *
Connecting head with base	T6	75 °C
	T5	90 °C
	T1-T4	125 °C
Connecting head with temperature transmitter	T6	67 °C
	T5	82 °C
	T1- T4	117 °C

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

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Braunschweig und Berlin

2nd SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1144

Technical data for temperature sensor:

Voltage:	< 60 V
Current:	< 2 mA
Output:	< 15 mW

Media temperatures:

	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	28 °C
	T5	3 °C
	T6	8 °C

Stainless steel may optionally be used as enclosure material for the connecting head. In addition, measuring inserts in the modifications with ∅ 3mm and ∅ 4.5mm, may be used. In all other respects, the design remains unchanged.

Applied standards

EN 50014:1997 + A1 + A2 **EN 50018:2000 + A1** **EN 50284:1997**

EN 1127-1:1997

Test report: PTB Ex 06-16197

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, November 8, 2006

Dr.-Ing. [illegible]
Regierungsrat

EC-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.
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Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

3rd S U P P L E M E N T

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1144

(Translation)

Equipment: Temperature sensor TSP..., measuring elements TSA..., temperature transmitter TTF300

Marking: **II 1/2 G EEx d IIC T1 - T6**

Manufacturer: ABB Automation Products GmbH

Address: Schillerstraße 72, 32425 Minden, Germany
formerly:
Borsigstraße 2, 63755 Alzenau, Germany

Description of supplements and modifications

1. Higher status of standards
2. In connection with the above Supplement, the connection heads with measuring elements TSP311, TSP321 and TSP331, and the temperature transmitter TTF300 are subjected to structural modifications. Measuring elements TSA101 and TSA302 are added.

Additional notes for safe operation

Components attached or installed (terminal compartments, bushings, Ex-type cable glands, connectors) shall be of a technical standard that at least complies with the specifications on the cover sheet, and they shall have a separate examination certificate. The operating conditions specified in the component certificates must be complied with.

Connection conditions

1 Measuring sensors TSP..., measuring elements TSA..., temperature transmitter TTF300 must be connected with suitable cable glands or conduit systems that meet the requirements set forth in EN 60079-1, sections 13.1 and 13.2, and for which a separate test certificate has been issued. If temperature sensor TSP..., measuring elements TSA..., temperature transmitter TTF300 are connected to conduit systems, the required sealing device must be provided immediately at the enclosure.

2. Cable glands (Pg type glands) and blanking plugs of a simple design must not be used.

ZSEx10101e.dotm

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Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

3rd SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1144

3. Openings that are not used must be closed in compliance with the specifications in EN 60079-1, section 11.9.
4. If connection is made in the potentially explosive area, the connecting cable (unconnected cable end) of temperature sensor TSP..., measuring elements TSA..., temperature transmitter TTF300 must be connected in an enclosure that meets the requirements of an approved type of protection in accordance with EN 60079-0, section 1.
5. The connecting cable of temperature sensor TSP..., measuring elements TSA..., temperature transmitter TTF300 must be fixed and routed, so they will be adequately protected against mechanical damage.
6. If the temperature at the input parts exceeds 70 °C, temperature-resistant connecting cables shall be used.
7. Temperature sensor TSP..., measuring elements TSA..., temperature transmitter TTF300 must be included in the local equipotential bonding system of the potentially explosive area.

   This information must accompany each device in an adequate form.

Applied standards

EN 60079-0:2009 EN 60079-1:2007 EN 60079-26:2007

With the application of the above standards, the marking changes to:

II 1/2 G Ex d IIC T1 - T6 Ga/Gb

Test report: PTB Ex 12-12128

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, 14 May 2012

attach(signature)

Dr.-Ing. U. Klausmeyer
Regierungsdirektor

2 pages, correct and complete as regards content.
By order

Dr.-Ing. Klausmeyer
Regierungsdirektor

Braunschweig, March 5, 2015

Dr.-Ing. U. Klausmeyer
Direktor und Professor

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