Pressure Transmitter
HDA 4700 Ex applications

Relative pressure | **Accuracy 0.25 %**

Intrinsically Safe, Dustproof enclosure
Non-Sparking
ATEX, IECEx, double approval

Description:

The HDA 4700 is a compact pressure transmitter (intrinsically safe version) which is used to measure relative pressures in hydraulics and pneumatics. The double approval in accordance with ATEX and IECEx enables universal, almost worldwide utilisation of the devices in potentially explosive atmospheres.

The pressure is measured by means of a very accurate and robust sensor with a thin-film strain gauge on a stainless steel membrane.

The main fields of application are in the oil & gas industry, gas turbines. The device is also used in mining applications as well as in locations with high dust contamination.

Protection types and applications:

ATEX

I M1	Ex ia	I Ma
II 1G	Ex ia	IIC T6 Ga
II 1/2G	Ex ia	IIC T6 Ga/Gb
II 2G	Ex ia	IIC T6 Gb
II 3G	Ex nA	IIC T6, T5, T4 Gc
II 3G	Ex ic	IIC T6, T5, T4 Gc
II 1D	Ex ia	IIIC T85 °C Da
II 1D	Ex ta	IIIC T80/90/100 °C T_{500}90/ T_{500}100/T_{500}110 °C Da
II 2D	Ex tb	IIIC T80/T90/T100 °C Db
II 3D	Ex tc	IIIC T80/T90/T100 °C Dc
II 3D	Ex ic	IIIC T80/T90/T100 °C Dc

IECEx

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 ia	IIIC T85 °C Da
Ex ta	IIIC T80/T90/T100 °C Da T_{500}90/ T_{500}100/T_{500}110 °C Da
Ex tb	IIIC T80/T90/T100 °C Db
Ex tc	IIIC T80/T90/T100 °C Dc
Ex ic	IIIC T80/T90/T100 °C Dc

Technical data:

Input data												
Measuring ranges	bar	6	16	40	60	100	250	400	600	1000	1600	2000
Overload pressures	bar	15	32	80	120	200	500	800	1000	1600	2400	3000
Burst pressure	bar	100	200	200	300	500	1000	2000	2000	3000	3000	4000

Mechanical connection	G1/4 A ISO 1179-2 G1/2 B DIN EN 837	
Tightening torque, recommended	20 Nm (G1/4); 45 Nm (G1/2)	
Parts in contact with fluid	Stainless steel: 1.4542; 1.4571; 1.4435; 1.4404; 1.4301; 1.4548 Seal: FKM	
Output data		
Output signal, permitted load resistance	4 .. 20 mA, 2-conductor $R_{Lmax.}$ = (U_B - 12 V) / 20 mA [kΩ]	
Accuracy acc. to DIN 16086, terminal based	≤ ± 0.25 % FS typ. ≤ ± 0.5 % FS max.	
Accuracy, B.F.S.L.	≤ ± 0.15 % FS typ. ≤ ± 0.25 % FS max.	
Temperature compensation Zero point	≤ ± 0.008 % FS / °C typ. ≤ ± 0.015 % FS / °C max.	
Temperature compensation Span	≤ ± 0.008 % FS / °C typ. ≤ ± 0.015 % FS / °C max.	
Non-linearity acc. to DIN 16086, terminal based	≤ ± 0.3 % FS max.	
Hysteresis	≤ ± 0.1 % FS max.	
Repeatability	≤ ± 0.05 % FS	
Rise time	≤ 1.5 ms	
Long-term drift	≤ ± 0.1 % FS / typ. year	
Environmental conditions		
Compensated temperature range	-25 .. +85 °C	
Operating/ambient temperature range [1) 2)]	T6, T80/T85 °C, T_{500}90 °C T5, T90 °C,T_{500}100 °C T100 °C, T_{500}110 °C T4	Ta = -40 .. +60 °C/-20 .. +60 °C Ta = -40 .. +70 °C/-20 .. +70 °C Ta = -40 .. +80 °C/-20 .. +80 °C Ta = -40 .. +85 °C/-20 .. +85 °C
Storage temperature range	-40 .. +100 °C	
Fluid temperature range [1) 2)]	Ta = -40 .. +60 °C / -20 .. +60 °C	
CE mark	EN 61000-6-1/2/3/4; EN 60079-0/11/15/26/31; EN 50303	
Vibration resistance acc. to DIN EN 60068-2-6 at 10 .. 500 Hz	≤ 20 g	
Protection class acc. to DIN EN 60529 [3)]	IP 67	

Relevant data for Ex applications	**Ex ia, ic**	**Ex nA, ta, tb, tc**
Supply voltage	12 .. 28 V DC	12 .. 28 V DC
Max. input current	Ii = 100 mA	
Max. input power	Pi = 1 W	Max. power consumption ≤ 1 W
Connection capacitance of the sensor	Ci ≤ 22 nF	
Inductance of the sensor	Li = 0 mH	
Insulation voltage [4)]	50 V AC, with integrated overvoltage protection acc. to EN 61000-6-2	

Other data	
Residual ripple of supply voltage	≤ 5 %
Current consumption	≤ 25 mA
Life expectancy [5)]	> 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 (**F**ull **S**cale) = relative to complete measuring range
B.F.S.L. = **B**est **F**it **S**traight **L**ine

[1)] -20 °C with FKM seal, -40 °C on request
[2)] With M12x1 male connector, only up to -25 °C
[3)] With mounted mating connector in corresponding protection class
[4)] 500 V AC on request
[5)] Measuring ranges ≥ 1000 bar: > 1 million cycles (0 .. 100 % FS)

Fields of application:

Code no. for use in model code	1			9	A	C
ATEX KEMA 05 ATEX 1016X	I M1 Ex ia I Ma	II 1G Ex ia IIC T6 Ga II 1/2G Ex ia IIC T6 Ga/Gb II 1D Ex ia IIIC T85 °C Da	II 2G Ex ia IIC T6 Gb	II 3G Ex nA IIC T6, T5 Gc	II 1D Ex ta IIIC T80/T90 °C T_{500}90 °C, T_{500}100 °C Da II 2D Ex tb IIIC T80/T90 °C Db	II 3G Ex ic IIC T6, T5 Gc II 3D Ex ic IIIC T80/T90 °C Dc
IECEx KEM 08.0014X	Ex ia I Ma	Ex ia IIC T6 Ga Ex ia IIC T6 Ga/Gb Ex ia IIIC T85 °C Da	Ex ia IIC T6 Gb	Ex nA IIC T6, T5 Gc	Ex ta IIIC T80/T90 °C T_{500}90 °C, T_{500}100 °C Da Ex tb IIIC T80/T90 °C Db	Ex ic IIC T6, T5 Gc Ex ic IIIC T80/T90 °C Dc
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	Gases Protection type: non-sparking nA	Conductive dust Protection type: dustproof enclosure	Gases/conductive dust Protection type: intrinsically safe ic with barrier
Electrical connection (see model code)	5, 6	5, 6	5, 6	6	6	5, 6

Instruments for other protection types and zones (see cover) are available upon request.

Model code:

HDA 4 7 X X – A – XXXX – E N X – 000

Mechanical connection
1 = G1/2 B DIN EN 837
(only for measuring ranges ≥ 1600 bar)
4 = G1/4 A ISO 1179-2

Electrical connection
5 = male, EN 175301-803, 3 pole + PE (IP 67 mating connector supplied)
6 = male M12x1, 4 pole (mating connector not supplied)

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

Measuring ranges in bar
0006; 0016; 0040; 0060; 0100;0250; 0400; 0600; 1000 (only with mechanical connection code "4")
1600; 2000 (only with mechanical connection code "1")

Approval
E = ATEX
IECEx

Insulation voltage
N = 50 V AC to housing

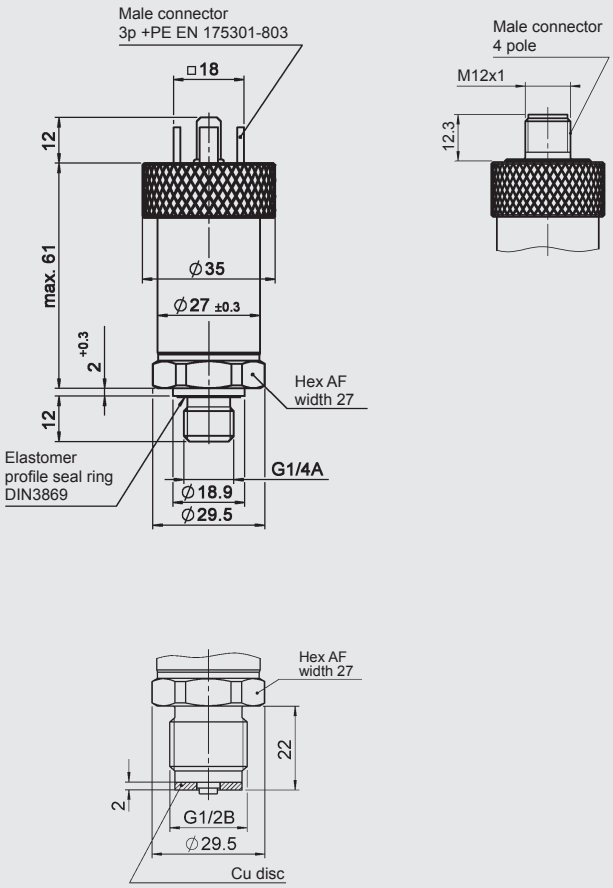
Protection types and applications (code)

	ATEX	IECEx
1 =	I M1 Ex ia I Ma II 1G Ex ia IIC T6 Ga II 1/2 G Ex ia IIC T6 Ga/Gb II 2 G Ex ia IIC T6 Gb II 1D Ex ia IIIC T85 °C Da	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
9 =	II 3G Ex nA IIC T6, T5 Gc Only in conjunction with electr. connection "6" and the impact protection metal safety sleeve (see dimensions)	Ex nA IIC T6, T5 Gc
A =	II 1D Ex ta IIIC T80/T90 °C T_{500}90 °C, T_{500}100 °C Da II 2D Ex tb IIIC T80/T90 °C Db Only in conjunction with electr. connection "6" and the impact protection metal safety sleeve (see dimensions)	Ex ta IIIC T80/T90 °C Da T_{500}90 °C, T_{500}100 °C Da Ex tb IIIC T80/T90 °C Db
C =	II 3G Ex ic IIC T6, T5 Gc II 3D Ex ic IIIC T80/T90 °C Dc	Ex ic IIC T6, T5 Gc Ex ic IIIC T80/T90 °C Dc

Modification number
000 = standard

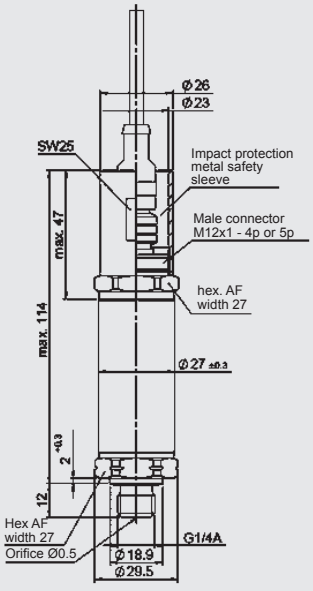
Dimensions:

Protection types and applications (code): 1,C



With impact protection metal safety sleeve:

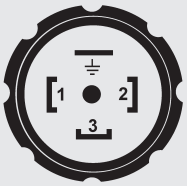
Protection types and applications (code): 9, A



The impact protection metal safety sleeve is included. A straight mating connector is required for electrical connection. E.g. mating connector M12x1,
4 pole, straight, with 3 m shielded cable: ZBE 06S-03, part no. 6098243

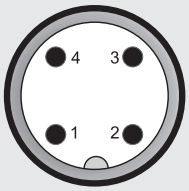
Pin connections:

EN 175301-803



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

Subject to technical modifications.

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