



Pressure Transmitter HDA 4400 Ex applications

Relative pressure

Accuracy 0.5 %

Flameproof Enclosure
ATEX, IECEx, CSA, triple approval
Flush membrane
HART interface



Description:

HDA 4400 with flush membrane and HART interface is a compact pressure transmitter in the ignition protection type flameproof enclosure which is used to measure relative pressures in hydraulics and pneumatics. The triple approval in accordance with ATEX, IECEx and CSA enables universal, worldwide utilisation of the devices in potentially explosive atmospheres.

The pressure port is achieved with a fully-sealed 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.

In addition to the analogue 4 .. 20 mA output of the measured value, digital communication is possible by means of the HART protocol.

This device is used for applications in which a standard pressure port 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.

The main fields of application are in the oil & gas industry, e.g. in hydraulic power units, drill drives or valve actuation stations. The device is also used in mining applications as well as in locations with high dust contamination.

Protection types and applications:

cCSA_{US} Explosionproof - Seal not required
Class I Group A, B, C, D, T6, T5
Class II Group E, F, G
Class III
Type 4

ATEX Flameproof
I M2 Ex d I Mb
II 2G Ex d IIC T6, T5 Gb
II 2D Ex tb IIIC T110 .. 120 °C Db

IECEx Flameproof
Ex d I Mb
Ex d IIC T6, T5 Gb
Ex tb IIIC T110 .. 120 °C Db

Technical data:

Input data

Measuring ranges	bar	4	6	10	16	25	40	100	250	400	600	-1 .. 3
Overload pressures	bar	8	12	20	32	50	80	200	500	800	1000	8
Burst pressure	bar	20	30	50	80	125	200	500	1000	2000	2000	20

Mechanical connection	G1/2 A ISO 1179-2 G1/2 with additional front O-ring seal G1/4 with additional front O-ring seal
Tightening torque, recommended	20 Nm (G 1/4); 45 Nm (G 1/2)
Parts in contact with fluid	Stainless steel: 1.4435; 1.4301 Seal: FKM O-ring: FKM
Conduit, housing material	1.4435; 1.4404
Pressure transfer fluid	Silicone-free oil

Output data

Output signal, permitted load resistance	4 .. 20 mA with HART protocol $R_{Lmax} = (U_B - 12 V) / 20 \text{ mA}$ [kΩ] for HART communication min. 250 Ω HART communication acc. to HART 7 specifications HART Common Practice Commands e.g. Altering of measuring range limits (see table), Zero point adjustment within max. 3 % of the span
Accuracy acc. to DIN 16086, terminal based	± 0.5 % FS typ. ± 1.0 % FS max.
Accuracy, B.F.S.L.	± 0.25 % FS typ. ± 0.5 % FS max.
Temperature compensation	± 0.015 % FS / °C typ.
Zero point	± 0.025 % FS / °C max.
Temperature compensation	± 0.015 % FS / °C typ.
Span	± 0.025 % FS / °C max.
Non-linearity acc. to DIN 16086, terminal based	± 0.3 % FS max.
Hysteresis	± 0.4 % FS max.
Repeatability	± 0.1 % FS
Rise time	≤ 25 ms
Long-term drift	± 0.3 % FS typ. / year

Environmental conditions

Compensated temperature range	-25 .. +85 °C	
Operating/ambient temperature range ¹⁾²⁾	T6, T110 °C T5	T _a = -30 .. +60 °C / -20 .. +60 °C T _a = -30 .. +70 °C / -20 .. +70 °C
Storage temperature range	-40 .. +100 °C	
Fluid temperature range ¹⁾²⁾	T6, T110 °C T5	T _a = -30 .. +60 °C / -20 .. +60 °C T _a = -30 .. +70 °C / -20 .. +70 °C

CE mark	EN 61000-6-1/2/3/4; EN 60079-0/11/26/31
Vibration resistance acc. to DIN EN 60068-2-6 at 10 .. 500 Hz	≤ 10 g
Protection class acc. to DIN EN 60529 ISO 20653	IP 65 (Vented Gauge); IP 69 (Sealed Gauge) IP 6K9K (Sealed Gauge)

Other data

Supply voltage	12 .. 30 V DC
Residual ripple of supply voltage	acc. to FSK Physical Layer Specification (HCF_SPEC-054)
Current consumption	≤ 25 mA
Life expectancy	> 10 million cycles (0 .. 100 % FS)
Weight	~ 300 g

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

FS = Full Scale = relative to complete measuring range (default calibration)

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

¹⁾ -20 °C with FKM seal, -30 °C on request

²⁾ T120 °C with T_a = -30 .. +70 °C / -20 .. +70 °C with electrical connection single leads available

Measuring range limits:

By means of HART Common Practice Commands, you have the opportunity to adjust the following measuring ranges:

Lower measuring range limit		Upper measuring range limit		Measuring span	
min	max	min	max	min	max
0 % FS	112.5 % FS	37.5 % FS	150 % FS	37.5 % FS	150 % FS

Fields of application:

	Single leads Electrical connection "9"	Jacketed cable Electrical connection "G"
CSA	Explosionproof (seal not required)	
ATEX	Flameproof	
IECEX	Flameproof	
^c CSA _{US}	Class I Group A, B, C, D, T6, T5 Class II Group E, F, G Class III Type 4	
ATEX	I M2 Ex d I M II 2G Ex d IIC T6, T5 Gb	
	II 2D Ex tb IIIC T110 .. 120 °C Db	II 2D Ex tb IIIC T110 °C Db
IECEX	Ex d I Mb Ex d IIC T6, T5 Gb	
	Ex tb IIIC T110 .. 120 °C Db	Ex tb IIIC T110 .. 120 °C Db

Model code:

HDA 4 4 Z X - F21 - XXXX - XXX - D X - 000 (2m)

Mechanical process connection

Z = flush membrane

Electrical connection

9 = 1/2-14 NPT Conduit, single leads

G = 1/2-14 NPT Conduit, jacketed cable

Output signal

F21 = 4 .. 20 mA, 2-conductor with HART protocol

Measuring ranges in bar

04.0; 06.0; 0010; 0016; 0025; 0040; 0060; 0100; 0250; 0400; 0600

0003 (-1 .. 3)

Mechanical connection

G01 = G1/2 A ISO 1179-2

G02 = G1/2 with additional front O-ring seal

G04 = G1/4 with additional front O-ring seal (only measuring ranges 0040; 0100; 0250; 0400 and 0600)

Approval

D = CSA Explosionproof (seal not required)

ATEX Flameproof

IECEX Flameproof

Measurement cell type

S = Sealed Gauge (sealed to atmosphere) ≥ 40 bar

V = Vented Gauge (vented to atmosphere) < 40 bar

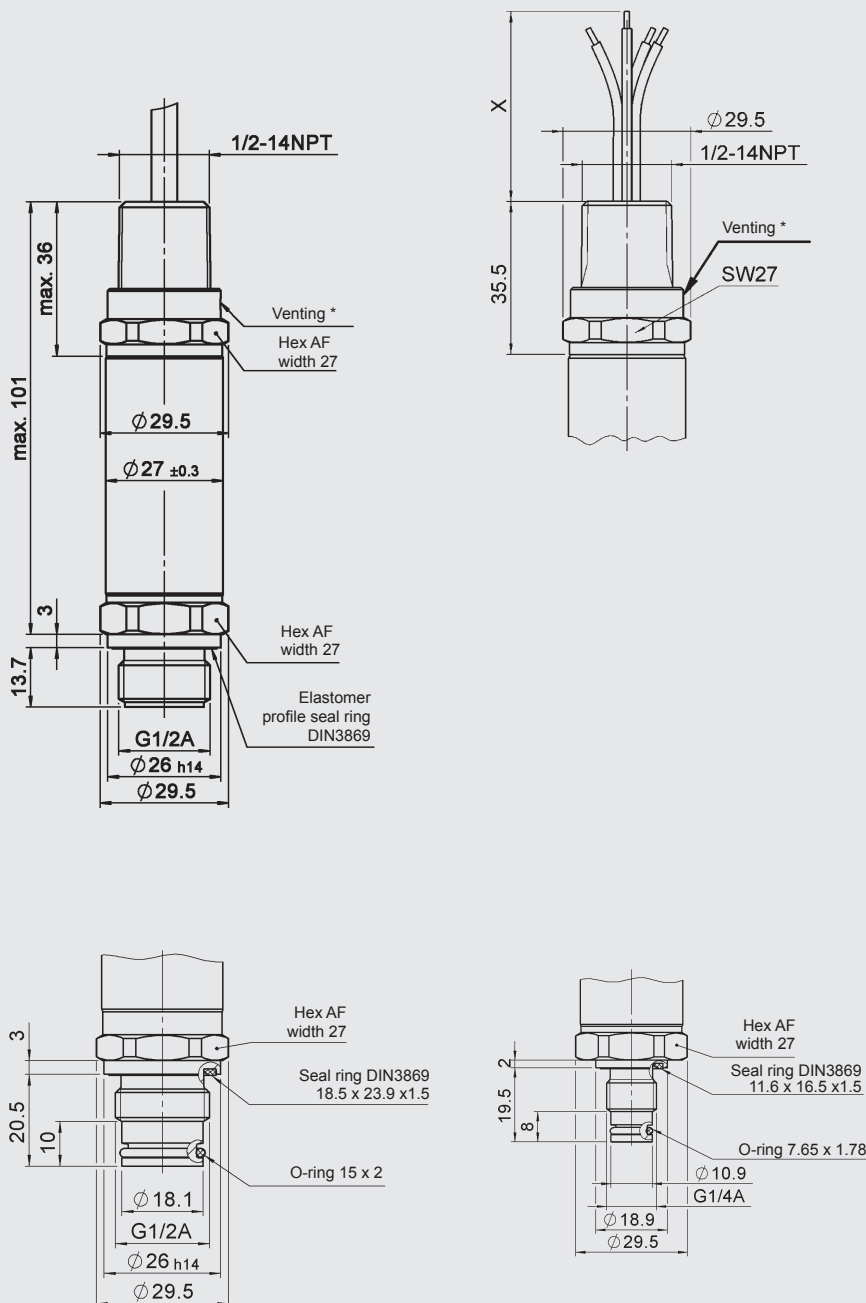
Modification number

000 = standard

Cable length in m

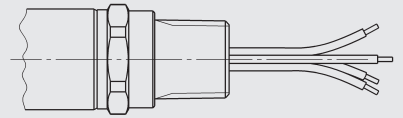
Standard = 2m

Dimensions:



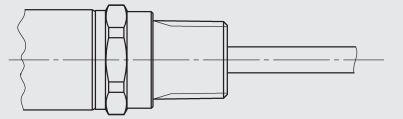
Pin connections:

Conduit (single leads)



Lead	HDA 44Z9
red	Signal +
black	Signal -
green-yellow	Housing

Conduit (jacketed cable)



Lead	HDA 44Z9
white	Signal +
brown	Signal -
green	n. c.
yellow	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.

HYDAC ELECTRONIC GMBH
Hauptstraße 27, 66128 Saarbrücken
Germany
Telephone +49 (0)6897 509-01
Fax +49 (0)6897 509-1726
E-mail: electronic@hydac.com
Internet: www.hydac.com

