



## Pressure Transmitter HDA 4400 Ex applications

Relative pressure

Accuracy 0.5 %

Intrinsically Safe, Dustproof enclosure  
**ATEX, IECEx, double approval**  
For the medium hydrogen  
Redundant



### Description:

This intrinsically safe version of the pressure transmitter has been specially developed for use in hydrogen applications and potentially explosive atmospheres and it is based on the HDA 4000 series.

Thanks to the use of two highly accurate and robust pressure measurement cells with thin-film strain gauge on a stainless steel membrane, each with their own electronics, the device has a fully redundant architecture and thus two separate and independent output signals.

The two output signals are output in inverted form (signal 1 = 4 .. 20 mA and signal 2 = 20 .. 4 mA). This means that the energy in the intrinsically safe current circuit is kept constant as the sum of the output signals at any pressure is 24 mA.  
Connection is via a two-channel barrier.

The double approval in accordance with ATEX and IECEx enables universal, almost worldwide utilisation of the devices in potentially explosive atmospheres.

Thanks to the redundant structure, the sensor is also suitable for safety circuits/functions in the oil and gas industry. The device is also used in mining applications as well as in locations with high dust contamination.

The fields of application are thus in safety-oriented systems.

Due to the specially selected material, this HDA 4400 is suitable for use in hydrogen applications.

### Protection types and applications:

#### ATEX

I M1	Ex ia	I	Ma
II 1G	Ex ia	IIC	T6, T5 Ga
II 1/2G	Ex ia	IIC	T6, T5 Ga/Gb
II 2G	Ex ia	IIC	T6, T5 Gb
II 1D	Ex ia	IIIC	T85/T95 °C Da

#### IECEx

Ex ia	I	Ma
Ex ia	IIC	T6, T5 Ga
Ex ia	IIC	T6, T5 Ga/Gb
Ex ia	IIC	T6, T5 Gb
Ex ia	IIIC	T85/T95 °C Da

### Technical data:

#### Input data

Measuring range Signal 1	bar	16	25	40	200	250	400	500	600	1050
Measuring range Signal 2	bar	16	25	40	200	250	400	500	600	1050
Overload pressures	bar	50	50	80	500	500	800	1000	1000	1400
Burst pressure	bar	125	125	200	1250	1250	2000	3000	3000	3000

Mechanical connection SF250CX20, autoclave (7/16-20 UNF 2B)  
(Tightening torque, recommended) 15 Nm for measuring range < 1000 bar  
20 Nm for measuring range 1050 bar

Parts in contact with fluid Stainless steel 1.4435 (Ni content ≥ 13 %)

#### Output data

Output signal 1 4 .. 20 mA, 2-conductor  
Output signal 2 20 .. 4 mA, 2-conductor  
Permitted load resistance, each  $R_{Lmax} = (U_B - 12 V) / 20 mA [k\Omega]$

Accuracy acc. to DIN 16086, terminal based  $\leq \pm 0.5 \% FS$  typ.  
 $\leq \pm 1 \% FS$  max.

Accuracy, B.F.S.L.  $\leq \pm 0.25 \% FS$  typ.  
 $\leq \pm 0.5 \% FS$  max.

Temperature compensation  $\leq \pm 0.015 \% FS / ^\circ C$  typ.  
Zero point  $\leq \pm 0.025 \% FS / ^\circ C$  max.

Temperature compensation  $\leq \pm 0.015 \% FS / ^\circ C$  typ.  
Span  $\leq \pm 0.025 \% FS / ^\circ C$  max.

Non-linearity acc. to DIN 16086, terminal based  $\leq \pm 0.3 \% FS$  max.

Hysteresis  $\leq \pm 0.4 \% FS$  max.

Repeatability  $\leq \pm 0.1 \% FS$

Rise time  $\leq 2 ms$

Long-term drift  $\leq \pm 0.3 \% FS$  typ. / year

#### Environmental conditions

Compensated temperature range -25 .. +85 °C

Operating/ambient temperature range T6, T85 °C Ta = -25 .. 60 °C  
T5, T95 °C Ta = -25 .. 70 °C

Storage temperature range -40 .. +100 °C

Fluid temperature range T6, T85 °C Ta = -25 .. 60 °C  
T5, T95 °C Ta = -25 .. 70 °C

#### CE mark

EN 61000-6-1 / 2 / 3 / 4  
EN 60079-0 / 11 / 26  
EN 50303

Vibration resistance acc. to DIN EN 60068-2-6 at 10 .. 500 Hz  $\leq 20 g$

Protection class acc. to DIN EN 60529 <sup>1)</sup> IP 67

#### Relevant data for Ex applications

#### Ex ia

Supply voltage 12 .. 28 V DC

Max. input current  $I_i = 100 mA$

Max. input power  $P_i = 0.7 W$

Connection capacitance of the sensor  $C_i \leq 22 nF$

Inductance of the sensor  $L_i = 0 mH$

Intrinsic safety barrier 2-channel,  $R_{min} = 280 \Omega$   
(e.g. Pepperl & Fuchs Z789)

Insulation voltage 50 V AC, with integrated overvoltage protection acc. to EN 61000-6-2

#### Other data

Residual ripple of supply voltage  $\leq 5 \%$

Current consumption  $\leq 25 mA$

Life expectancy > 1 million cycles (0 .. 100 % FS)

Weight ~ 200 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> With mounted mating connector in corresponding protection class

Fields of application:

Code no. for use in model code	1		
ATEX KEMA 05 ATEX 1016X	I M1 Ex ia I Ma	II 1G Ex ia IIC T6, T5 Ga II 1/2G Ex ia IIC T6, T5 Ga/Gb II 1D Ex ia IIIC T85/T95 °C Da	II 2G Ex ia IIC T6, T5 Gb
IECEX KEM 08.0014X	Ex ia I Ma	Ex ia IIC T6, T5 Ga Ex ia IIC T6, T5 Ga/Gb Ex ia IIIC T85/T95 °C Da	Ex ia IIC T6, T5 Gb
Application fields	Mining Protection type: intrinsically safe ia with barrier	Gases/conductive dust Protection type: intrinsically safe ia with barrier	Gases Protection type: intrinsically safe ia with barrier

Model code:

HDA 4 4 C 6 - AA - XXXX - XXXX - E N 1 - H00

**Mechanical connection**  
C = SF250CX20, autoclave (7/16-20 UNF 2B)

**Electrical connection**  
6 = male M12x1, 4 pole (mating connector not supplied)

**Output signal 1**  
A = 4 .. 20 mA, 2-conductor

**Output signal 2**  
A = 20 .. 4 mA, 2-conductor

**Measuring ranges in bar (output signal 1)**  
0016; 0025; 0040; 0200; 0250; 0400; 0500; 0600; 1050

**Measuring ranges in bar (output signal 2)**  
0016; 0025; 0040; 0200; 0250; 0400; 0500; 0600; 1050

**Approval**  
E = ATEX / IECEX

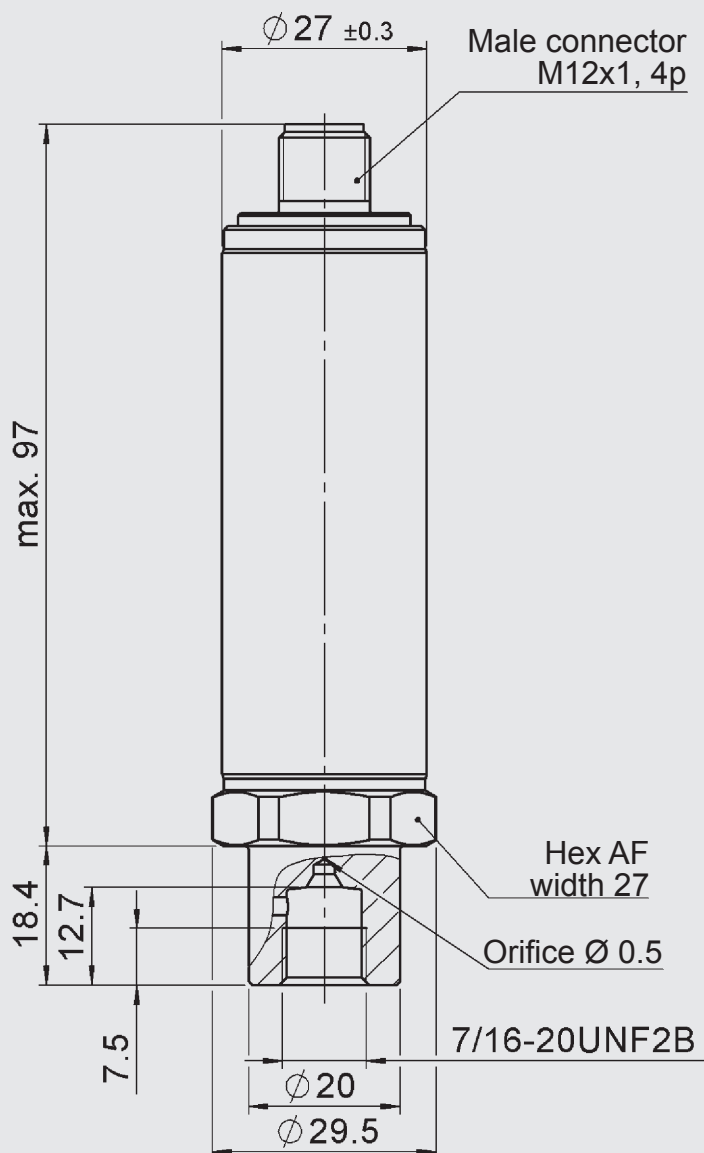
**Insulation voltage**  
N = 50 V AC to housing

**Protection types and applications (code)**

ATEX	IECEX
1 = I M1 Ex ia I Ma	Ex ia I Ma
II 1G Ex ia IIC T6, T5 Ga	Ex ia IIC T6, T5 Ga
II 1/2 G Ex ia IIC T6, T5 Ga/Gb	Ex ia IIC T6, T5 Ga/Gb
II 2 G Ex ia IIC T6, T5 Gb	Ex ia IIC T6, T5 Gb
II 1D Ex ia IIIC T85/T95 °C Da	Ex ia IIIC T85/T95 °C Da

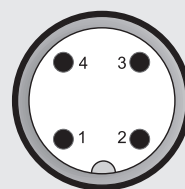
**Modification number**  
H00 = standard

## Dimensions:



## Pin connections:

M12x1



Pin	HDA 44C6-AA
1	+ Sig 1 (for output signal 1)
2	- Sig 1 (for output signal 1)
3	+ Sig 2 (for output signal 2)
4	- Sig 2 (for output signal 2)

## 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.

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