



## Electronic Pressure Transmitter

### HDA 4700

IECEX Intrinsically Safe  
IECEX Dustproof Enclosure  
IECEX Non-sparking



#### Description:

The pressure transmitter HDA 4700 IECEX Intrinsically Safe version has been especially developed for use in potentially explosive atmospheres and is based on the HDA 4000 series.

As with the industrial version of the HDA 4700, devices with IECEX Intrinsically Safe approval have a field-proven, all-welded stainless steel measurement cell with thin film strain gauge without internal seal.

Intended areas of application are, for example, in the oil and gas industry, in mining, on gas turbines or in locations with high dust loads, e.g. in mills.

#### Protection types and applications:

Ex ia I Ma

Ex ia IIC T6 Ga

Ex ia IIC T6 Ga/Gb

Ex ia IIC T6 Gb

Ex nA IIC T6, T5, T4 Gc

Ex ic IIC T6, T5, T4 Gc

Ex ta IIIC T80/90/100 °C Da  
T<sub>500</sub> 90/100/110 °C Da

Ex tb IIIC T80/90/100 °C Db

Ex tc IIIC T80/90/100 °C Dc

Ex ic IIIC T80/90/100 °C Dc

Ex ia IIIC T85 °C Da

#### Special features:

- Accuracy  $\leq \pm 0.25\%$  FS typ.
- Certificate: IECEX TSA 09.0041X / IECEX KEM 08.0014X
- Output signal 4 .. 20 mA
- Robust design
- Very small temperature error
- Excellent EMC characteristics
- Excellent long-term properties

#### Technical data:

Input data	
Measuring ranges <sup>1)</sup>	-1 .. 9; 6; 16; 40; 60; 100; 250; 400; 600; 1000 bar
Overload pressures	20; 15; 32; 80; 120; 200; 500; 800; 1000; 1600 bar
Burst pressure	100; 100; 200; 200; 300; 500; 1000; 2000; 2000; 3000 bar
Mechanical connection <sup>1)</sup> (torque value)	G1/4 A DIN 3852 (20 Nm) G1/2 DIN 3852 (40 Nm)
Parts in contact with medium	Stainl. steel: 1.4542; 1.4571; 1.4435; 1.4404; 1.4301 Seal: FPM
Output data	
Output signal, permitted load resistance	4 .. 20 mA, 2 conductor R <sub>Lmax</sub> = (U <sub>B</sub> - 12 V) / 20 mA [kΩ]
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.25\%$ FS typ. $\leq \pm 0.5\%$ FS max.
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.15\%$ FS typ. $\leq \pm 0.3\%$ FS max.
Temperature compensation Zero point	$\leq \pm 0.008\%$ FS / °C typ. $\leq \pm 0.015\%$ FS / °C max.
Temperature compensation Over range	$\leq \pm 0.008\%$ FS / °C typ. $\leq \pm 0.015\%$ FS / °C max.
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.3\%$ FS max.
Hysteresis	$\leq \pm 0.1\%$ FS max.
Repeatability	$\leq \pm 0.05\%$ FS
Rise time	$\leq 1.5$ ms
Long-term drift	$\leq \pm 0.1\%$ FS typ. / year
Environmental conditions	
Compensated temperature range	-20 .. +85 °C
Operating temperature range <sup>2)</sup>	-40 .. +60 °C / -20 .. +60 °C
Storage temperature range	-40 .. +100 °C
Fluid temperature range <sup>2)</sup>	-40 .. +60 °C / -20 .. +60 °C
CE mark	EN 61000-6-1 / 2 / 3 / 4; EN 60079-0 / 11 / 26 / 36
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20$ g
Protection class to IEC 60529	IP 65 (for male EN175301-803 (DIN 43650) and Binder 714 M18) IP 67 (for M12x1 male, when an IP 67 female connector is used)
Relevant data for Ex applications	
Supply voltage	U <sub>i</sub> = 12 .. 28 V
Max. input current	I <sub>i</sub> = 100 mA
Max. input power	P <sub>i</sub> = 1 W
Connection capacitance of the sensor	C <sub>i</sub> = $\leq 22$ nF
Inductance of the sensor	L <sub>i</sub> = 0 mH
Insulation voltage <sup>3)</sup>	50 V AC, with integrated overvoltage protection EN 61000-6-2
Other data	
Residual ripple of supply voltage	$\leq 5\%$
Life expectancy	> 10 million cycles 0 .. 100 % FS
Weight	~ 150 g

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.

FS (Full Scale) = relative to the full measuring range, B.F.S.L. = Best Fit Straight Line

<sup>1)</sup> 1000 bar only with mechanical connection G 1/2 DIN 3852 and vice versa

<sup>2)</sup> -20 °C with FPM seal, -40 °C on request

<sup>3)</sup> 500 V AC on request

## Areas of application:

Protection types and applications			Ex ia I Ma	Ex ia IIC T6 Ga Ex ia IIC T6 Ga/Gb	Ex ia IIC T6 Gb	Ex nA IIC T6 Gc	Ex ta IIIC T80 °C T <sub>500</sub> T90 °C Da Ex tb IIIC T80 °C Db	Ex ic IIC T6 Gc Ex ic IIIC T80 °C Dc	Ex ia IIIC T85 °C Da
Zones / Categories			Equipment protection level Ma Mining Protection class: intrinsically safe ia with barrier	Equipment protection level Ga, Ga/Gb Gases Protection class: intrinsically safe ia with barrier	Equipment protection level Gb Gases Protection class: intrinsically safe ia with barrier	Equipment protection level Gc Gases Protection class: non-sparking nA	Equipment protection level Da, Db Conductive dust Protection class: Dustproof enclosure	Equipment protection level Gc, Dc Gases/conductive dust Protection class: Intrinsically safe ic with barrier	Equipment protection level Da Conductive dust Protection class: intrinsically safe ia with barrier
Electrical connection			4, 5, 6	4, 5, 6	4, 5, 6	6	6	4, 5, 6	4, 5, 6
Code for use in Model code	IECEX	IECEX Australia							
1	✓	✓	✓	✓	✓				
9	✓					✓			
A	✓						✓		
C	✓							✓	
D	✓		✓	✓	✓				✓

Certificate numbers: IECEX TSA 09.0041X, IECEX KEM 08.0014X

Devices in the ignition protection class "Dustproof enclosure" for the protection types Ex ta IIIC T80/90/100 °C Da T500T90/T100/T110°C Da, Ex tb IIIC T80/90/100 °C Db and Ex tc IIIC T80/90/100 °C Dc are available with flying leads on request. Devices in the ignition protection class "non-sparking" for protection type Ex nA IIC T6, T5, T4 Gc are available with flying leads on request.

## Model code:

**HDA 4 7 X X - A - XXXX - I N X - 000**

### Mechanical connection

- 2 = G1/2 DIN 3852  
(only for "1000 bar" pressure range)
- 4 = G1/4 A DIN 3852 (male)

### Electrical connection

- 4 = Male 4 pole Binder series 714 M18 (connector not supplied)
- 5 = Male 3 pole + PE, EN175301-803 (DIN 43650) (connector supplied)
- 6 = Male M12x1, 4 pole (connector not supplied)

### Signal

- A = 4 .. 20 mA, 2 conductor

### Pressure ranges in bar

0009 (-1..9); 0006; 0016; 0040; 0060; 0100; 0250; 0400; 0600;  
1000 (only in conjunction with mechanical connection type "2")

### Approval

- I = IECEX

### Insulation voltage

- N = 50 V AC

### Protection types and applications (code)

- 1 = Ex ia I Ma  
Ex ia IIC T6 Ga  
Ex ia IIC T6 Ga/Gb  
Ex ia IIC T6 Gb
- 9 = Ex nA IIC T6 Gc (only in conjunction with electr. connection "6")\*
- A = Ex ta IIIC T80 °C T<sub>500</sub> T90 °C Da (only in conjunction with electr. connection "6")\*  
Ex tb IIIC T80 °C Db
- C = Ex ic IIC T6 Gc  
Ex ic IIIC T80 °C Dc
- D = Ex ia I Ma  
Ex ia IIC T6 Ga  
Ex ia IIC T6 Ga/Gb  
Ex ia IIC T6 Gb  
Ex ia IIIC T85 °C Da

### Modification number

- 000 = Standard

### Notes:

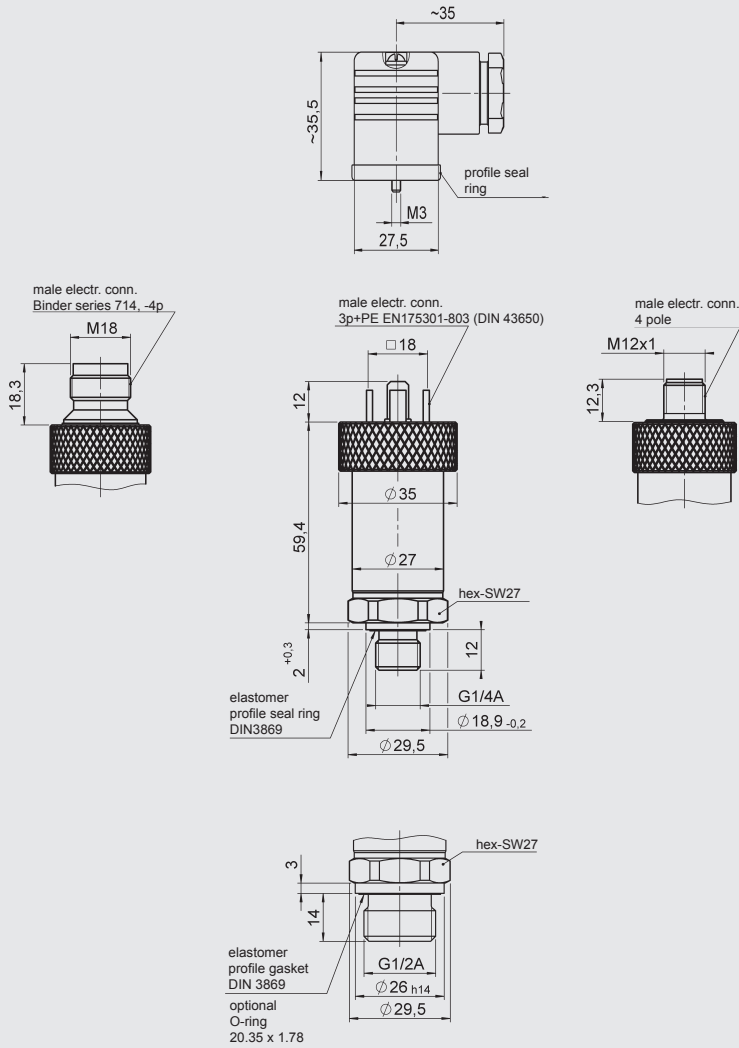
\* For design and electrical connection see Dimensions

### Accessories:

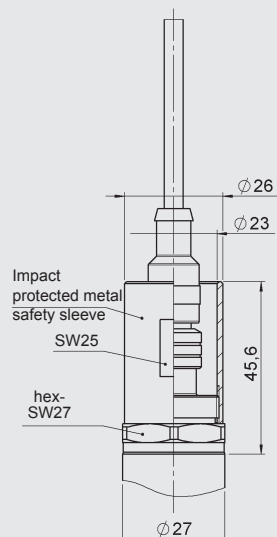
Appropriate accessories, such as electrical female connectors, can be found in the Accessories brochure.

## Dimensions:

Protection types and applications: (code): 1, C, D



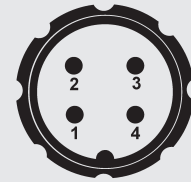
Protection types and applications: (code): 9, A



The impact protected metal safety sleeve is included. A straight female connector is required for electrical connection, e.g. female connector M12x1, 4 pole, straight, with 3m shielded cable: ZBE 06S-03, Part No. 6098243

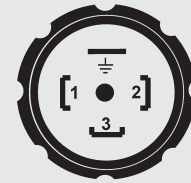
## Pin connections:

Binder series 714 M18



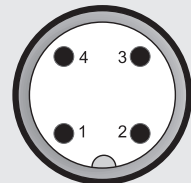
Pin	HDA 47x4-A
1	n.c.
2	Signal +
3	Signal -
4	n.c.

EN175301-803 (DIN 43650)



Pin	HDA 47x5-A
1	Signal +
2	Signal -
3	n.c.
⊥	Housing

M12x1



Pin	HDA 47x6-A
1	Signal +
2	n.c.
3	Signal -
4	n.c.

**Note:**

The information in this brochure relates to the operating conditions and applications described.  
For applications and operating conditions not described, please contact the relevant technical department.  
Subject to technical modifications.