Electronic Pressure Transmitter

HDA 4700
ATEX Intrinsically Safe
ATEX Dustproof Enclosure
ATEX Non-sparking

Description:

The pressure transmitter HDA 4700 in ATEX version has been specially developed for use in potentially explosive atmospheres and is based on the HDA 4000 series.

As with the industry model, the HDA 4700 in ATEX version has a stainless steel measurement cell with thin-film strain gauge.

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 mills.

Protection types and applications:
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 Da
T_{500}T90/T100/T110°C Da
II 2D Ex tb IIIC T80/90/100°C Db
II 3D Ex tc IIIC T80/T90/T100°C Dc
II 3D Ex ic IIIC T80/T90/T100°C Dc

Special features:

- Accuracy ≤ ± 0.25 % FS typ.
- Certificates:
  KEMA 05ATEX1016 X
  KEMA 05ATEX1021
- Output signal 4 .. 20 mA
- Very small temperature error
- Excellent EMC characteristics
- Excellent durability

Technical data:

Input data		
Measuring ranges[1)]	-1 .. 9; 6; 16; 60; 100; 250; 400; 600; 1000 bar	
Overload pressures	20; 15; 32; 120; 200; 500; 800; 1000; 1600 bar	
Burst pressures	100; 100; 200; 300; 500; 1000; 2000; 2000; 3000 bar	
Mechanical connection[1)]	G1/4 A DIN 3852 G1/2 DIN 3852	
Torque value	20 Nm	
Parts in contact with medium	Stainless 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 $R_{Lmax} = (U_B - 12\ V) / 20\ mA\ [k\Omega]$	
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. ≤ ± 0.3 % FS max.	
Temperature compensation Zero point	≤ ± 0.008 % FS / °C typ. ≤ ± 0.015 % FS / °C max.	
Temperature compensation Over range	≤ ± 0.008 % FS / °C typ. ≤ ± 0.015 % FS / °C 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	-20 .. +85 °C	
Operating temperature range[2)]	-40 .. +60 °C / -20 .. +60 °C	
Storage temperature range	-40 .. +100 °C	
Fluid temperature range[2)]	-40 .. +60 °C / -20 ... +60 °C	
CE mark	EN 61000-6-1 / 2 / 3 / 4 EN 60079-0 / 11 / 26 / 31 EN 50303	
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	≤ 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 connector is used)	

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 [3)]	50 V AC, with integrated overvoltage protection EN 61000-6-2	

Other data	
Residual ripple of supply voltage	≤ 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 (**F**ull **S**cale) = relative to the full measuring range, **B.F.S.L.**= **B**est **F**it **S**traight **L**ine
[1)] 1000 bar only with mechanical connection G 1/2 DIN 3852 and vice versa
[2)] -20 °C with FPM seal, -40 °C on request
[3)] 500 V AC on request

Areas of application:

Code No.for use in Model code	1			9	A	C
Protection type	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 Gc	II 1D Ex ta IIIC T80°C T_{500}T90°C Da II 2D Ex tb IIIC T80°C Db	II 3G Ex ic IIC T6 Gc II 3D Ex ic IIIC T80°C Dc
Certificate	KEMA 05ATEX1016 X / KEMA 05ATEX1021					
Zones / Categories	Group I Category M1 Mining Protection class: intrinsically safe ia with barrier	Group II, III Category 1G, 1/2G, 1D Gases/conductive dust Protection class: intrinsically safe ia with barrier	Group II Category 2G Gases Protection class: intrinsically safe ia with barrier	Group II Category 3G Gases Protection class: Non-sparking nA	Group III Category 1D, 2D Conductive dust Protection class: Dustproof enclosure	Group II, III Category 3G, 3D Gases/conductive dust Protection class: Intrinsically safe ic with barrier
Electrical Connection (see model code)	4, 5, 6	4, 5, 6	4, 5, 6	6	6	4,5,6

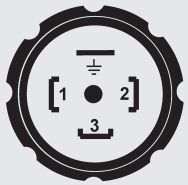
Devices in ignition protection class "Dustproof enclosure" for the protection types II 1D Ex ta IIIC T80/90/100° C Da T_{500}T90/T100/T110°C Da, II 2D Ex tb IIIC T80/90/100°C Db and II 3D Ex tc IIIC T80/90/100°C Dc are available with flying leads on request.
Devices in the ignition protection class "Non-sparking" for the protection type II 3G Ex nA IIC T6, T5, T4 Gc are available with flying leads on request.

Pin connections:

Binder series 714 M18

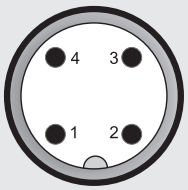
Pin	HDA 47X4-A
1	n.c.
2	Signal +
3	Signal -
4	n.c.

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.

Model code:

HDA 4 7 X X – A – XXXX – A N X – 000

Mechanical connection
2 = G1/2 DIN 3852 (only for "1000 bar" press. 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; 0060; 0100; 0250; 0400; 0600
1000 (only in conjunction with mechanical connection code "2")

Approval
A = ATEX

Insulation voltage
N = 50 V AC

Protection types and applications (code)
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
9 = II 3G Ex nA IIC T6 Gc (only in conjunction with electr. connection “6“)*
A = II 1D Ex ta IIIC T80 °C T_{500}T90 °C Da (only in conjunction with electr. connection "6")*
II 2D Ex tb IIIC T80 °C Db
C = II 3G Ex ic IIC T6 Gc
II 3D Ex ic IIIC T80 °C Dc

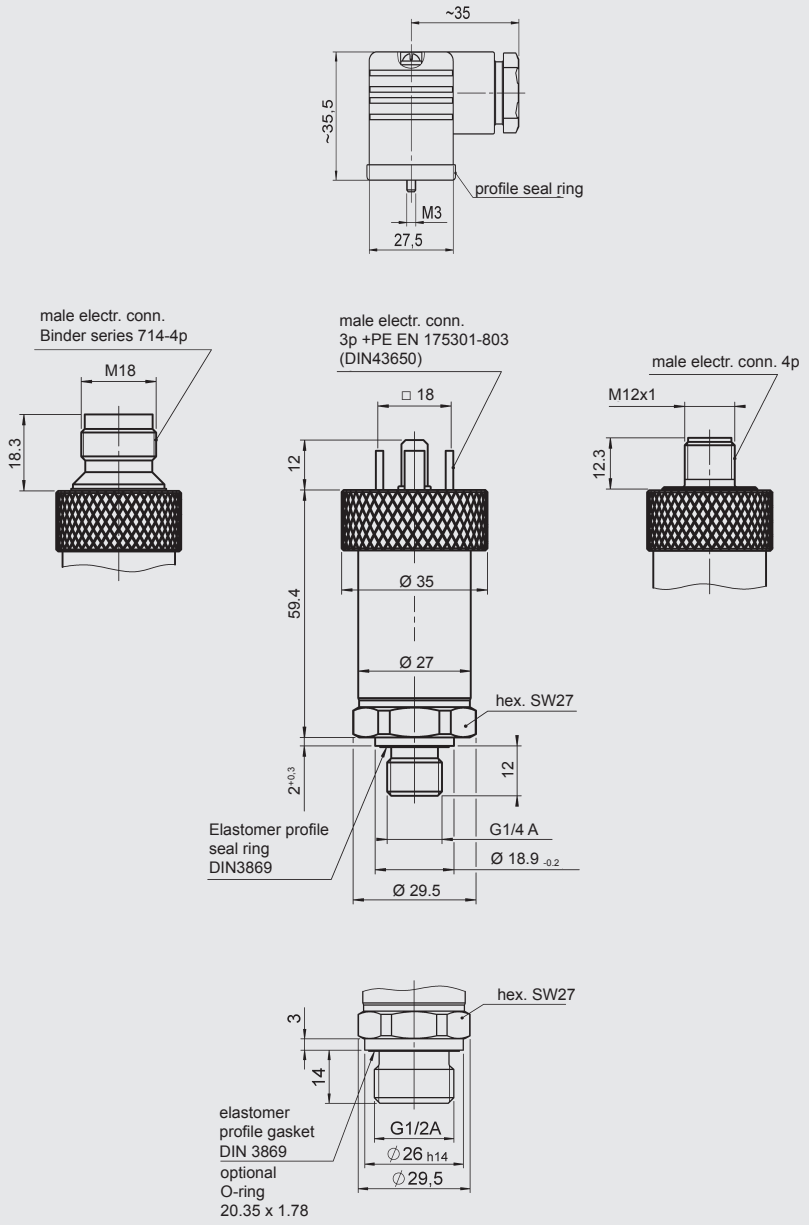
Modification number
000 = Standard

Notes:
* For design and electrical connection see device dimensions

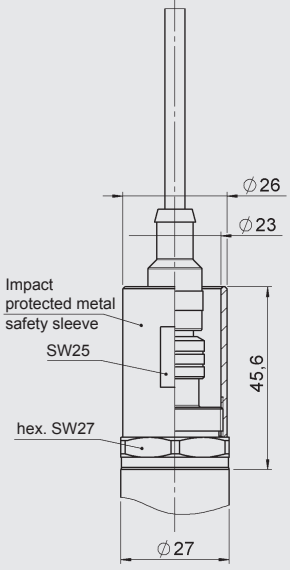
Accessories:
Appropriate accessories, such as electrical connectors, can be found in the Accessories brochure.

Dimensions:

Protection types and applications (code): 1, C



Protection ratings and areas of application (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.

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