

Pressure transmitter COMPACT ECONomic

for diaphragm seal operation

Type series CA1110



Application area

- Pharmaceutical industry
- Food industry
- Biotechnology
- General process technology
- Chemical and petrochemical industry

Features

- Digitale pressure transmitter
- Hygienic design according to EHEDG, selected process connections with EHEDG certificate
- Case and wetted parts of stainless steel, degree of protection IP 65
- Measuring ranges
 - 0...1 bar up to 0...700 bar
 - -1...0 bar up to -1...15 bar
- Various process connections with diaphragm seal technology
- Output signal 4...20 mA, 2-wire technology
- Accuracy $\leq 0.5\%$
- Easy zero point correction using a magnet
- Media temperature 140 °C (others upon request)

Options

- Labom REconnect quick coupling device for easy and safe separation and connection of diaphragm seal systems; Type series MK1000, see data sheet DB_D6-022
- Accuracy $\leq 0.3\%$
- Approvals / Certificates
 - Material certificate as per EN 10204-3.1
 - Roughness height rating with inspection certificate per EN 10204-3.1
- As per UKCA regulations
- Output signal (invers) 20...4 mA
- Hygienic design
- Wetted parts electropolished

Application

The pressure transmitter COMPACT ECONomic is suitable for measuring the relative and absolute pressure of gases, vapors and liquids. Thanks to a wide variety of process connections with diaphragm seal technology, the transmitter can be used for a wide range of applications with aggressive, highly viscous, crystallizing or deposit-prone media.

Technical data

Constructional design / case

Design:	Hygienic case with high moisture protection
Material:	Stainless steel mat.-no. 1.4301 (304)
Degree of protection per EN 60529:	Circular connector: IP 65 / IP 67 Right-angle plug: IP 65
Pressure compensation:	Ventilation via electrical connection
Electrical connection	■ Circular connector M12x1 (4 pin) ■ Right-angle plug per DIN EN 175 301-803-A (DIN 43650 model A)
Weight:	approx. 0.2 kg (without diaphragm seal)

Process connection

Design: See order details

Other designs upon request.

Material wetted parts

Diaphragm: See order details

Hygienic design

The surface roughness of the wetted parts made of stainless steel are executed per EHEDG Doc.8 and ASME BPE SF3.

In case of choosing the additional feature HY, we guarantee the following surface roughness values:

Diaphragm foil:	$R_a \leq 0.38 \mu\text{m}$
Laser welds:	$R_a \leq 0.76 \mu\text{m}$
Turned parts:	$R_a \leq 0.76 \mu\text{m}$

Further versions of hygienic design upon request.

Measuring system

Sensor:	Thin film sensor
System filling:	Synthetic oil FD1, free of silicone, FDA compliant

Measuring range

Nominal range [bar]	Standard measuring range * [bar]		Measuring spans		Overload limit ** [bar]
			min. [bar]	max. [bar]	
3	0...1 0...1.6 0...2.5	-1...0 -1...0.6 -1...1.5 -1...3	1	4	6
10	0...4 0...6 0...10	-1...5 -1...9	2.5	10	20
50	0...16 0...25 0...40	-1...15	12.5	50	100
200	0...60 0...100 0...160		50	200	400
700	0...250 0...400		250	700	1200

* Different measuring ranges and measuring units upon request.

** The maximum nominal pressure rating of the diaphragm seal must be observed.

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

Accuracy

General

Limit point setting:	per DIN 16086
Reference conditions:	per DIN EN 60770-1
Calibration position:	vertical mounting position
Accuracy: (Lin./Hyst./Rep.)	$\leq 0.5 \%$ of adjusted measuring range optional: $\leq 0.3 \%$ of adjusted measuring range
Long term drift:	$\leq 0.1 \%$ / year of nominal range
Temperature influence (transmitter):	$\leq 0.2 \%$ / 10 K of nominal range
Temperature influence (process connection):	Depending on the type of diaphragm seal Upon request we will provide a detailed error analysis.

Output

Signal:	4...20 mA (20...4 mA), 2-wire technology
Damping:	12 ms
Measuring rate:	80 Hz *
Current range:	3.7...22 mA
Resolution:	6 μA
Load, R_B :	$R_B \leq (U_V - 10V) / 0.022 \text{ A } [\Omega]$ U_V = supply voltage

* Other measuring rates upon request.

Supply voltage

Functional range: 10...32 V DC

Temperature ranges

Temperature ranges for the design of the diaphragm seal system (in combination with the pressure transmission fluid FD1):

Ambient: -10...50 °C

Media: -10...140 °C

Adjusted design temperature ranges within the following maximum values are possible on request:

Ambient: -40...85 °C

Media: -10...140 °C

Other medium temperature ranges upon request.

Vacuum application:

For detailed information on operating limits for negative pressure applications, see Technical Information TA_038.

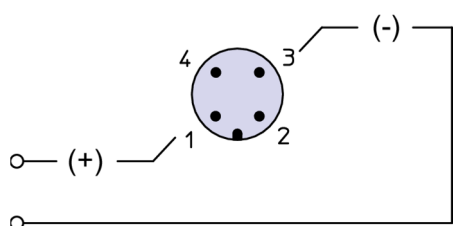
Storage: -40...85 °C

Tests and certificates

EMC : Per EN 61326-2-3 : 2013-07,
EN 61326-1 : 2013

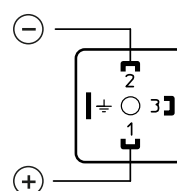
Connection diagram

circular connector M12



Do not wire terminal 2 + 4

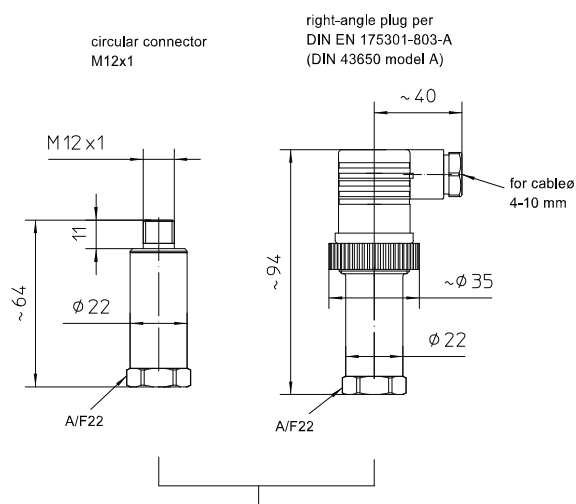
right-angle plug



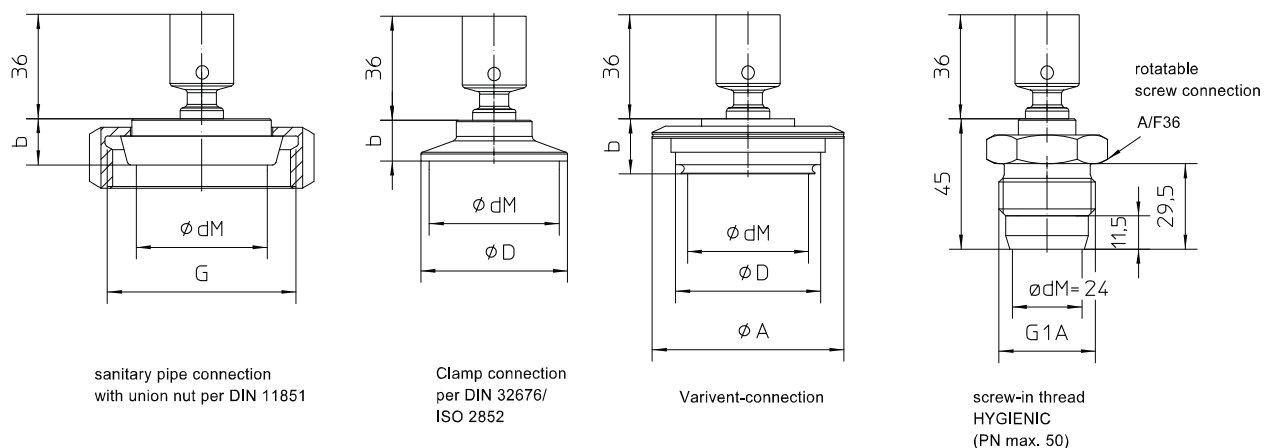
Do not wire terminals 3 + 

The transmitter is grounded via the process connection

Dimensions



Selection of process connections



Sanitary pipe connection with union nut per DIN 11851

DN	PN	dM	b	G
25	40	27	16	Rd.52x1/6"
32	40	34	16	Rd.58x1/6"
40	40	40	16	Rd.65x1/6"
50	25	51	17	Rd.78x1/6"

Clamp connection per DIN 32676 model C (Tri-Clamp) for pipes per ASME BPE

DN	PN	dM	b	D
3/4"	25	15.5	15	25
1"	25	22.6	14	50.5
1 1/2"	25	34	12	50.5
2"	16	46	14	64

Clamp connection per DIN 32676 model A (metric) for pipes per EN 10357 (DIN 11850)

DN	PN	dM	b	D
25	25	22.6	14	50.5
32	25	27	12	50.5
40	25	34	12	50.5
50	16	46	14	64

Clamp connection per ISO 2852 for pipes per ISO 2037

DN	PN	dM	b	D
25	16	22.6	14	50.5
38	16	34	12	50.5
51	16	46	14	64

Clamp connection per DIN 32676 model B (OD, ISO) for pipes per DIN EN ISO 1127

DN	PN	dM	b	D
26.9	25	22.6	14	50.5
33.7	25	27	12	50.5
42.4	25	34	12	64
48.3	16	40	14	64

VARIVENT® connection for VARINLINE® access unit

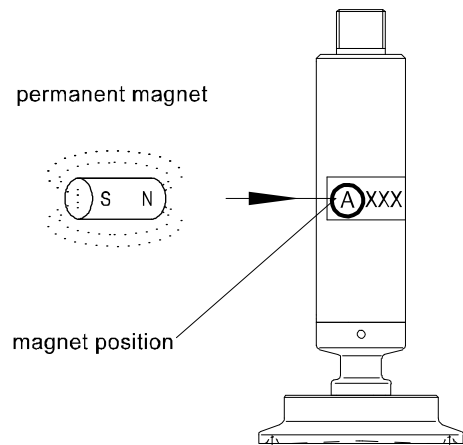
Connection	PN	dM	A	D
Form F	25	40	66	50
Form N	25	58	84	68

For further process connections for measuring ranges > 40 bar, see product range diaphragm seals.

Zero point correction

The zero point can be set easily with a magnet within $\pm 10\%$ 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 ECO for diaphragm seal operation			
CA1110	Pressure transmitter COMPACT ECO for diaphragm seal operation		
A3053	measuring ranges (bar)	0...1	
A3054		0...1.6	
A3055		0...2.5	
A3056		0...4	
A3057		0...6	
A3058		0...10	
A3059		0...16	
A3060		0...25	
A3061		0...40	
A3062		0... 60 ¹	
A3063		0... 100 ¹	
A3064		0... 160 ¹	
A3065		0... 250 ¹	
A3066		0... 400 ¹	
A3086		-1...0	
A3087		-1...0.6	
A3088		-1...1.5	
A3089		-1...3	
A3090		-1...5	
A3091		-1...9	
A3092		-1...15	
A9999		different measuring ranges upon request	
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 (DIN 43650, model A)	
T120		circular connector M12 (4-pin)	
K102	process connection material: ASTM 316L	sanitary pipe connection with union nut per DIN 11851 ¹	DN 25
K103			DN 32
K104			DN 40
K105			DN 50
K124		clamp connection per ISO 2852 for pipes per ISO 2037 ¹	DN 25 (1")
K126			DN 38 (1 1/2")
K127			DN 51 (2")
K144		clamp connection per DIN 32676, model A (metric) for pipes per EN 10357 (DIN 11850) ¹	DN 25
K146			DN 32
K147			DN 40
K148			DN 50
K213		clamp connection per DIN 32676, model B (OD, ISO) for pipes per DIN EN ISO 1127 ¹	DN 26.9
K214			DN 33.7
K215			DN 42.4
K216			DN 48.3
K134		clamp connection per DIN 32676, model C (Tri-Clamp) for pipes per ASME BPE ¹	DN 3/4" ³
K136			DN 1"
K137			DN 1 1/2"
K138			DN 2"
K152		VARIVENT® connection ²	Form F (D=50) for VARINLINE® access unit
K153			Form N (D=68) for VARINLINE® access unit
K80		screw-in thread HYGIENIC	G 1 A rotatable, no gasket
...		other process connections (diaphragm seals) upon request	
HY	surface roughness (wetted parts)	standard	
		hygienic version as per EHEDG Doc.8 and ASME BPE SF3	

Additional features (to be indicated if required)	
Q3	accuracy ≤ 0.3 %
W1020	material certificate per DIN EN 10204-3.1, wetted parts
W1223	roughness measurement
W2660	as per UKCA regulations
W4035	elektropolishing, wetted parts

Order code (example): CA1110 – A3054 – H1 - T120 - ...

¹ Process connections for measuring range > 40 bar see product range diaphragm seals.

² EHEDG certified only in connection with hygienic design (order code option HY). EHEDG certificate valid only if gaskets are used that are listed in the "EHEDG position paper".

³ For a function calculation and optimum system design it is necessary to specify the operation temperature.