



Prüf- und Zertifizierungsstelle

ZELM Ex



(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:

**ZELM 04 ATEX 0227 X**

- (4) Equipment: **Pressure Transmitters type 20.0T. HART resp. 263.. / 265.. / 267.. / 269.. HART**
- (5) Manufacturer: **ABB Automation Products GmbH**
- (6) Address: **Schillerstr. 72, D-32425 Minden, Germany**
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The Prüf- und Zertifizierungsstelle ZELM Ex, notified body No. 0820 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 ZELM Ex 0980412321

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

**EN 50 014: 1997+A1+A2**  
**EN 50 281-1-1: 1998**  
**IEC 60079-0: 1998**

**EN 50 020: 1994**  
**EN 1127-1: 1997**  
**IEC 60 079-15:2001**

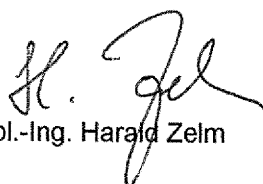
**EN 50 284: 1999**  
**EN 50 018 :1994**

- (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 or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this Certificate.
- (12) The marking of the equipment shall include the following:



**II 1/2 GD T 50°C EEx ia IIC T6 resp. II 1/2 GD T 95°C EEx ia IIC T4**  
**or II 1/2 GD T 85°C EEx d IIC T6**  
**or II 3 GD T 50°C EEx nL IIC T6 resp. II 3 GD T 95°C EEx nL IIC T4**

Zertifizierungsstelle ZELM Ex

  
 Dipl.-Ing. Harald Zelm



Braunschweig, November 11, 2004

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EC-type-examination Certificates without signature and stamp are not valid. The certificates may only be circulated without alteration. Extracts or alterations are subject to approval by the Prüf- und Zertifizierungsstelle ZELM Ex. In the case of dispute, the German text shall prevail.



## SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE ZELM 04 ATEX 0227 X**

(15) Description of equipment

The Pressure Transmitter is used for measurement and conversion of the physical quantities pressure and differential pressure into an analogous electrical standard signal of a 4 ... 20 mA current loop and digital communication according to the HART protocol in the hazardous area.

The Pressure Transmitter is mounted into a housing meeting the degree of protection  $\geq$  IP 65 according to EN 60529:1991 – for dust including the cable entry fittings.

Depending on the measurement range and the amount of pressure appropriate inductive, capacitive or piezoresistive sensors are used.

The devices are intrinsically safe and have got an enclosure with the explosionproof protection concept "EEx d". From this fact results the possibility to apply these devices either in accordance with the intrinsic safety or with the explosionproof type of protection in the hazardous area. There is also the possibility for the use in explosion hazardous areas that require the category 3 as energy-limited equipment.

The customer decides on the protection concept of the device and according to this decision the marking on the safety label should be done permanently. After the decision is made it could be only altered by the manufacturer.

The operating conditions for service with flammable measuring mixtures – which are non-explosive - and higher pressures are to be taken from the instruction manual and operation manual respectively.

Instead of the points of the model code other letter- or numerical- combinations will be stated, which are describing several variations and versions of the equipment.

### Electrical data

**Degree of protection at least IP 65 in accordance with EN 60529:1991**

**1. Use in accordance with the type of protection Intrinsic safety "i":**

Supply and signal circuit (terminals signal +,-) type of protection Intrinsic Safety EEx ib IIC or EEx ia IIC for connection to certified intrinsically safe circuits maximum values:

$$U = 30 \text{ V}$$
$$I_i = 200 \text{ mA}$$
$$P_i = \text{see table 1}$$

effective internal capacitance  $C_i \leq 10 \text{ nF}$   
effective internal inductance is negligibly small

Temperature class	lower limit of ambient temperature	upper limit of ambient temperature	max. $P_i$ [W]
T4 resp. T 95 °C	- 40 °C	+ 85 °C	0,8
T4 resp. T 95 °C	- 40 °C	+ 70 °C	1
T6 resp. T 50 °C	- 40 °C	+ 40 °C	0,7

Table1



Schedule to EC-TYPE-EXAMINATION CERTIFICATE\_ZELM 04 ATEX 0227 X

Temperature sensor circuit  
 Supply (terminal 12,14)  
 Signal (terminal 11,13)

type of protection Intrinsic Safety  
 resp. EEx ia IIC  
 resp. EEx ib IIC

only to the connection to passive intrinsically safe sensors  
 maximum values:

$U_o = 10,6 \text{ V}$   
 $I_o = 1,5 \text{ mA}$   
 $P_o = 4 \text{ mW}$   
 maximum permissible external capacitance  $C_o = 2,3 \text{ }\mu\text{F}$   
 maximum permissible external inductance  $L_o = 1 \text{ H}$

resp.

2. Use in accordance with the type of protection explosionproof "d"

Supply and signal circuit  
 (terminal signal +,-)

operating voltage  $U \leq 55 \text{ VDC}$   
 operating current  $I \leq 22,5 \text{ mA}$

The permissible ambient temperature range conducts -40°C to +75°C

resp.

3. Use in accordance with the type of protection limited energy "nL"

Supply and signal circuit  
 (terminal signal +,-)

operating voltage  $U \leq 55 \text{ VDC}$   
 operating current  $I \leq 22,5 \text{ mA}$

Temperature sensor circuit  
 Supply (terminal 12,14)  
 Signal (terminal 11,13)

maximum values:

$U_o = 10,6 \text{ V}$   
 $I_o = 1,5 \text{ mA}$   
 $P_o = 4 \text{ mW}$   
 maximum permissible external capacitance  $C_o = 2,3 \text{ }\mu\text{F}$   
 maximum permissible external inductance  $L_o = 1 \text{ H}$

The permissible ambient temperature ranges depending on the temperature class are to be taken from the following table:

ambient temperature	Temperature class
- 40 ... + 85 °C	T4
- 40 ... + 40 °C	T6

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ZELM Ex



Schedule to EC-TYPE-EXAMINATION CERTIFICATE\_ZELM 04 ATEX 0227 X


(17) Special conditions for safe use

1. The pressure transmitter meet the requirements for three alternative types of protection: intrinsic safety "i", explosionproof "d" and limited energy "nL". In each case the corresponding electric parameters, consider use and installation conditions must be followed.
2. Before the final installation the operator decides on the commitment of the device, either as a device with the type of protection "EEx ia", "EEx d" or "EEx nL", and marks the selected type of protection permanently on the nameplate. During the durable marking also the particular environment conditions (chemical corrosion as for example), must to be considered. The selected type of protection of the device may be changed only by the manufacturer after further inspection.
3. The connection of cables and conduits to the Transmitter as well as the blind stops of unused openings shall be made in accordance with requirements of the selected type of protection. Cables and conduits as well as blind stops of simple construction are not allowed to be used, except the equipment is only used in accordance with the category 3G. For the use in hazardous locations endangered by combustible dusts, the cable glands as well as the blind stops must at least correspond to the standards EN 50014 and EN 50281-1-1 in accordance with present EC-type-examination certificate. With selection of the type of protection explosionproof they have to correspond the standard EN 50018 in addition.
4. The instruction manual has to be considered, in particular the maximum thickness of dust layers permitted for the hazardous area of category 1D and the sufficient equipotential bonding and grounding and the overvoltage protection.
5. With connection of the explosionproof transmitter about a conduit entry approved for this purpose the corresponding seal must be placed immediately at the housing. Not used openings must be closed according to EN 50018 section 11.9.
6. The pressure transmitters is allowed only to be installed in such chemical atmosphere where sufficient permanence of its isolating diaphragm is guaranteed (consider operating instruction).

(18) Essential Health and Safety Requirements

met by standards

Zertifizierungsstelle ZELM Ex

  
Dipl.-Ing. Harald Zelm



Braunschweig, November 11, 2004

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ZELM Ex



## 1. Supplement

(Supplement according to EC-Directive 94/9 Annex III letter 6)

to EC-type-examination Certificate

**ZELM 04 ATEX 0227X**

Equipment: **Pressure and Differential Pressure - Transducer  
type 20.0T.HART resp. 263.. / 265.. / 267.. / 269.. HART**

Manufacturer: **ABB Automation Products GmbH**

Address: **D-32425 Minden**

### Description of supplement

The 1. Supplement to EC-type-examination Certificate concerns in particular the inner construction without essential changes of the printed circuit board layout.

The technical data, the marking as well as the special conditions for safe use mentioned in the EC-type-examination Certificate remain unchanged.

### Report No.

ZELM Ex 1530612550

### Special conditions for safe use

The special conditions for safe use remain unchanged and are valid further on.

### Essential Health and Safety Requirements

The essential health and safety requirements are fulfilled by adherence to the following standards:

EN 50014:1997+A1+A2

EN 50 020:2002

EN 50284:1999

EN 50281-1-1:1998

EN 50018:1994

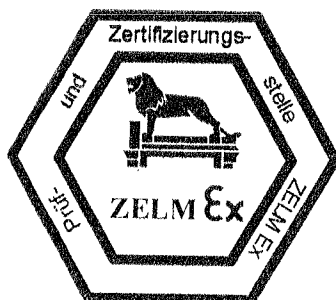
EN 60079-0 :2004

EN 60079-1 :2004

EN 60079-15 :2005

EN 60079-26 :2004

Zertifizierungsstelle ZELM Ex



Braunschweig, Juli 31, 2007

  
Dipl.-Ing. Harald Zelm

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