# Pressure transmitter COMPACT

## for general application, Type series CB60../CE61..



### Application area

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

## Features

- Measuring ranges: 0...1 bar up to 0...400 bar
- Linearity error including hysteresis < 0.2 % f.s.
- Piezoresistive measuring system
- Internal diaphragm (type series CB60 . .)
- Flush mounted diaphragm (type series CE61 . .)
- Wetted parts of stainless steel; completely welded
- Stainless steel case as standard or field housing
- Degree of protection IP 65, alternatively IP 67
- Output signal: 4…20 mA
- Process temperature up to 140 °C (short term, for sterilisation)

### Options

- Approvals/Certificates
  - Explosion protection for gases
  - Certificate of measuring equipment for Russian Federation
  - Classification per SIL2
  - GL-approval

### Application

The device converts pressure measurements into a load-independent current signal. Because of their robust design these transmitters are suitable for use in tough environments. The process temperature is allowed up to 140 °C (short term). The flush mounted diaphragm allows dead-zone free measuring. The transmitters have extensive circuitry which ensures electromagnetic compatibility.

## Technical data

### Constructional design / case

| | | |
|---|---|---|
| Design: | ■ Field housing IP 65 or IP 67, with cable gland<br>■ Right-angle plug per EN 175301-803-A (DIN 43650, model A), IP 65<br>■ Cable connection IP 67<br>■ Circular connector M12, IP 65 | |
| Construction: | Electronics unit encapsulated with silicone | |
| Material: | Stainless steel mat.-no. 1.4301 (304) | |
| Pressure compensation: | Inner chamber aeration for measuring ranges < 16 bar over case thread or connection cable (depending on design) | |
| Weights: | Case with connector | approx. 200 g |
| | field housing | + approx. 260 g |
| | with temperature decoupler | + approx. 50 g |

### Process connection

| | |
|---|---|
| Design: | See order details |

### Material wetted parts

| | | |
|---|---|---|
| Sensor : | piezoresistive | thin film |
| Sensor diaphragm: | 1.4404/1.4435 (316L) | 1.4542 (630) |
| Socket: | 1.4404/1.4435 (316L) | 1.4301/1.4404 (304/316L) |
| Diaphragm: | Stainless steel mat.-no. 1.4404 (316L) | |
| Socket: | Stainless steel mat.-no. 1.4404 (316L) | |

### Measuring system

| | | |
|---|---|---|
| Sensor: | Piezoresistive | Thin film |
| Sensor filling: | Synthetic oil, free of silicone FD1, FDA listed | without |

## Accuracy

| | |
|---|---|
| Lin./Hyst.: | < 0.2 % f.s.<br>< 0.3 % f.s. for mr ≥ 0…60 bar<br>Fixed point adjustment |
| Adjustment: | < ± 0.2 % f.s. |
| Temperature effect: | At 0…50 °C:<br>Zero point ≤ 0.2 % / 10K<br>Span ≤ 0.2 % / 10K |

## Output

| | |
|---|---|
| Signal: | 4…20 mA, 2-wire technology |
| Adjusting range | approx. ± 5 % f.s., zero point and measuring span separately adjustable |
| Delay: | ≤ 20 ms |
| Current limitation: | ≤ 30 mA |
| Load, $R_B$: | $R_B \leq (U_V\text{-}6V)/0.02A$ [KOhm]<br>$U_V$ = supply voltage |
| Load influence: | for load change 500 Ohm:<br>≤ 0.1 % f.s. |

## Supply voltage

standard design:

| | |
|---|---|
| Nominal voltage: | 24 V DC |
| Functional range: | 6…30 V DC |
| max. allowable: | 30 V DC |
| Influence: | ≤ 0.01 % v.E. /V |

## Temperature ranges

| | |
|---|---|
| Ambient: | -25…70 °C |
| Media: | -10...80 °C<br>with temperature decoupler (short term, for sterilization):<br>-10...140 °C |
| Storage: | -40…90 °C |

Further temperature ranges upon request.

## Tests and certificates

Ex approval: CENELEC approval according to ATEX
Explosion protection intrinsically safe
TÜV 00 ATEX 1557 X
Ⓔx II 2G Ex ib IIC T6 Gb

| | |
|---|---|
| $U_{max}$ | ≤ 30 V DC |
| $I_{max}$ | ≤ 150 mA |
| $P_{max}$ | ≤ 1 W |
| Ci | ≤ 49 nF |
| Li | ≤ 33 µH |

SIL 2: Functional safety per EN 61508, classification per SIL2
TÜV-Reg.-No. 44 799 13190204

GL approval: Per certificate no. 60208-09 HH

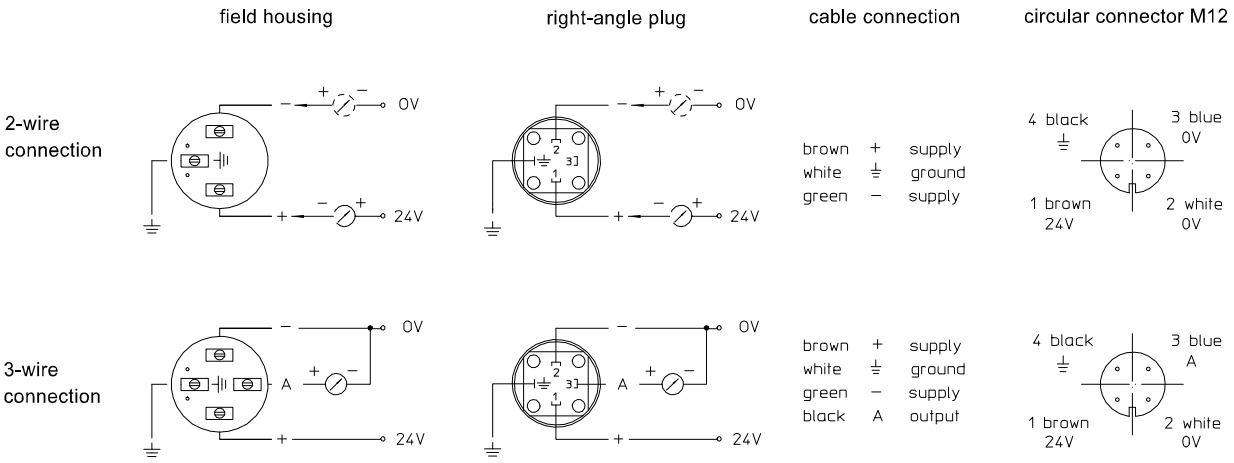
- EAC declaration upon request
- Certificate of measuring equipment for Russian Federation

## EMC test

EMC:
- 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.

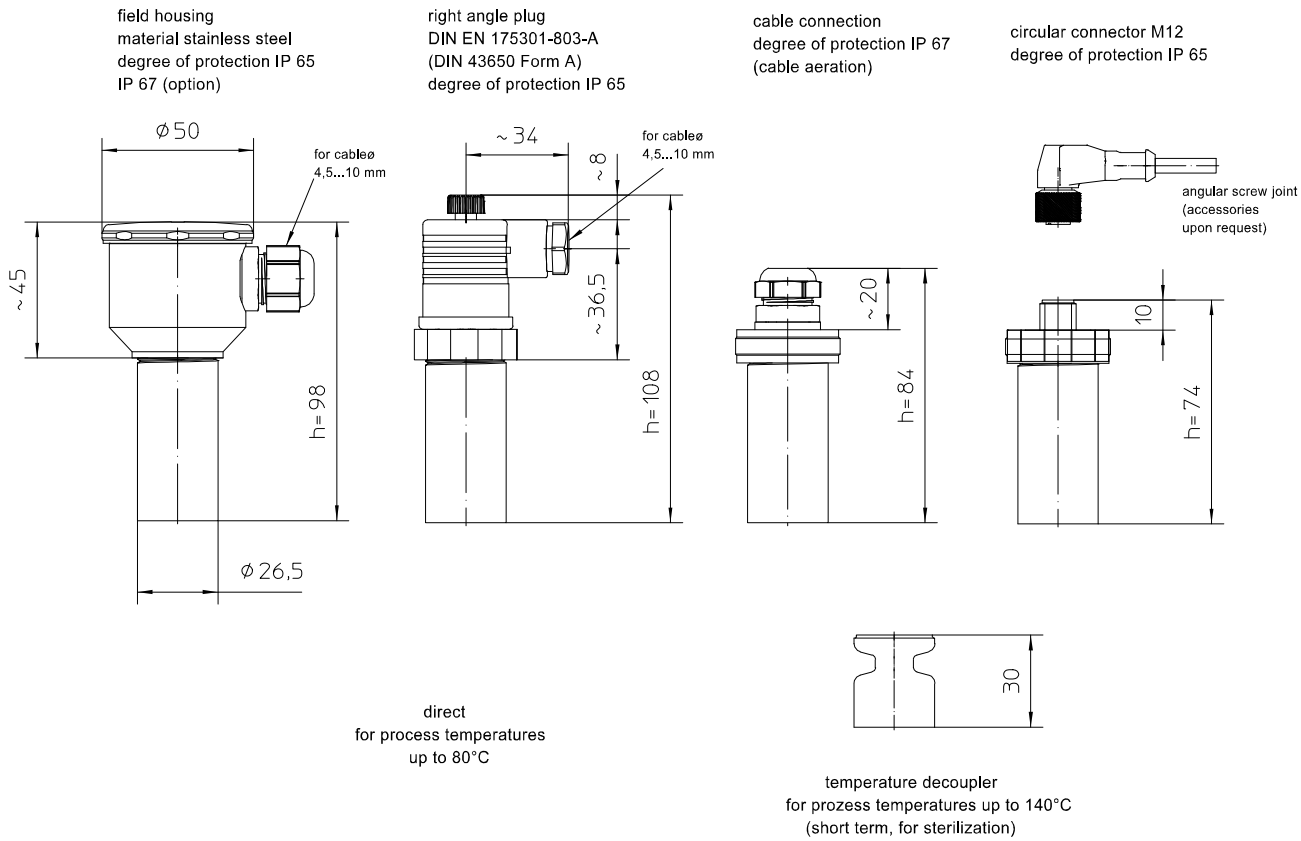
The device has no own emission.

## Connection diagram



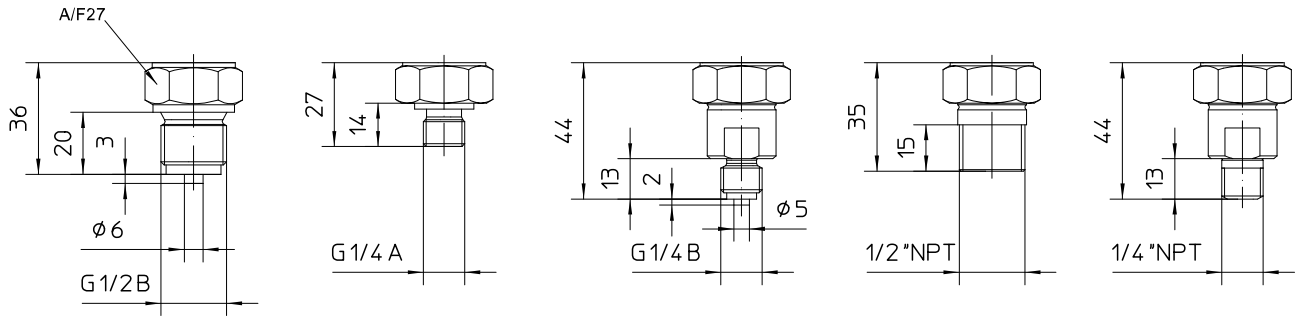

## Dimensions

### Case




All dimensions are in mm

## Process connections piezoresistive, internal diaphragm




standard
G1/2B DIN EN 837-1

G1/4A DIN EN ISO 1179-2
(DIN 3852-11) model E

G1/4B DIN EN 837-1

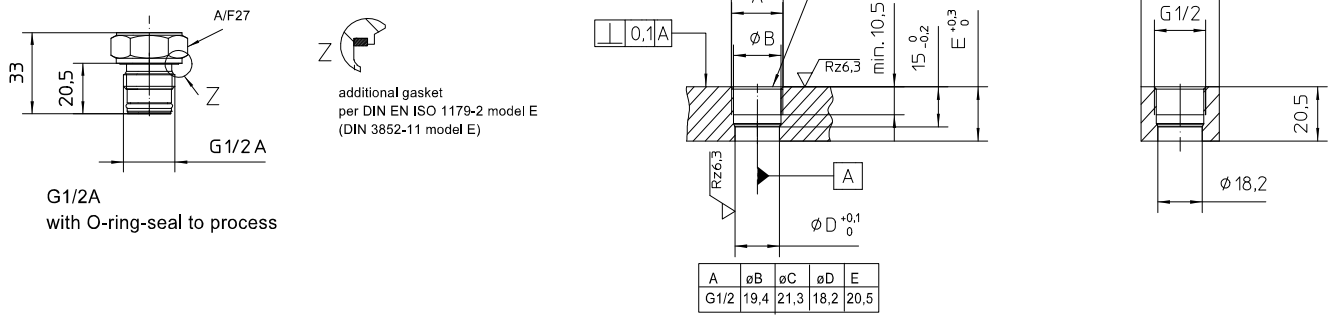
1/2"NPT

1/4"NPT

All dimensions are in mm

## Process connection piezoresistive, flush mounted diaphragm

screw-in hole/welded socket for flush mounted diaphragm
with O-ring (type series CE6100)

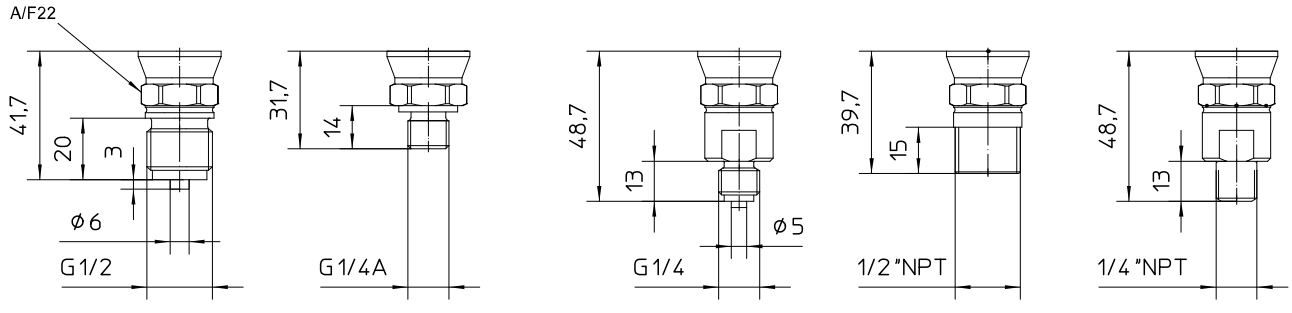



| A | øB | øC | øD | E |
|---|---|---|---|---|
| G1/2 | 19,4 | 21,3 | 18,2 | 20,5 |

G1/2A
with O-ring-seal to process

All dimensions are in mm

## Process connection thin film, internal diaphragm




standard
G1/2B DIN EN 837-1

G1/4A DIN EN ISO 1179-2
(DIN 3852-11) model E

G1/4B DIN EN 837-1

1/2"NPT

1/4"NPT

All dimensions are in mm

# Order details

## Pressure transmitter COMPACT for general application, Type series CB60 . ./CE61 . .

| Order details CB60../CE61.. | | | |
|---|---|---|---|
| **CB601 .** | design | internal diaphragm | for media temperature up to 80 °C |
| **CB602 .** | | | for media temperature up to 140 °C |
| **CE611 .** | | flush mounted diaphragm | for media temperature up to 80 °C |
| **CE612 .** | | | for media temperature up to 140 °C |
| **0** | Ex-protection | without | |
| **1** | | ⟨Ex⟩ II 2 G Ex ib IIC T6 Gb | |

| | | measuring range | overload limit | CB600 connection | CE6100 connection with O-ring | sensor type |
|---|---|---|---|---|---|---|
| **A1053** | measuring range | 0..1 bar | 3 bar | x | x | piezoresistive |
| **A1054** | | 0...1.6 bar | 10 bar | x | x | |
| **A1055** | | 0...2.5 bar | 10 bar | x | x | |
| **A1056** | | 0...4 bar | 20 bar | x | x | |
| **A1057** | | 0...6 bar | 60 bar | x | x | |
| **A1058** | | 0...10 bar | 60 bar | x | x | |
| **A1059** | | 0...16 bar | 60 bar | x | x | |
| **A1060** | | 0...25 bar | 60 bar | x | x | |
| **A1061** | | 0... 40 bar | 100 bar | x | x | |
| **A1062** | | 0...60 bar | 200 bar | x | x | |
| **A1063** | | 0...100 bar | 200 bar | x | - | |
| **A1064** | | 0...160 bar | 250 bar | x | - | |
| **A3065** | | 0...250 bar | 600 bar | x | - | thin film |
| **A3066** | | 0...400 bar | 600 bar | x | - | |
| **A1086** | | -1...0 bar [1] | 3 bar | x | x | piezoresistive |
| **A1087** | | -1...0.6 bar [1] | 10 bar | x | x | |
| **A1088** | | -1...1.5 bar [1] | 10 bar | x | x | |
| **A1089** | | -1...3 bar [1] | 20 bar | x | x | |
| **A1090** | | -1...5 bar [1] | 20 bar | x | x | |
| **A1091** | | -1...9 bar [1] | 60 bar | x | x | |
| **A1092** | | -1...15 bar [1] | 60 bar | x | x | |
| **B1053** | | 0...1 bar abs | 3 bar | x | x | |
| **B1054** | | 0...1.6 bar abs | 10 bar | x | x | |
| **B1055** | | 0...2.5 bar abs | 10 bar | x | x | |
| **B1056** | | 0...4 bar abs | 10 bar | x | x | |
| **B1057** | | 0...6 bar abs | 60 bar | x | x | |
| **B1058** | | 0...10 bar abs | 60 bar | x | x | |
| **B1059** | | 0...16 bar abs | 60 bar | x | x | |
| **B1060** | | 0...25 bar abs | 60 bar | x | x | |

| | | | |
|---|---|---|---|
| **H1** | output signal | 4...20 mA, 2-wire technology | |
| **K1002** | process connection material stainless steel | internal diaphragm (type series CB60..) | G1/4 B per EN 837-1 |
| **K1010** | | | G1/2 B per EN 837-1 |
| **K1024** | | | G1/4 A per DIN EN ISO 1179-2 (DIN 3852-11) model E |
| **K1030** | | | 1/2" NPT |
| **K1072** | | | 1/4" NPT |
| **K1010** | | flush mounted diaphragm (type series CE61..) | G1/2 A with O-ring |
| **T410** | case electrical connection | field housing of stainless steel, with cable gland | IP 65, measuring ranges ≤ 16 bar, only [2] |
| **T420** | | | IP 67 |
| **T110** | | right angle plug according to EN 175301-803-A (DIN 43650 model A), IP 65 | |
| **T310** | | cable connection IP 67 | 2 m cable lenght |
| **T311** | | | 5 m cable lenght |
| **T312** | | | 10 m cable lenght |
| **T319** | | | cable length as in writing |
| **T120** | | circular connector M12, IP 65 [3] | |

| Additional features (to be indicated if required) | |
|---|---|
| **W2602** | functional safety per EN 61508, classificatio per SIL2 |
| **W2652** | approval German Lloyd |
| **W2673** | certificate of measuring equipment for Russian Federation |

| Accessories | |
|---|---|
| **MC1000-A1** | welded socket of stainless steel G 1/2" |

**Order code (example): CB6011 – A1053 – H1 - K1010 - …**

[1] negative relative pressure ranges (e.g.-1...+1 bar) are adjusted at works to 0...100 %, e.g. 4...20 mA. Long term vacuum measurements at relative measuring ranges may cause changes in the properties of the measurement device. Vacuum-proof designs are available upon request.

[2] not valid for absolute pressure

[3] connectors with cable connection see product group D6