Pressure transmitter COMPACT HYDROGEN

for hydrogen applications up to 1050 bar

Type series CA1600

Application area

- Hydrogen production, storage and distribution
- Power-to-X applications
- Hydrogen filling stations
- Plant and mechanical engineering
- Chemical and petrochemical industry
- Lab applications

Features

- Digital pressure transmitter with thin film sensor for hydrogen applications
- Measuring ranges
  - 0…10 bar up to 0…1050 bar
  - -1…9 bar up to -1…15 bar
- Output signal 4…20 mA in 2-wire technology
- Accuracy ≤ 0,5 %
- Long term drift ≤ 0.1 % / year, of nominal range
- Media temperature -40…120 °C
- Easy zero point correction using a magnet
- Case and wetted parts of stainless steel, degree of protection IP 65 / IP 67

Options

- Approvals / Certificates
  - Explosion protection for gases
- Calibration certificate per DIN EN 10204-3.1
- Output signal (invers) 20…4 mA
- Various process connections
- Oxygen free of oil and grease

Application

The pressure transmitter COMPACT HYDROGEN is suitable for measuring the relative pressure of hydrogen and media containing hydrogen.

The thin film sensor ensures a very good resistance to hydrogen embrittlement and at the same time offers high long-term stability.

Technical data

Constructional design / case

Design:	Compact case with high protection against moisture
Material:	Stainless steel mat.-no. 1.4301 (304)
Pressure compensation:	Ventilation via electrical connection
Electrical connection:	Circular connector M12 optional: Right-angle plug per EN 175 301-803-A
Degree of protection per EN 60529:	Circular connector M12: IP 65 / IP 67 Right-angle plug: IP 65
Weight:	approx. 0.25 kg

Process connection

Design:

- G1/2 B per EN 837-1
- G1/4 B per EN 837-1
- G1/4 A per DIN EN ISO 1179-2 model E
- 1/2 NPT
- 1/4 NPT

Material wetted parts

Process connection:	Stainless steel
Diaphragm:	Stainless steel
Gasket:	NBR / FKM

Measuring system

Sensor:	Thin film sensor

Measuring range

Nominal range [bar]	Standard measuring ranges* [bar]	Overload limit [bar]	Vacuum tight
40	-1...9 -1...15 0...10 0...16 0...25 0...40	80	0 bar abs
150	0...60 0...100	200	
400	0...160 0...250 0...315	470	
1050	0...400 0...500 0...640 0...700 0...1000 0...1050	1050	

* different measuring ranges, measuring units and overload limits upon request.

For information on definitions of terms regarding the Pressure Equipment Directive, see Technical Instruction TA_068.

Accuracy

General:

Limit point setting:	per EN 61298-2
Reference conditions:	per EN 60770-1
Calibration position:	vertical mounting position
Accuracy: (Lin./Hyst./Repr.)	≤ 0.5 % of adjusted measuring range
Long term drift:	≤ 0.1 % / year of nominal range
Temperature influence:	range -20…85 °C: ≤ 0.2 %/10K of nominal range range -40…-20 °C: ≤ 0.5 %/10K of nominal range

Output

Signal:	4…20 mA (20…4 mA) in 2-wire technology
Damping:	12 ms
Measuring rate:	250 Hz
Current range:	3.7…22 mA
Resolution:	6 µA
Load, R_B:	$R_B \leq (U_V\text{-}10V)/0.023\ A\ [\Omega]$ Ex-design $R_B \leq (U_V\text{-}20V)/0.023\ A\ [\Omega]$ U_V = supply voltage

Supply voltage

Standard version:

Functional range:	10…30 V DC

Ex-design:

Functional range:	20…27 V DC

Temperature ranges

Ambient:	-40…85 °C
Media:	-40…120 °C *
Storage:	-40…85 °C

* For pressure > 900 bar $T_{media} \leq 100$ °C

Temperature ranges for Ex-design according to XA_012.

Tests and certificates

Ex approval

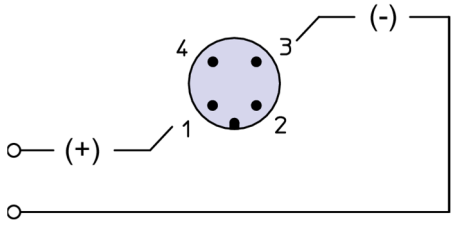
ATEX:	IBExU 14 ATEX 1119
	Ⓔx II 2G Ex ia IIC T4 Gb
	Ⓔx II 1G Ex ia IIC T4 Ga

For more detailed information see Ex Safety Instruction XA_012

EMC :	per EN 61326-1

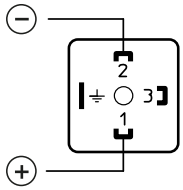
Connection diagram

circular connector M12



Do not wire terminal 2 + 4

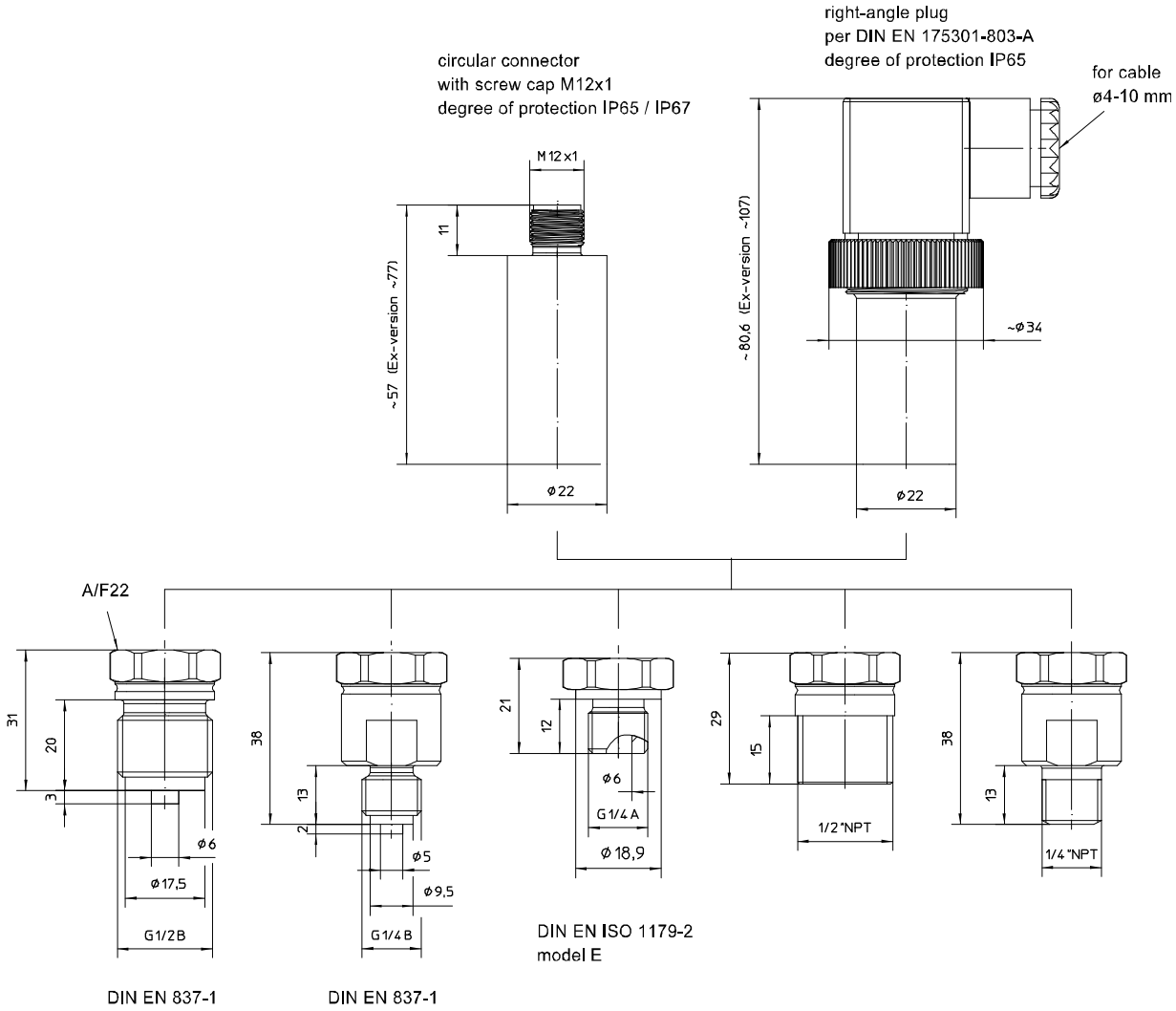
right-angle plug



Do not wire terminals 3 + ⏚

The transmitter is grounded via the process connection

Dimensions

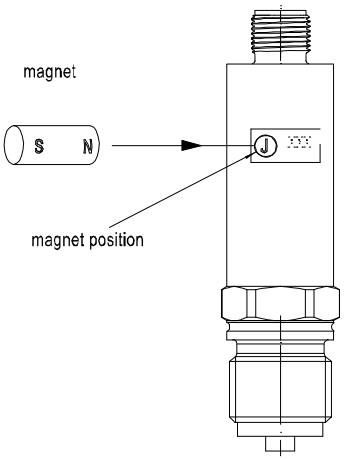


All dimensions are in mm

Zero point correction

The zero point can be set easily with a magnet within ± 10% of the nominal range.

To correct the zero point, hold a permanent magnet – a pin board magnet, for example – at the position marked on the pressure transmitter (i.e. the letter in a circle) within 30 to 120 seconds after the power has been switched on. To correct the zero point, atmospheric pressure has to be applied. Offsets for previously set values for lower range value with a constant measuring range will be corrected automatically by the device. A magnetic field applied outside of this time period has no effect on the setting. The power must be switched off and on before the zero point can be set again.



Order details

Pressure transmitter COMPACT HYDROGEN				
CA1600	pressure transmitter COMPACT HYDROGEN			
		measuring range	nominal range	overload limit
A3058.6	measuring ranges (bar)	0...10	40	80
A3059.6		0...16		
A3060.6		0…25		
A3061.6		0…40		
A3062.6		0…60	150	200
A3063.6		0…100		
A3064.6		0…160	400	470
A3065.6		0…250		
A3630.6		0…315		
A3066.6		0…400	1050	1050
A3067.6		0…500		
A3068.6		0…600		
A3629.6		0...640		
A3069.6		0...700		
A3070.6		0...1000		
A3620.6		0...1050		
A3091.6		-1...9	40	80
A3092.6		-1...15		
H1	output signal	4…20 mA, 2-wire technology (standard)		
H7		20…4 mA, 2-wire technology		
T110	electrical connection	right-angle plug per DIN EN 175 301-803-A		
T120		circular connector M12 x 1 (4-polig)		
K10	process connection internal diaphragm	G1/2 B, EN 837-1		
K12		G1/4 B, EN 837-1		
K24		G1/4 A, DIN EN ISO 1179-2 Form E incl. gasket NBR/FKM [1]		
K30		1/2" NPT		
K32		1/4" NPT		

Additional features (to be indicated in case of need, only)		
S69	Ex marking	Ⓔx II 2G Ex ia IIC T4 Gb
S78		Ⓔx II 1G Ex ia IIC T4 Ga [2]
W1201	calibration certificate per EN 10204-3.1, 5 measuring points	
W4001	Oil and grease free for oxygen [3]	

Order code (example): CA1600 – A3092.6 – H1 - T120 – K10

[1] Maximum permissible measuring range and overload limit ≤ 640 bar.

[2] With circular connector M12 only.

[3] For process connections K10, K12, K30 and K32, the application limits Tmax ≤ 85 °C and Pmax ≤ 90 bar apply.
For process connection K24, the application limits Tmax ≤ 60 °C and Pmax ≤ 40 bar apply.