Pressure transmitter UNIVERSAL

for diaphragm seal operation

Type series CC102 ./CC202 .

Application area

· Food industry
· Pharmaceutical industry
· Biotechnology

Features

- Measuring ranges 0...160 mbar to 0...400 bar rel.
  0...0.4 bar to 0...25 bar abs
- Piezoresistive sensor element
- Diaphragm seal operation with reduced inner volume
- Zero point and measuring span can be adjusted externally by means of a potentiometer
- Measuring system overload protected
- Stainless steel housing as standard or field housing
- Degree of protection IP 65, option: IP 67
- Output signal: 4...20 mA, option: 0...20 mA, 0...10 V DC

Options

- Explosion protection
- Asper UKCA regulations

Application

The analog pressure transmitter UNIVERSAL is suited for relative and absolute pressure measurement. Because of the reduced inner volume of the pressure chamber the transmitter is especially suited for connection to diaphragm seals. The diaphragm seal can be connected directly, via a capillary or via a temperature decoupler. For further information see diaphragm seal data sheets D5.

Technical Data

Housing designs
Standard housing with right angle plug
material: st. steel mat.-no. 1.4301 (304)
degree of protection: IP 65
silicon cover plate for trimming potentiometers.
Right angle plug as per DIN EN 175301-803-A (DIN 43650, form A) with cable gland M16x1.5 mm, cable diameter 4...10 mm.
Inner chamber aeration for measuring ranges ≤ 10 bar.

Field housing, solid design
material: st. steel mat.-no. 1.4301 (304)
degrees of protection:
standard
· IP 65, inner chamber aeration via integrated sintered filter, only for excess pressure measuring ranges ≤ 10 bar.
Option:
IP 67, inner chamber aeration via connection cable for excess pressure measuring range ≤ 10 bar.
Screwable cover ring with O-ring seal for the externally accessible trimming potentiometers.
Screwable cover for connection chamber with O-ring thread protector.
Connection terminals 4 mm².
Cable gland M16x1.5 for cable diameter 4.5...10 mm, material polyamide.

Process connection
diaphragm seal systems
see product range D5

Measuring system
piezoresistive measuring bridge

Material
socket: st. steel mat.no. 1.4404 (316L)

Weights
standard housing: approx. 200 g
field housing: approx. 750 g
without diaphragm seal

Storage temperature range
-25...+80 °C

Limiting temperature range
-25...+70 °C

Rated temperature range
-10...+70 °C

Temperature influence
on zero point: ≤ 0.03 % of meas. span /K
on meas. span: ≤ 0.03 % of meas. span /K

Auxiliary power supply
standard version:
· nominal voltage 24 V DC
· function range
2-wire circuitry 14...30 V DC
3-wire circuitry 16...30 V DC
· max.permiss.operating voltage 30 V DC
Ex design:
· permiss. voltage range of 2-wire circuitry 15...30 V DC
Ex design:
· permiss. voltage range of 3-wire circuitry 16...30 V DC

Standard measuring ranges
see order details

Overload limits UE
for short-time overload, see order details

Overload influence
≤ 0.1 % f.s.

Output signal
4...20 mA, 2-wire circuitry, standard.
Further possibilities see order details

Test output (with field housing only)
non interruptible output current measurement via integrated LOC diode

Current limitation in output signal
max. output current approx. 30 mA

Supply voltage influence
≤ 0.2 % f.s. / 10 V

To be continued on page 2

Linearity error incl. hysteresis
≤ 0.3 % f.s. (limit point calibration)

Adjustable range
zero point and measuring span
approx. ± 10 %

Response time
≤ 20 ms

Ex-approval
The limit values detailed in the EC-Type Examination Certificate are to be observed!

EC-Type Examination Certificate
TÜV 02 ATEX 1971 X and
IECEx TUN 04.0008X
type of ex-protection:
Ⓔx II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb
Ⓔx II 2G Ex ia IIC T4/T5/T6 Gb

IECEx TUN 04.0008X
type of ex-protection:
Ex ia IIC T4/T5/T6 Ga/Gb
Ex ia IIC T4/T5/T6 Gb
Ex ia I Ma

Since the intrinsically safe circuits are connected with the earth potential for safety reasons, potential equalization has to exist in the complete course of the erection of the intrinsically safe circuits.

Ambient temperatures
Ⓔx II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb
Ex ia IIC T4/T5/T6 Ga/Gb

Ta [°C]	TM [°C]	temperature class
70	40	T6
70	60	T5
70	60	T4

Ambient temperatures
Ⓔx II 2G Ex ia IIC T4/T5/T6 Gb
Ex ia IIC T4/T5/T6 Gb

Ta [°C]	TM [°C]	temperature class
70	55	T6
70	70	T5
70	70	T4

Ambient temperatures Ex ia I Ma:
Ta = Tm 70°C max

Electrical data
Sum of maximum values in the intrinsically safe circuits
Ui = 30 V
Ii = 100 mA
Pi = 0,7 W

The table shows the values for different pressure transmitter signals:

signal mode	Ci [nF]	Li [µH]
2-wire 4...20 mA	33	20
3-wire 0(2)...10 V	43	30
3-wire (0)4...20 mA	43	30

Caution:
Make sure that there is equipotential bonding along the entire wiring run both inside and outside the explosion hazardous area.

Switch off device if it is installed in zone 0 and in temperature class T5 and T6 and it fails!

Burden
- current output
  2-wire circuitry
  standard version $R_a = \frac{U_B - 14\ V}{20\ mA}$ (KOhm)
  with explosion protection $R_a = \frac{U_B - 15\ V}{20\ mA}$ (KOhm)

- voltage output
  a current of 20 mA can be obtained in the case of devices with power output.

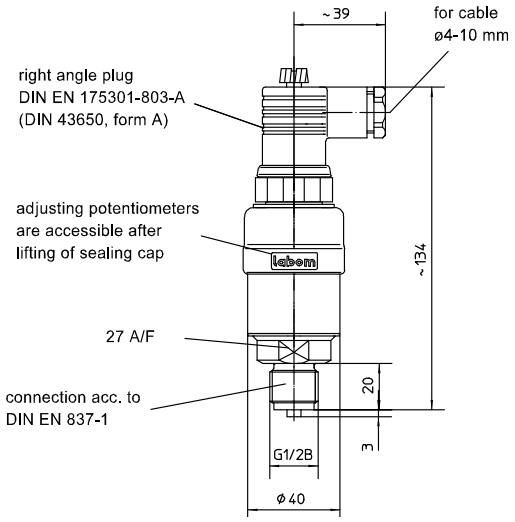
Burden influence
for 500 Ohm burden of change: ≤ 0.1 % f.s.

EMC-Test
· noise immunity as per EN 50082, section 2, March 95 issue for industry
· emitted interference as per EN 50081, section 1, 1993 issue for residential and industrial areas

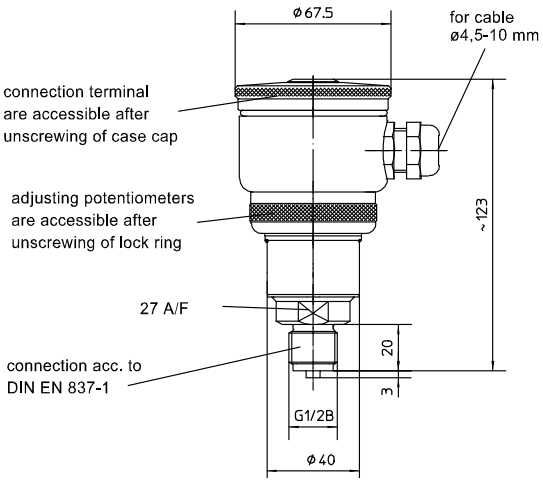
Information on other models see order details or upon request.

Dimensions

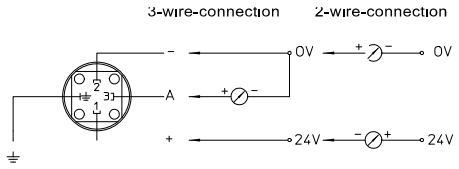
design standard housing



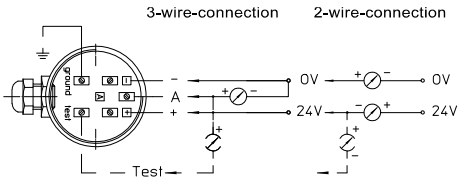
design field housing



Connection diagram

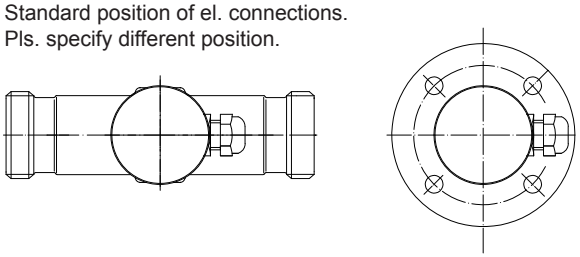


design standard housing



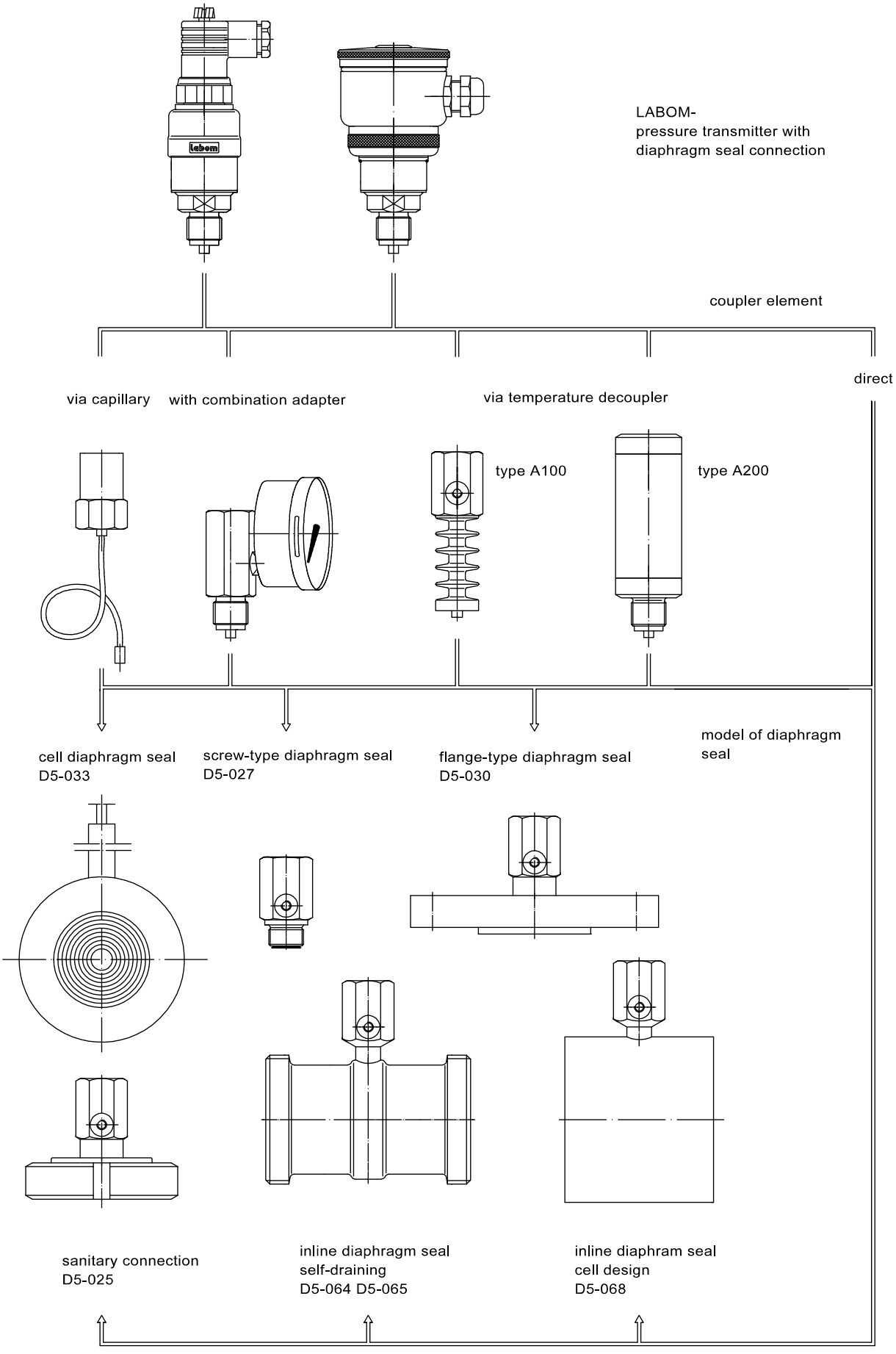
design field housing

Standard position of el. connections.
Pls. specify different position.



Design

different models of diaphrahm seals
with representation of usual device connections



Order details

Pressure transmitter UNIVERSAL for diaphragm seal operation			
design	· standard housing		**CC102 .**
	· field housing		**CC202 .**
version	· standard		**0**
	· explosion protection, type of ex-protection s. below		**1**
measuring range		overload protection UE bar [1]	
	-1...0.6 bar [4]	10	**A1087**
	-1...1.5 bar [4]	10	**A1088**
	-1...3 bar [4]	16	**A1089**
	-1...5 bar [4]	30	**A1090**
	-1...9 bar [4]	30	**A1091**
	-1...15 bar [4]	30	**A1092**
	0...160 mbar	1	**A1009**
	0...250 mbar	1	**A1010**
	0...0.4 bar	3	**A1051**
	0...0.6 bar	3	**A1052**
	0...1 bar	3	**A1053**
	0.2...1 bar	10	**A1080**
	0...1.6 bar	10	**A1054**
	0...2.5 bar	10	**A1055**
	0...4 bar	20	**A1056**
	0...6 bar	60	**A1057**
	0...10 bar	60	**A1058**
	0...16 bar	60	**A1059**
	0...25 bar	60	**A1060**
	0...40 bar	100	**A1061**
	0...60 bar	200	**A1062**
	0...100 bar	200	**A1063**
	0...160 bar	250	**A1064**
	0...250 bar	500	**A1065**
	0...400 bar	500	**A1066**
	0...0.4 bar abs	3	**B1051**
	0...0.6 bar abs	3	**B1052**
	0...1 bar abs	3	**B1053**
	0...1.6 bar abs	10	**B1054**
	0...2.5 bar abs	10	**B1055**
	0...4 bar abs	10	**B1056**
	0...6 bar abs	60	**B1057**
	0...10 bar abs	60	**B1058**
	0...16 bar abs	60	**B1059**
	0...25 bar abs	60	**B1060**
output signal	· 4...20 mA, 2-wire		**H1**
	· 0...20 mA, 3-wire		**H2**
	· 0...10 V, 3-wire		**H4**
	· 0...5 V, 3-wire		**H6**
additional features (to be indicated in case of need, only)			
type of ex-protection (for ex-protection only)	· II 2G Ex ia IIC T4 Gb		**S69**
	· II 2G Ex ia IIC T5/T6 Gb, standard		**S68**
	· II 1/2G Ex ia IIC T4 Ga/Gb		**S62**
	· II 1/2G Ex ia IIC T5/T6 Ga/Gb		**S66**
	IECEx	· Ex ia IIC T4/T5/T6 Ga/Gb · Ex ia IIC T4/T5/T6 Gb · Ex ia I Ma	**S76**
degree of protection [3] (field housing)	· IP 65 (standard) for measuring ranges ≤ 16 bar [5]		**T2**
	· IP 67 [2]		**T1**
as per UKCA regulations			**W2660**

Order code (example):	CC1020	A1010	H4			

[1] special excess pressure protection (UE) upon request
[2] aerated cable with < 10 bar is required
[3] design field housing only
[4] negative relative pressure ranges (e.g. -1...+1 bar) are adjusted at works to 0...100%, e.g. 4...20mA.
Temporary operation up to -1 bar at room temperature and continuous operation up to -500 mbar at max. 50°C is admissible.
Long-term vacuum measurements at temperatures above +50°C may cause changes in the properties of the measurement device.
Vacuum-proof designs are available upon request
[5] not valid for absolute pressure

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