



Features

- Measuring ranges 0...160 mbar up to 0...160 bar rel.
0...0.4 bar up to 0...25 bar abs
- Piezoresistive sensor element
- Measuring system overload protected
- Zero point and measuring span can be adjusted externally by means of a potentiometer
- Internal diaphragm type series CB1(2)02 .
- Flush mounted diaphragm type series CE1(2)02 .
- Wetted parts of stainless steel, completely welded
- 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 for gases
- Approval German Lloyd

Application area

- Chemical and petrochemical industry
- Process engineering
- Shipping
- General process technology

Application

The analog pressure transmitter UNIVERSAL is suited for measuring the relative and absolute pressure of gases, vapors and liquids.

The area of application lies in general process measurement technology. There are two different designs of housings available: standard housing with right angle plug or stainless steel field housing for use in tough environments.

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, if aeration via cable is impossible.

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 case cap for connection chamber.

Connection terminals 4 mm².

Cable gland M16x1.5 for cable diameter 4.5...10 mm, material polyamide.

Process connection

- G 1/2 B, DIN EN 837-1
- G 1/2 B, flush mounted

Measuring system

piezoresistive measuring bridge, protected by integrated stainless-steel diaphragm.
Completely welded system

Filling material

silicone-free, synthetic oil

Material

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

Weights

standard housing: approx. 300 g
field housing: approx. 750 g

Storage temperature range

-25...+80 °C

Limiting temperature range

-25...+70 °C

Rated temperature range

-10...+70 °C

Temperature influence

on zero point and meas. span:
≤ 0.02 % of meas. span/K

Auxiliary power supply

standard version:

- nominal voltage 24 V DC
- function range
- 2-wire technology 14...30 V DC
- 3-wire technology 16...30 V DC
- max.permiss.operating voltage 30 V DC

Ex design:

· permis. voltage range of 2-wire circuitry
15...30 V DC

Ex design:

· permis. 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 technology, 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

Technical Data (continued)

Linearity error incl. hysteresis
 $\leq 0.3\%$ f.s. (limit point calibration)

Adjustable range
 zero point and measuring span approx.
 $\pm 10\%$

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:

Ex II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb
 Ex 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

Ex 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

Ex 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 $R_a = \frac{U_a - 14 V}{20 \text{ mA}}$ (KOhm)

with explosion protection $R_a = \frac{U_b - 15 V}{20 \text{ mA}}$ (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: $\leq 0.1\%$ f.s.

GL approval (German Lloyd)

per certificate no. 60208-09 HH

EMC-Test

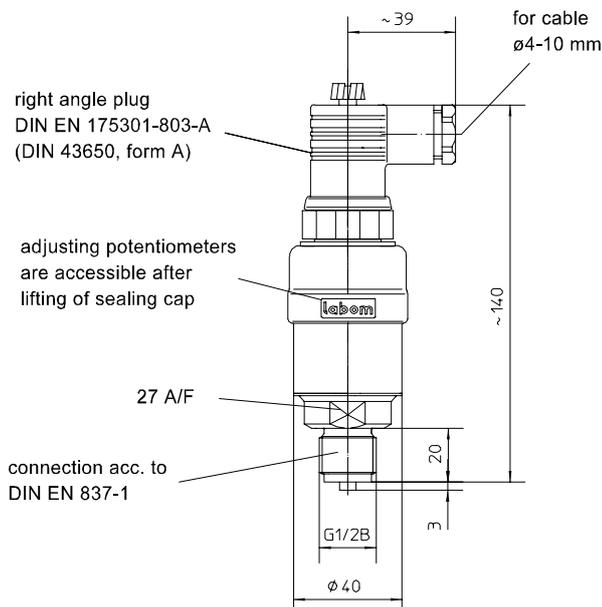
- noise immunity as per EN 50082, section 2, March 95 issue for industry
- emitted interference as per EN 50081, section 1, 1993 issue for residential and industrial areas

Information on other models see order details or upon request.

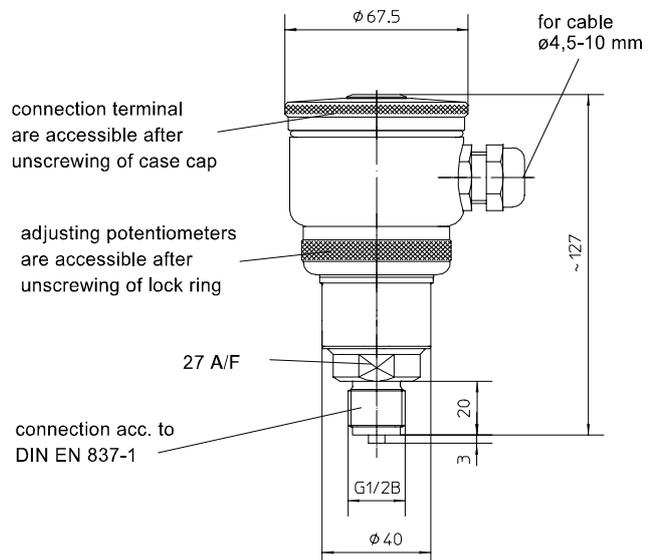
Dimensions

Pressure transmitter UNIVERSAL with internal diaphragm type series CB 1(2)02.

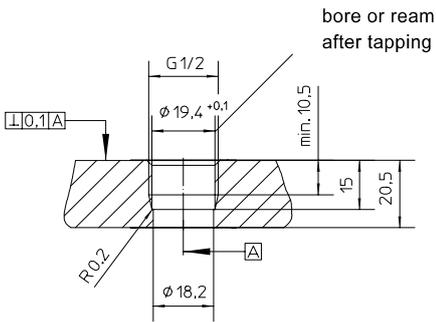
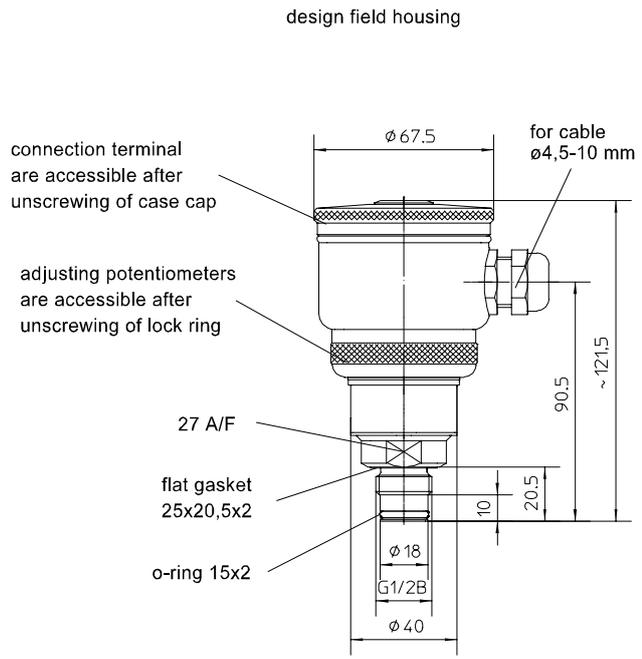
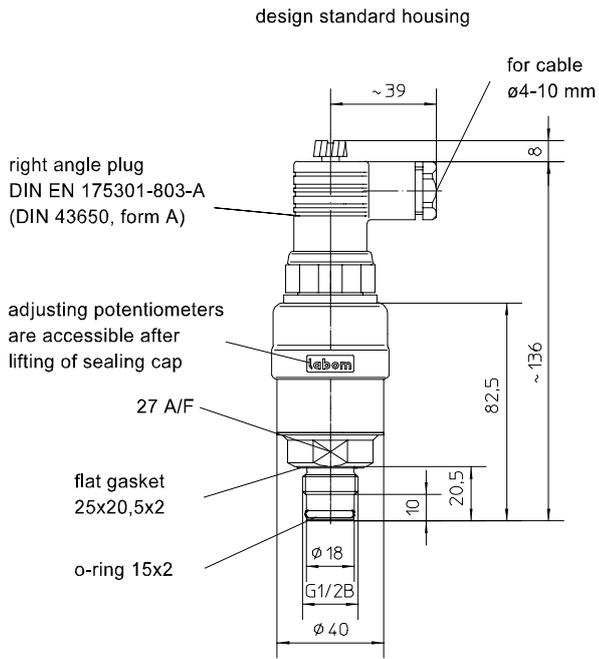
design standard housing



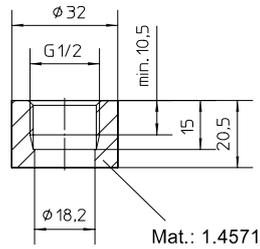
design field housing



Pressure transmitter UNIVERSAL with flush mounted diaphragm type series CE 1(2)01.

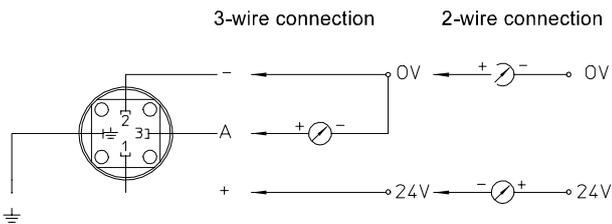


screw-in hole
(example)

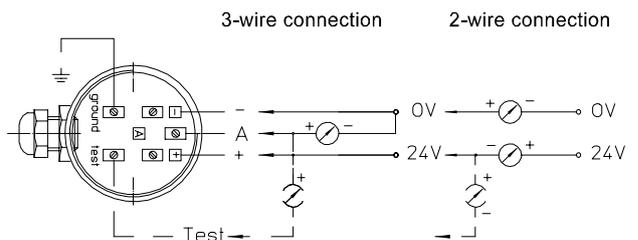


welded socket
(option)

Connection diagram



standard housing



field housing

Order Details - please give additional specifications for models not listed -

Pressure transmitter UNIVERSAL with internal diaphragm			
design	· standard housing	CB102 .	
	· field housing	CB202 .	
version	· standard	0	
	· explosion protection, type of ex-protection s. below	1	
meas. range	· per table ←	
output signal	· 4...20 mA, 2-wire technology		H1
	· 0...20 mA, 3-wire technology		H2
	· 0...10 V, 3-wire technology		H4
	· 0...5 V, 3-wire technology		H6
additional features (to be indicated in case of need, only)			
degree of protection ³	· IP 65 (standard) ⁵		T2
	· IP 67 ²		T1
type of ex-protection (for ex-protection only)	· Ex II 2G Ex ia IIC T4 Gb		S69
	· Ex II 2G Ex ia IIC T5/T6 Gb, standard		S68
	· Ex II 1/2G Ex ia IIC T4 Ga/Gb		S62
	· Ex 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	
approval German Lloyd			W2652
Order code (example):		CB1021	A1010 H4

standard measuring ranges and overload protection UE		
meas. range	UE bar ¹	order code
-1...0.6 bar ⁴	10	A1087
-1...1.5 bar ⁴	10	A1088
-1...3 bar ⁴	20	A1089
-1...5 bar ⁴	20	A1090
-1...9 bar ⁴	60	A1091
-1...15 bar ⁴	60	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	3	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...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

Pressure transmitter UNIVERSAL with flush mounted diaphragm			
design	· standard housing	CE101 .	
	· field housing	CE201 .	
version	· standard	0	
	· explosion protection, type of ex-protection s. below	1	
measuring range		UE bar ¹	
	-1...1.5 bar ⁴	10	A1088
	-1...3 bar ⁴	20	A1089
	-1...5 bar ⁴	20	A1090
	-1...9 bar ⁴	60	A1091
	-1...15 bar ⁴	60	A1092
	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...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 technology		H1
	· 0...20 mA, 3-wire technology		H2
	· 0...10 V, 3-wire technology		H4
	· 0...5 V, 3-wire technology		H6
additional features (to be indicated in case of need, only)			
type of ex-protection (for ex-protection only)	· Ex II 2G Ex ia IIC T4 Gb		S69
	· Ex II 2G Ex ia IIC T5/T6 Gb, standard		S68
	· Ex II 1/2G Ex ia IIC T4 Ga/Gb		S62
	· Ex 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	
degree of protection ³ (field housing)	· IP 65 (standard), measuring range ≤ 16 bar ⁵		T2
	· IP 67 ²		T1
welded socket to process connection			V2
approval German Lloyd			W2652
Order code (example):		CE1010	A1057 H2

¹ special overload 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