

[1] **EC-TYPE EXAMINATION CERTIFICATE**
according to Directive 94/9/EC, Annex III
(Translation)



[2] Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres, Directive 94/9/EC

[3] EC-Type Examination Certificate Number: **IBExU05ATEX1105 X**

[4] Equipment: Pressure measuring device type AX2 x|act nn...
AX2 XMP nn...

[5] Manufacturer: BD Sensors s.r.o.

[6] Address: Hradistska 817, CZ-687 08 Buchlovice

[7] The equipment mentioned in [4] and any acceptable variation thereto are specified in the schedule to this EC-Type Examination Certificate.

[8] IBExU Institut für Sicherheitstechnik GmbH, NOTIFIED BODY number 0637 in accordance with article 9 of the Council Directive 94/9/EC of 23th 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 intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in test report IB-05-3-190 of 3rd August 2005.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 50014:1997+A1+A2, EN 50020:2002 and EN 50284:1999.

[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 under [17] in the schedule to this EC-Type Examination Certificate.

[11] This EC-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this directive apply to the manufacture and supply of this equipment.

[12] The marking of the equipment mentioned in [4] shall include the following:

Ex II 1G, II 1/2G or II 2G EEx ia IIC/IIB T4
-25 °C ≤ T_a ≤ +70 °C

The validity of the marking for the type of protection goes by the marking table in test report.

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Authorised for certifications Explosion protection
By order

(Dr. Lösch)



- Seal-
(ID no. 0637)

Freiberg, 3rd August 2005

Certificates without signature and seal are not valid.
Certificates may only be duplicated completely and unchanged. In case of dispute, the German text shall prevail.

Schedule

[13]

Schedule

[14]

to the EC-TYPE EXAMINATION CERTIFICATE IBExU05ATEX1105 X

[15]

Description of equipment

The equipment series type AX2 x|act nn... and AX2 XMP nn... pressure transmitter represents more variously system-unit cover variants the piece. It serves in intrinsic safety electrical plants for the transformation of a pressure signal in a proportional electrical signal and have one a digital communication by means of HART-Protocol. It get Capacity ceramic and piezoresistive sensors set-in. The equipment are fitted with or without display and buttons.

Category 1 equipment

The sensor of the pressure measuring device may only operate in explosive atmospheres which requires equipment of Category 1, if there are atmospheric conditions (temperature from -20 °C to +60 °C pressure from 0.8 bar to 1.1 bar).

Category 1/2 equipment

The electronics case is installed areas in hazardous areas which require equipment of the Category 2. The process connection elements are built in into the partition wall which separates the areas, in which equipment of Category 2 or 1 are required. The sensor surface is set up in areas which require equipment of the Category 1.

Category 2 equipment

Capacity ceramic pressure transmitter with plastic pressure connections and with the smallest, at present practicable measurement range of 60 mbar, may be only used in areas, which require equipment of Category 2. They get the marking 2G.

Ambient temperature range
Degree of protection:

from -25 °C to +70 °C
better IP 54

AX2 x|act nn...

Supply and signal electric circuit in type of protection Intrinsic Satety EEx ia IIC
(Pin 1 and Pin 3)

$U_i = 28 \text{ V}$
 $I_i = 93 \text{ mA}$
 $P_i = 660 \text{ mW}$

effective inner capacity
effective inner inductivity

$C_i = 54 \text{ nF}$
 $L_i = 5 \mu\text{H}$

AX2 XMP nn... (Aluminium case)

Supply and signal electric circuit in type of protection Intrinsic Satety EEx ia IIB
(CL 2 and CL 4)

$U_i = 28 \text{ V}$
 $I_i = 93 \text{ mA}$
 $P_i = 660 \text{ mW}$

effective inner capacity
effective inner inductivity

$C_i = 27 \text{ nF}$
 $L_i = 5 \mu\text{H}$

AX2 XMP nn... (Steel case)

Supply and signal electric circuit in type of protection Intrinsic Satety EEx ia IIC
(CL 1 and CL 2)

(Pin 1 and Pin 3)

$U_i = 28 \text{ V}$
 $I_i = 93 \text{ mA}$
 $P_i = 660 \text{ mW}$

effective inner capacity
effective inner inductivity

$C_i = 54 \text{ nF}$
 $L_i = 5 \mu\text{H}$

[16]

Test report

The test results are recorded in detail in the test report IB-05-3-190 of 3rd August 2005.

Summary of the Test Result:

The Pressure measuring device type AX2 x|act nn... and AX2 XMP nn... fulfils the requirements of the type of protection Intrinsic Safety for an electrical apparatus for the Group II, depending on execution Explosion Group IIC or IIB and the Categories 1G, 1/2G or 2G.

[17] **Special conditions**

- The equipment designed with connector have to be installed in such a way, that the Degree of protection IP20, always will be kept.
- The safety and assembly notes contained in the operating instructions and the Ambient temperature range from -25 °C to +70 °C have to be observed.
- At pressure transmitter with the marking category 1/2 equipment, the sensor diaphragm serves as partition wall and has to be protected against mechanical damages.
- The isolation of the intrinsically circuit opposite the case is because of leakage flows in the blocking capacitors from the EMV-boards limited.

[18] **Essential Health and Safety Requirements**

Confirmed by norms (see [9]).

By order

Freiberg, 3rd August 2005


(Dr. Lösch)

[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 **IBExU05ATEX1105 X** | Issue 1

[4] Product: **Pressure measuring device**
Type: AX2 x|act*, AX2 XMP*, AX2 HMP*, AX2 LMP* and AX2 XMD*

[5] Manufacturer: BD SENSORS s.r.o.

[6] Address: Hradistska 817 1
687 08 Buchlovice
CZECH REPUBLIC

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

[8] IBExU Institut für Sicherheitstechnik GmbH, Notified Body number 0637 in accordance with Article 17 of 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 IB-17-3-0066.

[9] Compliance with the essential health and safety requirements has been assured by compliance with: EN 60079-0:2012+A11:2013, EN 60079-11:2012, EN 60079-26:2015
Except in respect of those requirements listed at item [18] of the schedule.

[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. 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 equipment mentioned under [4] happen in accordance with a marking table and must include one of the following:

- ⊕ II 1G Ex ia IIC T4 Ga
- ⊕ II 1/2G Ex ia IIC T4 Ga/Gb
- ⊕ II 2G Ex ia IIB T4 Gb
- ⊕ II 1D Ex ia IIIC T85 °C Da

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By order


Dipl.-Ing. Willamowski



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Freiberg, 2017-11-07

[13] **Schedule**

[14] **Certificate number IBExU05ATEX1105 X | Issue 1**

[15] **Description of product**

The equipment series type AX2 x|act*, AX2 XMP*, AX2 HMP*, AX2 LMP* and AX2 XMD* pressure transmitter represents more variously system-unit cover variants the piece. It serves in intrinsic safety electrical plants for the transformation of a pressure signal in a proportional electrical signal and have one a digital communication by means of HART-Protocol. It get Capacity ceramic and piezoresistive sensors set-in. The equipment are fitted with or without display and buttons.

Category 1 equipment

The sensor of the pressure measuring device may only operate in explosive atmospheres which requires equipment of Category 1, if there are atmospheric conditions (temperature from -20 °C to +60 °C pressure from 0.8 bar to 1.1 bar).

Category 1/2 equipment

The electronics case is installed areas in hazardous areas which require equipment of the Category 2. The process connection elements are built in into the partition wall which separates the areas, in which equipment of Category 2 or 1 are required. The sensor surface is set up in areas which re-quire equipment of the Category 1.

Category 2 equipment

Capacity ceramic pressure transmitter with plastic pressure connections and with the smallest, at present practicable measurement range of 60 mbar, may be only used in areas, which require equipment of Category 2. They get the marking 2G.

Technical data

Ambient temperature range from -40 °C to +70 °C

Electrical data

Supply and signal electric circuit in type of protection Intrinsic Safety Ex ia IIC

	Ui	= 28 V
	Ii	= 98 mA
	Pi	= 680 mW
effective inner capacity	Ci	= negligible
effective inner inductivity	Li	= negligible

Plus cable inductances 1 µH/m and cable capacities 160 pF/m (with cable at the factory).
The supply connections have an internal capacity to ground of max. 27 nF.

Variations compared to the basic certificate:

The devices have been slightly modified in design and comply with current standards EN 60079-0: 2012 + A11: 2013, EN 60079-11: 2012 and EN 60079-26: 2015.

[16] **Test report**

The test results are recorded in the confidential test report IB-17-3-0066 of 2017-11-07.

The test documents are part of the test report and they are listed there.

Summary of the test results

The pressure measurement device type AX2 x|act*, AX2 XMP*, AX2 HMP*, AX2 LMP* and AX2 XMD* fulfils the requirements of explosion protection for electrical equipment in type of protection Intrinsic safety 'ia', Explosion Group IIC/IIB, Temperature Class T4 for Equipment Group II, Category 1G, 1/2G or 2G as well as 1D.

Marking table:

Typ	Ex-marking	Description
X act i	II 1G Ex ia IIC T4 Ga	Ball housing u. membrane completely made of EDS
X act ci	II 1G Ex ia IIC T4 Ga	Ball housing made of EDS - ceramic membrane For membrane thickness ≥ 1 mm \rightarrow 1G
	II 1/2G Ex ia IIC T4 Ga/Gb	Ball housing made of EDS - ceramic membrane For membrane thickness < 1 mm \rightarrow 1/2G
	II 2G Ex ia IIC T4 Gb	Ball housing made of EDS - ceramic membrane For membrane thickness $< 0,2$ mm \rightarrow 2G
XMP i	II 1G Ex ia IIC T4 Ga	Housing u. membrane completely made of EDS
	II 1/2G Ex ia IIB T4 Ga/Gb	Housing made of ALU / membrane made of EDS
XMP ci	II 1G Ex ia IIC T4 Ga	Housing made of EDS - ceramic membrane For membrane thickness ≥ 1 mm \rightarrow 1G
	II 1/2G Ex ia IIC T4 Ga/Gb	Housing made of EDS - ceramic membrane For membrane thickness < 1 mm \rightarrow 1/2G
	II 2G Ex ia IIC T4 Gb	Housing made of EDS - ceramic membrane For membrane thickness $< 0,2$ mm \rightarrow 2G
	II 1/2G Ex ia IIB T4 Ga/Gb	Housing made of ALU - ceramic membrane For membrane thickness $> 0,2$ mm \rightarrow 1/2G
	II 2G Ex ia IIB T4 Gb	Housing made of ALU - ceramic membrane For membrane thickness $< 0,2$ mm \rightarrow 2G
XMD and HMP	II 1/2G Ex ia IIB T4 Ga/Gb	Housing made of ALU / Pressure connection and membrane made of EDS.

For dust explosive atmospheres, the following marking is used uniformly:
II 1D Ex ia IIIC T85 °C Da

[17] Specific conditions of use

- The equipment designed with connector have to be installed in such a way, that the Degree of protection IP20, always will be kept.
- The safety and assembly notes contained in the operating instructions and the Ambient temperature range from -40 °C to $+70$ °C have to be observed.
- At pressure transmitter with the marking category 1/2 equipment, the sensor diaphragm serves as partition wall and has to be protected against mechanical damages.
- The isolation of the intrinsically circuit opposite the case is because of leakage flows in the blocking capacitors from the EMV-boards limited.

[18] Essential health and safety requirements

In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item [9], the following are considered relevant to this product, and conformity is demonstrated in the test report: none

[19] Drawings and Documents

The documents are listed in the test report.

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By order

Dipl.-Ing. Willamowski

Freiberg, 2017-11-07