



## Electronic Pressure Transmitter HDA 4400 with Flush Membrane IECEX Intrinsically Safe IECEX Dustproof Enclosure IECEX Non-sparking



### Description:

The pressure transmitter HDA 4400 in 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 4400, devices with IECEx Intrinsically Safe approval have a field-proven, all-welded stainless steel measurement cell with thin film strain gauge without internal seal.

The pressure connection is achieved with an all-welded stainless steel front membrane filled internally with a pressure transfer fluid. The process pressure is transmitted hydrostatically to the measurement cell via the pressure transfer fluid.

This device is used for applications in which a standard pressure connection could become blocked, clogged or frozen by the particular medium used. Further applications include processes where the medium changes regularly and any residues could cause mixing or contamination of the media, or in highly viscous media. Intended areas of application are, for example, the oil and gas industry, in mines or in locations with high levels of dust, 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:

- Pressure connection has a flush membrane
- Accuracy:  $\leq \pm 0.5\%$  FS typ.
- Certificate: IECEx KEM 08.0014X
- Robust design
- Very small temperature error
- Excellent EMC characteristics
- Excellent durability

### Technical data:

Input data		
Measuring ranges	40; 60; 100; 250; 400; 600 bar	
Overload pressures	80; 120; 200; 500; 800; 1000 bar	
Burst pressure <sup>1)</sup>	200; 300; 500; 1000; 2000; 2000 bar	
Mechanical connection	G1/2 A DIN 3852 G1/2 with additional front O-ring seal G1/4 with additional front O-ring seal	
Pressure transfer fluid	Silicon-free oil	
Torque value	45 Nm for G1/2, G1/2 A 20 Nm for G1/4	
Parts in contact with medium <sup>2)</sup>	Stainless steel: 1.4435; 1.4301 Seal: FPM O-ring: FPM	
Output data		
Output signal, permitted load resistance	4 .. 20 mA, 2 conductor $R_{Lmax} = (U_B - 12 V) / 20 \text{ mA}$ [kΩ]	
Accuracy to DIN 16086, max. setting	$\leq \pm 0.5\%$ FS typ. $\leq \pm 1\%$ FS max.	
Accuracy at minimum setting (B.F.S.L.)	$\leq \pm 0.25\%$ FS typ. $\leq \pm 0.5\%$ FS max.	
Temperature compensation Zero point	$\leq \pm 0.015\%$ FS / °C typ $\leq \pm 0.025\%$ FS / °C max.	
Temperature compensation Over range	$\leq \pm 0.015\%$ FS / °C typ. $\leq \pm 0.025\%$ FS / °C max.	
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.3\%$ FS max.	
Hysteresis	$\leq \pm 0.4\%$ FS max.	
Repeatability	$\leq \pm 0.1\%$ FS	
Rise time	$\leq 1.5 \text{ ms}$	
Long term drift	$\leq \pm 0.3\%$ FS typ. / year	
Environmental conditions		
Compensated temperature range	-20 .. +85 °C	
Operating temperature range	-20 .. +60 °C	
Storage temperature range	-40 .. +100 °C	
Fluid temperature range <sup>3)</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	$\leq 20 \text{ g}$	
Protection class to IEC 60529	IP 65 (for male EN 175301-803(DIN 43650)) IP 67 (for M12x1 male, when an IP 67 female connector is used)	
Relevant data for Ex applications		
Supply voltage	Ex ia, ic $U_i = 12 .. 28 \text{ V}$	Ex nA, ta, tb, tc 12 .. 28 V
Max. input current	$i_i = 100 \text{ mA}$	
Max. input power	$P_i = 1 \text{ W}$	max. power consumption $\leq 1 \text{ W}$
Connection capacitance of the sensor	$C_i = \leq 22 \text{ nF}$	
Inductance of the sensor	$L_i = 0 \text{ mH}$	
Insulation voltage <sup>4)</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	$\sim 180 \text{ g}$	

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

FS (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

<sup>1)</sup> G1/2 with additional front O-ring seal max. 1500 bar

<sup>2)</sup> Other seal materials on request

<sup>3)</sup> -20 °C with FPM seal, -40 °C on request

<sup>4)</sup> 500 V AC on request

## Areas of application:

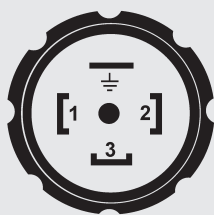
Code No. for use in Model code	D			9	A	C
Protection types and applications	Ex ia I Ma	Ex ia IIC T6 Ga Ex ia IIC T6 Ga/Gb Ex ia IIC T85°C Da	Ex ia IIC T6 Gb	Ex nA IIC T6 Gc	Ex ta IIC T80°C T <sub>500</sub> T90°C Da Ex tb IIC T80°C Db	Ex ic IIC T6 Gc Ex ic IIC T80°C Dc
Certificate	IECEX KEM 08.0014X					
Zones / Categories	Equipment protection level Ma Mining Protection class: intrinsically safe ia with barrier	Equipment protection level Ga, Ga/Gb, Da Gases/conductive dust 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
Electrical connection	4, 5, 6	4, 5, 6	4, 5, 6	6	6	4,5,6

Devices in ignition protection class "Dustproof enclosure" for the protection types Ex ta IIC T80/90/100 °C Da T<sub>500</sub>T90/T100/T110 °C Da, Ex tb IIC T80/90/100 °C Db and Ex tc IIC T80/90/100 °C Dc are available with flying leads on request.

Devices in the ignition protection class "Non-sparking" for the protection type Ex nA IIC T6, T5, T4 Gc are available with flying leads on request.

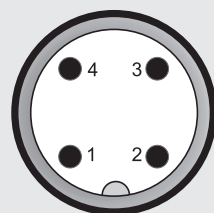
## Pin connections:

EN 175301-803 (DIN 43650)



Pin	HDA 44Z5-A
1	Signal +
2	Signal -
3	n.c.
⊥	Housing

M12x1, 4 pole



Pin	HDA 44Z6-A
1	Signal +
2	n.c.
3	Signal -
4	n.c.

## Model code:

**HDA 4 4 Z X - A - XXXX - XXX - I N X - 000**

### Mechanical process connection

Z = Flush membrane

### Electrical connection

5 = Male 3 pole+ PE,  
EN 175301-803 (DIN 43650)  
(female connector supplied)  
6 = Male M12x1, 4 pole  
(female connector not supplied)

### Signal

A = 4 .. 20 mA, 2 conductor

### Pressure ranges in bar

0040; 0060; 0100; 0250; 0400; 0600

### Mechanical connection

G01 = G1/2 A, DIN 3852  
G02 = G1/2 with additional front O-ring seal  
G04 = G1/4 with additional front O-ring seal

### Approval

I = IECEX

### Insulation voltage

N = 50 V AC

### Protection types and applications (code)

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

### Modification number

000 = Standard

### Notes:

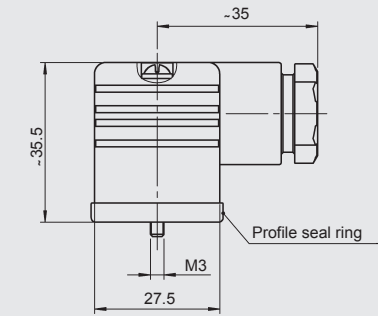
\* For design and electrical connection see Dimensions

### Accessories:

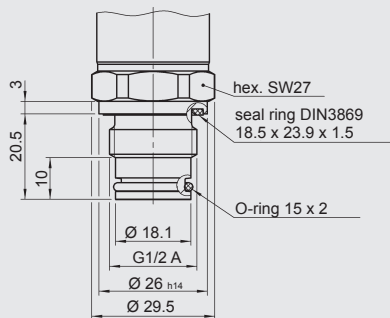
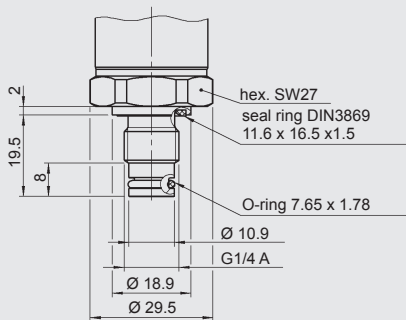
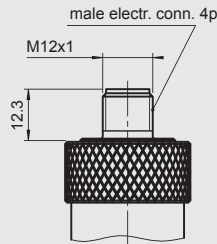
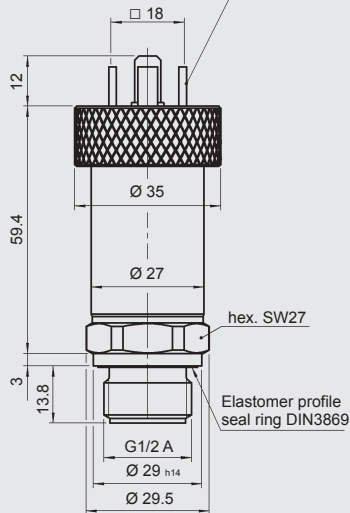
Appropriate accessories, such as electrical female connectors, can be found in the Accessories brochure.

## Dimensions:

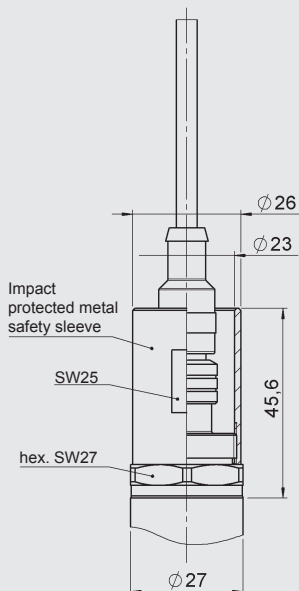
Protection types and applications (code): D, C



male electr. conn.  
3p +PE EN 175301-803 (DIN 43650)



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

## Note:

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

