HYDAC INTERNATIONAL

Pressure Transmitter

HDA 8400 for series applications

Wasserstoff, Mobilanwendungen

Type approval EC 79/2009

Relative pressure | **Accuracy 0.5 %**

Features

- Especially for the measurement of hydrogen
- Parts in contact with fluid, made of 1.4435 with a Ni content ≥ 13 % (316L)
- Type approval EC 79/2009

Description

The pressure transmitter series HDA 8400 has been specially developed for measurement tasks involving hydrogen as a medium in mobile applications. The devices are based on a robust, durable sensor cell with thin-film strain gauges on a stainless steel membrane. The sensor cell is welded to the process connection – there are no internal seals. The compatibility with hydrogen is ensured by using a particular material; the part getting in contact with the fluid is made of stainless steel 1.4435 with a Ni content of ≥ 13 %.

These devices are certified according to the EC 79/2009 regulations of the type approval for hydrogen-powered vehicles. To suit the particular application in an optimised way, a high variety of hydrogen-suited process connections have been implemented into this certification.

For implementation into modern controls, there are standard output signals available, e.g. 4..20 mA, 0.5..4.5 V or 1..5 V. Ratiometric output signals are available as well. There are various device-integrated connectors suited for mobile applications as well as cable solutions available for the electrical connection.

Fields of application

Applications can be found in all hydrogen-powered vehicles, put into circulation according to the EC 79/2009 regulations. In fuel cell vehicles, such as passenger cars, buses, trucks, etc., pressures starting with the high-pressure accumulator system up to the inlet of the fuel cell, are monitored and regulated.

Technical data

Input data														
Measuring ranges	bar	16	20	25	40	60	100	160	250	400	448	600	900	1000
Nominal operating pressure [1]	bar	30	30	30	50	70	80	125	200	300	400	400	700	700
Maximum permitted operating pressure [1]	bar	37	37	37	62	87	100	156	250	375	500	500	875	875
Burst pressure	bar	125	125	125	200	300	500	800	1250	2000	3000	3000	3000	3000

Mechanical connection (Tightening torque, recommended)	SF250CX20, Autoclave (7/16-20 UNF 2B) (15 Nm for measuring ranges ≤ 600 bar; 20 Nm for measuring ranges > 600 bar) G 1/4 B DIN EN 837 (20 Nm for measuring ranges ≤ 600 bar; 40 Nm for measuring ranges > 600 bar) 9/16-18 UNF 2A, ISO 8434-3 (25 Nm) 7/16-20 UNF 2A, SAE 4 (15 Nm) 3/8-24 UNF 2A (SAE 3) (10 Nm), only for measuring ranges ≤ 600 bar		
Parts in contact with fluid	Stainless steel	1.4435 (Ni content ≥ 13 %)	
	Seals	G 1/4 B	Copper (Cu-DHP)
		9/16-18 UNF 2A, ISO 8434-3	Zurcon®22 (Polyurethan)
		7/16-20 UNF 2A, SAE 4	EPDM
		3/8-24 UNF 2A, SAE 3	Ecopur

Output data	
Output signal	Various signals, e.g.: 4..20 mA, 0..5 V, 0..10 V ratiometric: 0.5..4.5 V at U_B= 5 V DC (10..90 % U_B)
Accuracy acc. to DIN 16086, Terminal based	≤ ± 0.5 % FS typ. ≤ ± 1 % FS max.
Accuracy at minimum value setting (B.F.S.L.)	≤ ± 0.25 % FS typ. ≤ ± 0.5 % FS max.
Temperature compensation offset	≤ ± 0.015 % FS / °C typ. ≤ ± 0.025 % FS / °C max.
Temperature compensation span	≤ ± 0.015 % FS / °C typ. ≤ ± 0.025 % FS / °C max.
Non-linearity at limit point adjustment acc. to DIN 16806	≤ ± 0.3 % FS max.
Hysteresis	≤ ± 0.4 % FS max.
Repeatability	≤ ± 0.1 % FS
Rise time	≤ 2 ms
Long-term drift	≤ ± 0.3 % FS typ. / year

Environmental conditions / Approvals / Tests		
Compensated temperature range		-25..+85 °C
Operating temperature range		-40..+100 °C
Storage temperature range		-40..+100 °C
Fluid temperature range		-40..+125 °C
EMC		2014/30/EU; EN 61000-6-1 / 2 / 3 / 4
EC79 approval		Available
CE conformity		Available
cULus approval[2]		Available
Vibration resistance acc. to DIN EN 60068-2-6 at 5..2000 Hz		≤ 25 g
Shock resistance acc. to DIN EN 60068-2-27		100 g / 6 ms / half sine 500 g / 1 ms / half sine
Protection type acc. to [3]	DIN EN 60529 ISO 20653	IP 67 IP 6K9K

Other data	
Electrical connection [4]	e.g.: M12x1, 4 pole, Metri-Pack series 150, 3 pole; Deutsch DT04-3P, 3 pole
Supply voltage	8..30 V DC 12..30 V DC (0..10 V output signal) 5 V DC ± 5 % (ratiometric output signal)
when applied acc. to UL specifications	-limited energy- acc. to 9.3 UL 61010; Class 2 UL 1310/1585; LPS UL 60950
Residual ripple of the supply voltage	≤ 5 %
Current consumption	≤ 25 mA
Life expectancy	>10 million load cycles (0..100 % FS)
Weight	~ 55 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

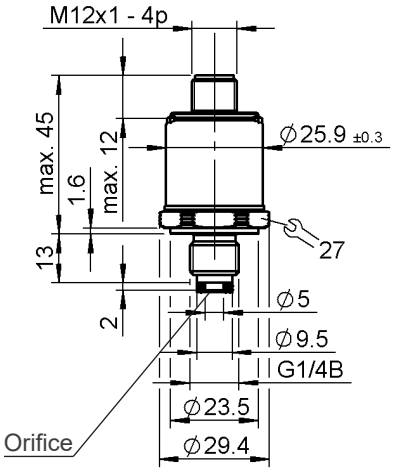
[1] Type approval EC 79/2009: Regardless of the measuring range associated with the output signal, these devices may only be operated up to the pressures specified under “Nominal operating pressure” or “Maximum permissible operating pressure” in order to comply with EC 79/2009.

[2] Environmental conditions acc. to 1.4.2 UL 61010-1; C22.2 no. 61010-1

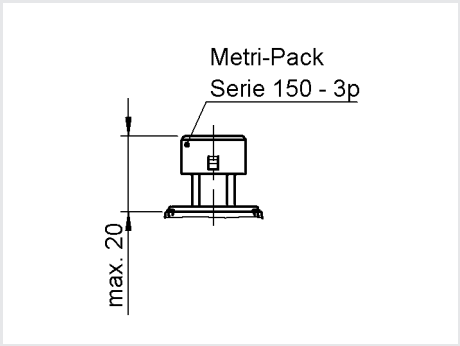
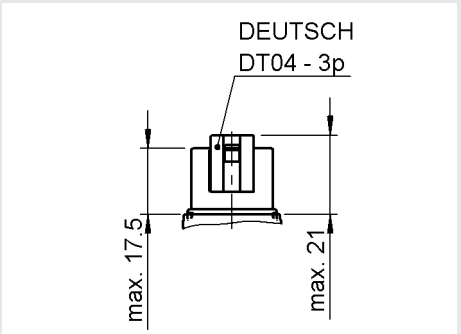
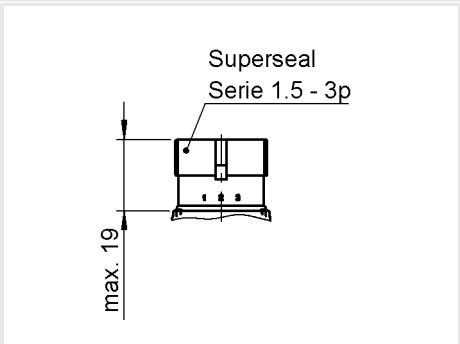
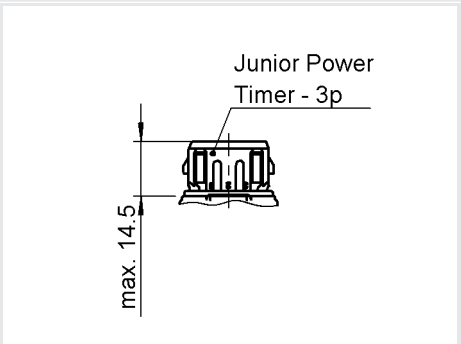
[3] With mounted mating connector in corresponding protection type

[4] Other connections on request

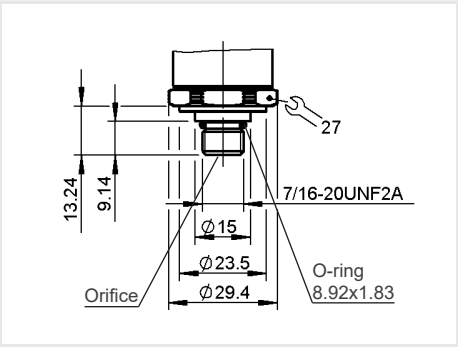
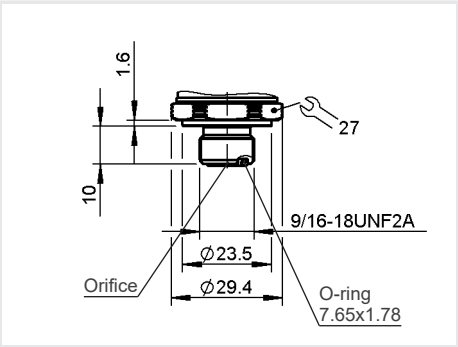
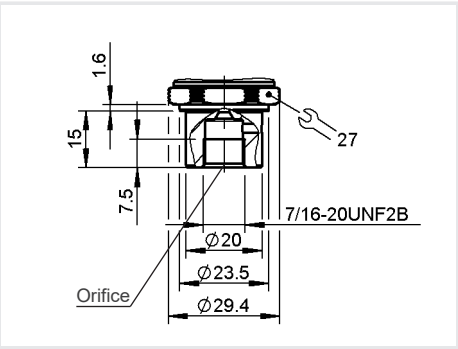
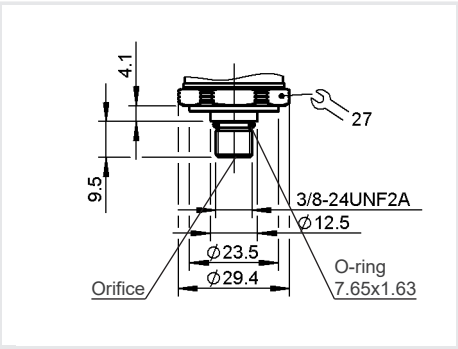
Dimensions



Electrical connection variants

Plug Packard Metri Pack series 150, 3 pole	Plug Deutsch DT 04, 3 pole
	
Plug AMP Superseal, 3 pole	**Plug AMP Junior Timer, 3 pole**
	

Mechanical connection variants

7/16-20 UNF 2A, external thread	9/16-18 UNF 2A with frontal seal, external thread
	
SF250CX20 Autoclave 7/16-20 UNF 2B, internal thread	3/8-24 UNF 2A, external thread
	

ORDER DETAILS

The pressure transmitter HDA 8400 with type approval EC 79/2009 for hydrogen applications has been especially developed for the use in series applications.
For precise specifications, please contact our HYDAC ELECTRONIC Sales Department.

Note

The information in this brochure relates to the operating conditions and applications described.
For applications and/or operating conditions not described please contact the relevant technical department.
Subject to technical modifications.

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