Pressure Transmitter
HDA 4700 Hazardous Environments

Relative Pressure | Accuracy 0.25%

Intrinsically Safe, Dustproof Enclosure
Non-sparking
ATEX, IECEx dual approval

Description:

The HDA 4700 is a compact pressure transmitter to measure relative pressure in hydraulics and pneumatics. The dual approval according to ATEX and IECEx allows an universal, almost worldwide use in hazardous environments.

The pressure is measured via a very accurate and robust stainless steel strain gauge sensor cell.

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

Protection types and applications:

ATEX

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 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 T80/90/100°C 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[1]	100, 150, 500, 750,1000, 1500, 3000, 5000, 6000, 9000, 10000, 15000, 20000, 30000 psi
Overload pressures	290, 290, 1160, 1740, 2900, 2900, 7250, 11600, 11600, 14500, 14500, 23200, 38400, 43500 psi
Burst pressures	1450, 1450, 2900, 4350, 7250, 7250, 14500, 29000, 29000, 29000, 29000, 43500, 43500, 58000 psi
Mechanical connection[1]	1/4-18 NPT, male; 1/4-18 NPT, female 9/16-18 UNF2A (SAE 6, male); SF 250 CX20, Autoclave (7/16-20 UNF 2B); F 250 C, Autoclave (9/16-18 UNF 2B)
Torque value	15 Nm (SF 250 CX20), 20 Nm (SAE 6, F250 C) 40 Nm (1/4-18 NPT)
Parts in contact with medium	Stainless steel: 630, 316Ti, 316LMHO, 316L, 304 Seal: FPM (SAE6)
Output data	
Output signal permitted load resistance	4 .. 20 mA, 2 conductor $R_{Lmax} = (U_B - 12\ V) / 20\ mA\ [k\Omega]$
Accuracy to DIN 16086, Max. setting	≤ ± 0.25 % FS typ. ≤ ± 0.5 % FS max.
Accuracy at min. setting (B.F.S.L.)	≤ ± 0.15 % FS typ. ≤ ± 0.25 % FS max.
Temperature compensation Zero point	≤ ± 0.0045 % FS / °F typ. ≤ ± 0.0085 % FS / °F max.
Temperature compensation Over range	≤ ± 0.0045 % FS / °F typ. ≤ ± 0.0085 % FS / °F max.
Non-linearity at max. setting to DIN 16086	≤ ± 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	-4 .. +185 °F
Operating/ambient/fluid [1) 2)] temperature range	T6, T80/85 °C, T_{500}90°C : Ta = -40 .. +140°F / -4 .. +140°F T5, T90°C, T_{500}100°C : Ta = -40 .. +158°F / -4 .. +158°F T100°C, T_{500}110°C : Ta = -40..+176°F / -4 ..+176°F T4 : Ta = -40..+185°F / -4 ..+185°F
Storage temperature range	-40 .. +212 °F
CE mark	EN 61000-6-1 / 2 / 3 / 4 EN 60079-0 / 11 / 15 / 26 / 31 EN 50303
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	≤ 20 g ≤ 10 g (with 1/2-18 NPT conduit)
Protection class to DIN EN 60529 [3)] ISO20653	IP 67 IP 6k9k (with 1/2-18 NPT conduit)

Relevant data for Ex applications	**Ex ia, ic**	**Ex nA, ta, tb, tc**
Supply voltage	Ui = 12 .. 28 V	12 .. 28 V
Max. input current	Ii = 100 mA	
Max. input power	Pi = 1 W	max. power consuption ≤ 1 W
Connection capacitance of the sensor	C_i = ≤ 22 nF	
Inductance of the sensor	L_i = 0 mH	
Insulation voltage [4)]	50 V AC, with integrated overvoltage protection 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, ~ 300g (with 1/2-14 NPT conduit)

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.
FS (**F**ull **S**cale) = relative to the full measuring range, **B.F.S.L.**= **B**est **F**it **S**traight **L**ine

[1)] -4°F with FPM seal, -40°F on request
[2)] with M12x1 connector until -13°F possible
[3)] with IP67 mating connector assembled
[4)] 500 V AC on request
[5)] Measuring ranges ≥ 15000psi : > 1 million cycles

Areas 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 T5,T6 Gb	II 3G Ex nA IIC T6, T5 Gc	II 1D Ex ta IIIC T80/90°C T_{500}90/100°C Da II 2D Ex tb IIIC T80/90°C Db	II 3G Ex ic IIC T6,T5 Gc II 3D Ex ic IIIC T80/90°C Dc
IECEx KEMA 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}90/100°C Da Ex tb IIIC T80/90°C Db	Ex ic IIC T6,T5 Gc Ex ic IIIC T80/90°C Dc
Application areas	Mining Protection class: Intrinsically safe ia with barrier	Gases/ conductive dust Protection class: Intrinsically safe ia with barrier	Gases Protection class: Intrinsically safe ia with barrier	Gases Protection class: Non-sparking nA	Conductive dust Protection class: Dustproof enclosure	Gases/ conductive dust Protection class: Intrinsically safe ic with barrier
Electrical connection (See model code)	5, 6, 9	5, 6, 9	5, 6, 9	6	6	5, 6, 9

Devices with other protection types and applications (see first page) are available on request.

Model code:

HDA 4 7 X X – A – XXXXX – E N X – XXX (psi) 72 inch

Mechanical Connection
7 = 9/16-18 UNF 2A (SAE 6), male
8 = 1/4-18 NPT, male
B = F250C Autoclave (9/16-18 UNF 2B), female
C = SF250CX, Autoclave (7/16-20 UNF 2B), female
F = 1/4-18 NPT, female

Electrical Connection
5 = Male connector, EN 175301-803, 3 pol. + PE (mating connector IP67 included)
6 = Male connector M 12 x 1, 4 pol. (without mating connector)
9 = 1/2-14 NPT Conduit (male)

Signal
A = 4 .. 20 mA, 2-conductor

Measuring ranges
0100, 0150, 0750, 1000, 1500, 3000, 5000, 6000, 9000
10000, 15000 (only with mechanical connection “C”)
20000, 30000 (only with mechanical connection “B”)

Approval
E = ATEX and IECEx

Isolation voltage
N = 50 V AC to housing

Protection types and applications:

	ATEX	IECEx
1 =	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 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 Gc	Ex nA IIC T6, T5 Gc
	Only in conjunction with electrical connection 6 and the impact protection safety sleeve (see dimensions)	
A =	II 1D Ex ta IIIC T80/90°C T_{500}T90/100°C Da II 2D Ex tb IIIC T80/90°C Db	Ex ta IIIC T80/90°C T_{500}90/100°C Da Ex tb IIIC T80/90°C Db
	Only in conjunction with electrical connection 6 and the impact protection safety sleeve (see dimensions)	
C =	II 3G Ex ic IIC T6, T5 Gc II 3D Ex ic IIIC T80/90°C Dc	Ex ic IIC T6, T5 Gc Ex ic IIIC T80/90°C Dc

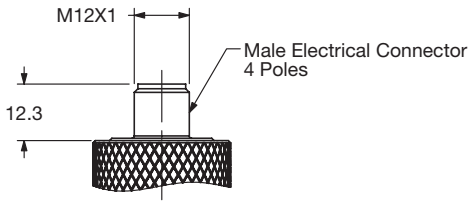
Modification number
000 = Standard

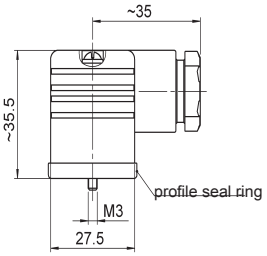
(psi)
Additional declaration for psi version

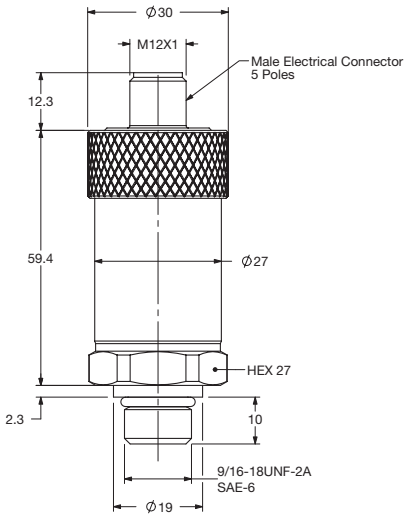
Cable length (for Conduit connection only)
72 inch = standard

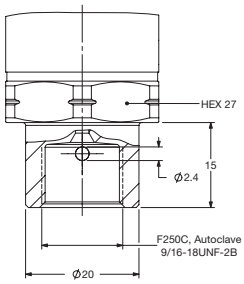
Dimensions:

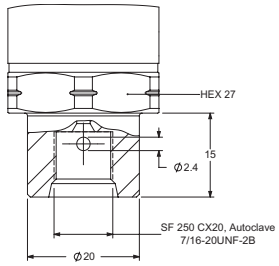
Protection types and applications (code): 1, C





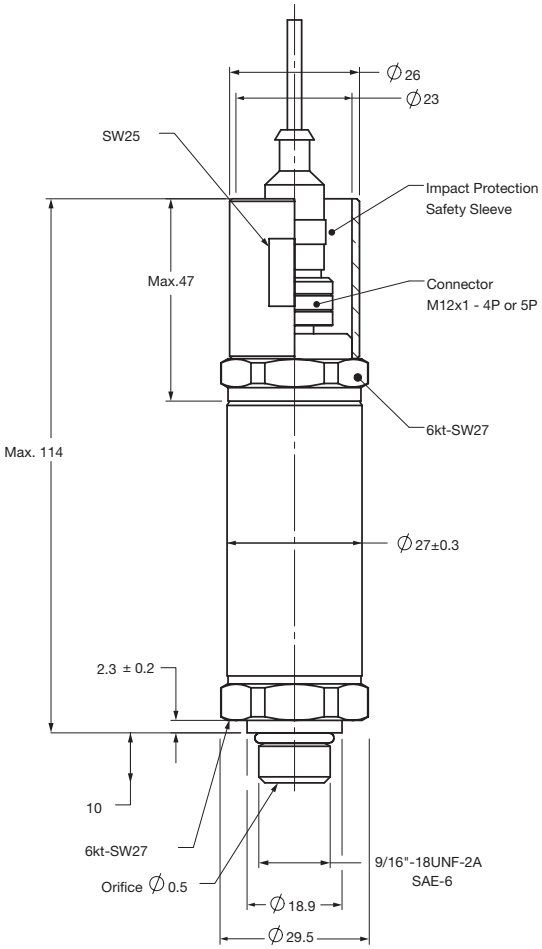






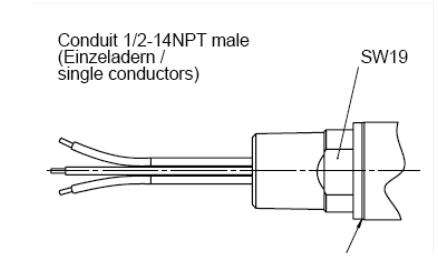
With impact protection metal sleeve

Protection ratings and areas of application (code): 9, A



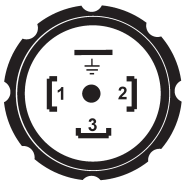
The impact protection metal safety sleeve is included. A straight mating connector is required for electrical connection; e.g. mating connector M12x1, 4 pole, straight, with 3m shielded cable: ZBE 06S-03, Part No. 6098243

Pin connections:



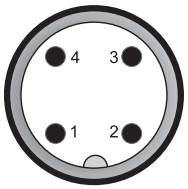
Lead	HDA 47x9
Green	Signal +
White	Signal -
Green/yellow	Housing

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

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