

Differential pressure and level transmitter

PASCAL Ci4 Delta P, highly overload protected

Type series CI4350



Application area

- General process engineering
- Chemical industry
- Petrochemical industry
- General process technology
- Power generation
- Environmental engineering
- Water / wastewater

Features

- Differential pressure transmitter with diaphragm seal
- Simultaneous display of differential pressure and static pressure
- Reference accuracy 0.07 %
- Long-term stability 0,1 % within 5 years
- Nominal ranges 100 mbar to 16 bar
- Turndown up to 100:1
- Stainless steel case in sturdy design, degree of protection IP 65/67
- High-resolution display with intuitive 4-button operation and backlight
- Comprehensive parameterising functions
- Comprehensive simulation and diagnostic functions
- Quick access to device data
- Development according to SIL2
- Maximum working pressure 160 bar
- Measuring rate up to 50 Hz
- Output signal 4...20 mA with HART® protocol
- Media temperature -90...400 °C
- Configuration memory
- Digital communication via PDM, FDT/DTM, 375/475 Field Communicator
- Output functions: linear, invers, square root, table function with up to 64 support points
- Wetted parts stainless steel
- EAC declaration (upon request)

Options

- Approvals/Certificates
 - Explosion protection for gases and dust
 - Classification per SIL2 (in preparation)
 - Certificate of measuring equipment for Russian Federation
 - Material certificate per EN 10204
 - Calibration certificate per EN 10204
- Operating software LAB4Level for level measurements
- Removable display and control unit
- Degree of protection IP 69K
- Maximum working pressure 400 bar (upon request)

Application

The digital differential pressure transmitter PASCAL Ci4 Delta P with diaphragm seal is suitable for pressure measurement of aggressive, high viscous and high-temperature media. Also available as an option is the operating software LAB4Level that allows the measuring of filling height, filling volume and filling weight (mass).

Technical data

Measuring ranges

Up to a turndown of 100:1 the measuring span can be freely selected.

| Nominal range | Measuring span | | Measuring limits | | Static excess pressure and overload capacity |
|---------------|----------------|-----------|------------------|-------------|----------------------------------------------|
| | min. span | max. span | lower limit | upper limit | |
| 100 mbar | 1 mbar | 200 mbar | -100 mbar | 100 mbar | one-sided (+/-) / double-sided 160 bar |
| 500 mbar | 5 mbar | 1 bar | - 500 bar | 500 mbar | 160 bar |
| 3 bar | 30 mbar | 6 bar | -3 bar | 3 bar | 160 bar |
| 16 bar | 160 mbar | 32 bar | - 16 bar | 16 bar | 160 bar |

Minimum permissible static pressure: 5 mbar abs (at reference conditions)

Constructional design / case

| | |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Design: | Two-chamber case, continuously rotatable by $\pm 170^\circ$ Case surface blasted |
| Material case: | <ul style="list-style-type: none"> ■ Stainless steel mat.no. 1.4301/1.4305 (304/303) ■ Stainless steel mat.no. 1.4404 (316L) |
| Material front cover: | <ul style="list-style-type: none"> ■ Stainless steel mat.no. 1.4305 (303) ■ Stainless steel mat.no. 1.4404 (316L) ■ Polypropylene, black |
| Gaskets: | Silicone / NBR |
| Degree of protection per EN 60529: | IP 65 / IP 67 Option: IP 69K |
| Climatic category per EN 60721 3-4: | 4K4H |
| Vibration resistance per EN 61298-3: | 10...60 Hz: ± 0.35 mm 60...1000 Hz: 5 g |
| Material window: | <ul style="list-style-type: none"> ■ Macrolon ■ Non-splintering glass (requires front cover of stainless steel) |
| Elec. connection: | <ul style="list-style-type: none"> ■ Circular connector M12 ■ Cable gland M16x1.5, PA black ■ Cable gland M16x1.5, stainless steel ■ Cable gland M20x1.5, PA black ■ Cable gland M20x1.5, stainless steel ■ 1/2" NPT, PA black <p>Further connections upon request</p> |
| Terminal blocks: | <ul style="list-style-type: none"> ■ Spring clamp terminals up to 1.5 mm² ■ Pole terminals up to 2.5 mm² ■ Screw terminals up to 2.5 mm² |
| Weight: | approx. 2.9 kg |
| Type plate: | Laser marking |

Process connection plus-sided

| | |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Design: | <ul style="list-style-type: none"> ■ Diaphragm seal direct with distance tube ■ Diaphragm seal with stainless steel capillary and stainless steel protective tube |
| Design of diaphragm seals see order code. | |

Process connection minus-sided

| | |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Design: | <ul style="list-style-type: none"> ■ Process flange <p>with connection dimension per EN 61518 and with mounting thread 7/16 – 20 UNF</p> <ul style="list-style-type: none"> - Process connection 1/4 – 18 NPT - Process connection 1/2 – 14 NPT via oval flange (see accessories) <p>Material: Stainless steel mat.-no. 1.4404 (316L)</p> <p><u>Ventilation:</u></p> <ul style="list-style-type: none"> - without ventilation, with sealing plug 1/4" NPT - with ventilation valve 1/4" NPT <p><u>Gasket:</u></p> <ul style="list-style-type: none"> - EPDM, FDA compliant (standard) temperature range -40...85 °C - FKM (Viton) temperature range -20...85 °C <p>Diaphragm material: Stainless steel mat.-no. 1.4404 (316L)</p> <p>Further connections and materials upon request.</p> |
| Design: | <ul style="list-style-type: none"> ■ Diaphragm seal <p>with stainless steel capillary and stainless steel protective tube</p> <p>Design of diaphragm seals see order code.</p> |

Material wetted parts

| |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> ■ Stainless steel mat.-no. 1.4404/1.4435 (316L) ■ Hastelloy C276 ■ Tantal ■ PTFE coating, vacuum-resistant |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Further materials upon request.

Measuring system

| | |
|-----------------|---------------------------------------------------------------------------------------------------------|
| Sensor: | Piezoresistive measuring element |
| System filling: | <ul style="list-style-type: none"> ■ Silicone oil ■ Halocarbon oil upon request |

Pressure transmission fluids

- Synthetic oil, free of silicon
- High temperature oil
- Halocarbon oil

Accuracy

| | |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reference cond. per EN 61298-1: | $T_U = \text{const. (15...25) } ^\circ\text{C}$ $\varphi = \text{const. (45...75) \% r.F.}$ $p_U = \text{const. (860...1060) mbar}$ $U_B = 24 \text{ V DC } (\pm 3 \text{ V DC})$ $R_B = 50 \text{ } \Omega, \text{ HART: } 250 \text{ } \Omega$ Ground connected Lower range value = 0 bar |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Calibration position: Druckmittler auf gleicher Höhe

Reference accuracy:

Per EN 61298-2 incl. non-linearity, hysteresis and repeatability refer to the adjusted measuring span:

| Nominal range | Turndown < 10:1 | Turndown > 10:1 |
|---------------|--------------------|---------------------------------------------------|
| 100 mbar | $\leq \pm 0.07 \%$ | $\leq \pm(0.01 \% \times \text{TD} - 0.0325 \%)$ |
| 500 mbar | | $\leq \pm(0.005 \% \times \text{TD} + 0.0175 \%)$ |
| 3 bar | | $\leq \pm(0.005 \% \times \text{TD} + 0.0175 \%)$ |
| 16 bar | | $\leq \pm(0.01 \% \times \text{TD} - 0.0325 \%)$ |

Long-term drift: Refer to nominal range
 $\leq 0.1 \%$ within 5 years

Temperature influence of ambient temperature:

| Refer to measuring range (per IEC 61298-3): | |
|---------------------------------------------|------------------------------------------------|
| Nominal range | Temperature range: -10...60 °C |
| 100 mbar | $\leq \pm(0.15 \% + 0.15 \% \times \text{TD})$ |
| 500 mbar | $\leq \pm(0.15 \% + 0.05 \% \times \text{TD})$ |
| 3 bar | $\leq \pm(0.15 \% + 0.05 \% \times \text{TD})$ |
| 16 bar | $\leq \pm(0.15 \% + 0.15 \% \times \text{TD})$ |
| Nominal range | Temperature range: -40...80 °C |
| 100 mbar | $\leq \pm(0.15 \% + 0.2 \% \times \text{TD})$ |
| 500 mbar | $\leq \pm(0.2 \% + 0.06 \% \times \text{TD})$ |
| 3 bar | $\leq \pm(0.2 \% + 0.06 \% \times \text{TD})$ |
| 16 bar | $\leq \pm(0.15 \% + 0.2 \% \times \text{TD})$ |

Temperature influence output (-40...80 °C): $\leq \pm(0,04 \% / 10 \text{ K})$

Temperature influence diaphragm seal: Depends on design and profile of requirements.
 We provide a detailed error analysis upon request.

Indication

- Display:
- High-resolution graphic display with backlight
 - 4-button operation
 - Freely configurable display modes
 - continuously rotatable by ± 170 (detent every 90°)
 - Optional: Remote display and control unit, can be used up to 10 m away from measuring point
- Configuration memory:
- All parameterisation data can be copied from the device into the configuration memory in the display module. The data is permanently stored there, even in the event of power failure.
 - The parameters can be transferred simply and quickly to other devices.

Output

| | | |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Signal: | 2-wire technology | 4...20 mA |
| | Lower limit | 3.8...4 mA |
| | Upper limit | 20...21 mA |
| | Lower alarm current | < 3.6 mA |
| | Upper alarm current | > 21 mA |
| | Current limitation | 22 mA |
| | Operational availability | < 12 s |
| | Response time t_{90} at current output | typically 200 ms |
| | Digitale communication | HART [®] protocol, version 7 |
| | Communication via: | |
| | <ul style="list-style-type: none"> ■ Siemens PDM ■ Pactware or compatible systems (FDT/DTM) ■ 375 / 475 Field Communicator | |

- Function:
- linear
 - inverse response
 - by square root
 - table function with up to 64 support points

Turndown: max. 100:1

Damping: 0...999.9 s selectable in steps of 0.1 s

Measuring rate: 50 Hz

Resolution: 0.5 μ A
Current sensing func.: 3.55...21.5 mA selectable in steps of 0.001 mA
Load R: $R \leq (U-12V \text{ DC})/0.022 \text{ A } [\Omega]$
U = supply voltage
for HART communication: $R \geq 230 \Omega$

Supply voltage

Functional range: 12...30 V DC, protected against polarity reversal
Ripple: < 5 %

Temperature ranges

Ambient: -40...80 °C
(Display visibility is limited at temperatures below -30 °C)
Measuring cell: -40...85 °C
Media: -90...400 °C
The temperature range of the pressure transmission fluid has to be observed.
Storage: -40...80 °C

Tests and certificates

Ex approvals

ATEX: TÜV 13 ATEX 120264 X
Ⓢ II 1/2G Ex ia IIC TX Ga/Gb
Ⓢ II 1/2D Ex ia IIIC Txx °C Da/Db
Ⓢ II 2G Ex ia IIC TX Gb
Ⓢ II 2D Ex ia IIIC Txx °C Db

IECEX: IECEX TUN 13.0018X
Ex ia IIC TX Ga/Gb
Ex ia IIIC Txx °C Da/Db
Ex ia IIC TX Gb
Ex ia IIIC Txx °C Db

For more detailed information see Ex Safety Instruction XA_022.

EMC : per EN 61326-1, NAMUR NE21

SIL2: In preparation:
Functional safety per EN 61508, classification per SIL2.

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

Parameterisation, simulation and adjustment

Parameterisation

| | Standard device | Device with operating software LAB4Level | |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------|
| Parameter | Values | Values | Default setting |
| device ID | 16 digits, freely selectable | | LABOM PASCAL Ci4 |
| lower range value | at any value within nominal range | | 0 bar |
| upper range value | at any value within nominal range | | end of nominal range |
| damping | 0.0...999.9 s | | 0.0 s |
| Display and control unit | | | |
| pressure unit | mbar, bar, Pa, hPa, kPa, MPa, g/cm ² , kg/cm ² , psi, atm, torr, mmH ₂ O, mH ₂ O, inH ₂ O, ftH ₂ O, mmHg, inHg | | bar |
| static pressure unit ¹ | mbar, bar, Pa, hPa, kPa, MPa, g/cm ² , kg/cm ² , psi, atm, torr, mmH ₂ O, mH ₂ O, inH ₂ O, ftH ₂ O, mmHg, inHg | | bar |
| filling height unit | | mm, cm, m, ft, in, yd | m |
| volume unit | | l, hl, m ³ , in ³ , ft ³ , gal | l |
| weight unit (mass) | | g, kg, t, lb | kg |
| density unit | | g/cm ³ , kg/cm ³ , t/m ³ , kg/l, lb/in ³ , lb/ft ³ | g/cm ³ |
| temperature unit | °C, °F, °R, K | | °C |
| lighting | on, off | | on |
| language | English, German | | German |
| | English, Chinese | | as ordered |
| | English, Spanish, French | | as ordered |
| | English, Polish, German | | as ordered |
| | English, Turkish, German | | as ordered |
| decimal point | auto, x.xxxx, xx.xxx, xxx.xx, xxx.x, xxxxx | | auto |
| display mode (Δ p) | five values, four values, three values, two values, big display | | 4 value |
| display mode (level) | | level 4 values, level 2 values, five values, four values, three values, two values, big display | level 4 value |
| main value (Δ p) | pressure (Δ p), current in %, current in mA | | pressure |
| main value (level) | | filling height, volume, weight, pressure (Δ p), current in %, current in mA | filling height |
| secondary values (Δ p) | pressure (Δ p), static pressure, current in %, current in mA, sensor temperature, device ID, HART-TAG, HART-Descriptor, <leer> | | current in %, current in mA, device ID |
| secondary values (level) | filling height, volumen, weight, pressure (Δ p), static pressure, current in %, current in mA, sensor temperature, density, device ID, HART-TAG, HART-Descriptor, <leer> | | current in %, current in mA, device ID |
| level | | | |
| density | | 0,1...20 g/cm ³ | 1 g/cm ³ |
| offset height | | max 99.999 m | 0 m |
| tank shape table | | on, off | off |
| Table function (Δ p) | 64 support points (% from measuring range/current) | | |
| Table funktion (level) | | 64 support points (filling height/volume) | |
| Current output | | | |
| measured value (Δ p) | pressure | | pressure |
| measured value (level) | | hight, volume, weight, pressure | height |
| output function (Δ p) | linear, invers, square root, table function | | linear |
| output function (level) | | linear, tank function | linear |
| lower current limit | 3.8...4.0 mA | | 3.8 mA |
| upper current limit | 20...21 mA | | 2.5 mA |
| alarm current | low (<3.6 mA), high (> 21.0 mA) | | low (<3.6 mA) |
| position correction (mounting position) | on, off | | off |
| Maintenance counter | | | |
| maintenance interval | 0...9999 days | | 0 days |
| status | on, off | | off |
| HART data | | | |
| HART address | 0...63 | | 0 |
| number of response preambels | 5...20 | | 5 |
| current mode | proportional, constant | | proportional |

¹The static pressure will be displayed as absolute pressure by default, adjusted to 0 bar abs.

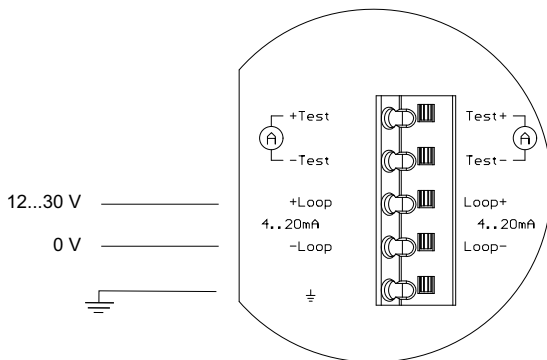
Diagnostic functions

| | Standard device | Device with operating software LAB4Level | |
|--------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------|
| Eigendiagnose | Description | | Value range |
| RAM-Test | Permanent check of the read/write memory | | / |
| ROM-Test | Permanent check of the checksum via the program memory | | / |
| Bridge circuit test | Permanent check of the bridge circuit | | / |
| CRC parameterisation test | Permanent check of the checksum via the parameter memory | | / |
| Electronics temperature monitoring | Permanent check of the electronics temperature | | / |
| Process diagnostics | | | |
| Maintenance timer | Check of the maintenance cycles | | / |
| Operating hours counter | Capture of operating hours | | / |
| Min/Max values | Check of minimum and maximum process pressure and sensor temperature | | / |
| Measuring circuit diagnostics | | | |
| simulation function | pressure (Δp), current | pressure (Δp), filling height, volumen, weight (mass), current | |

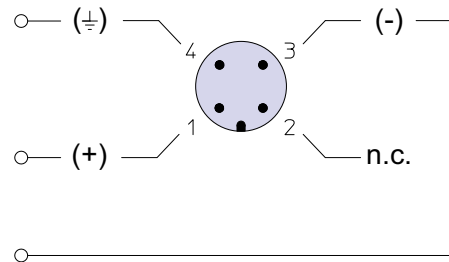
Adjustment

| Type | Description |
|-----------------------------------------|----------------------------------------------------------------------------------------|
| zero point correction (Δp) | adjusts reading to 0 bar at same pressure on both connections |
| position correction (Δp) | adjusts reading of 0 bar at same pressure on both connections and installed conditions |
| lower adjustment (Δp) | adjusts reading to applied pressure (affects zero point) |
| upper adjustment (Δp) | adjusts reading to applied pressure (affects span only) |
| current adjustment | adjusts current output to achieve 4 resp. 20 mA at the end of the measurement chain |
| zero point correction (static pressure) | adjusts Pstat. to 0 bar relative |

Connection diagram



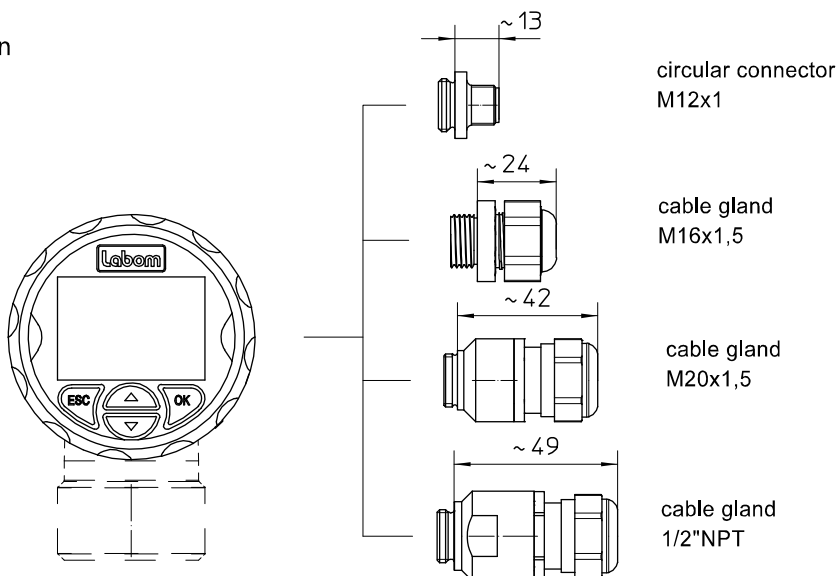
Output (2-wire): 4...20 mA



Circular connector M12 x 1

Electrical connection

Electrical connection



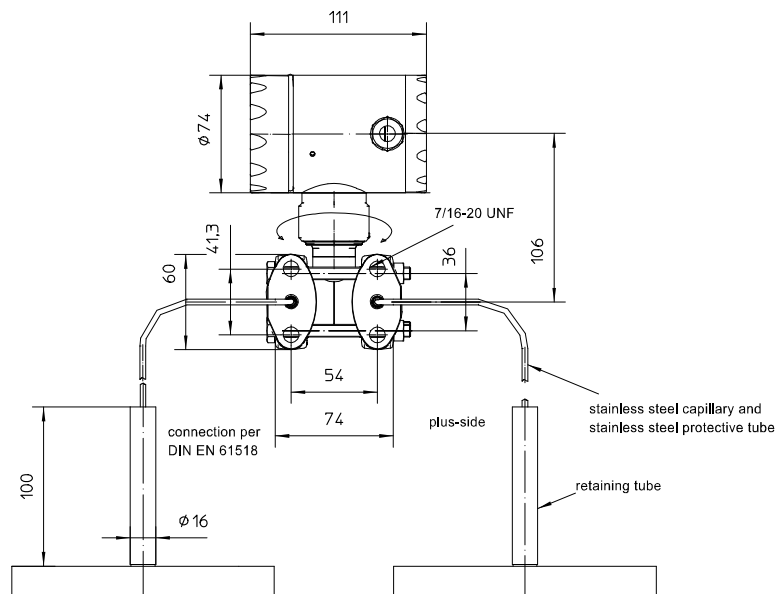
All dimensions are in mm.

Dimensions

Case and design

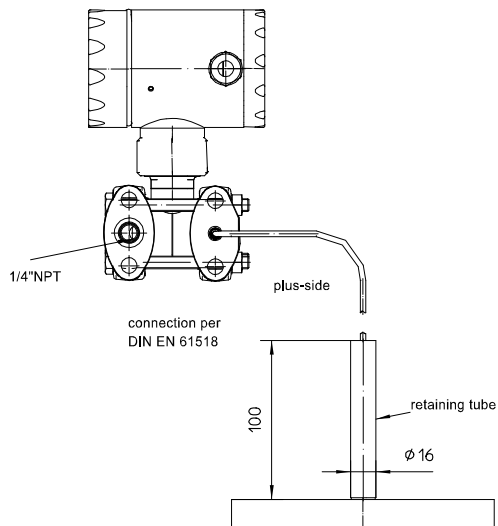
Capillary connection double-sided

(see order code variation A)



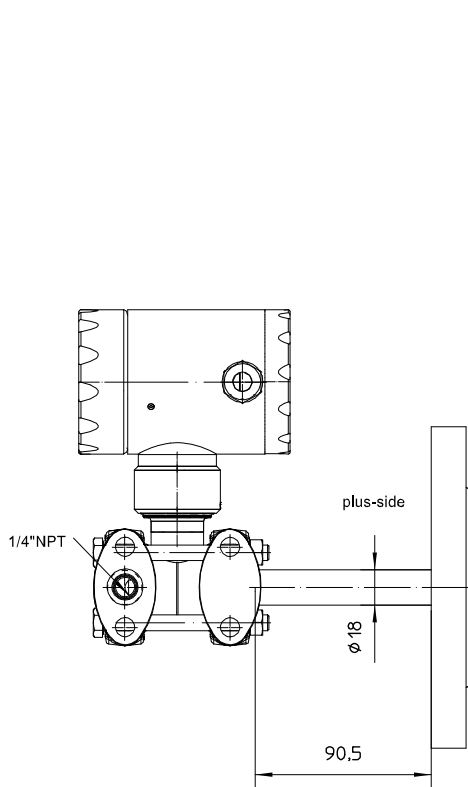
Capillary connection plus-sided

(see order code variation B)



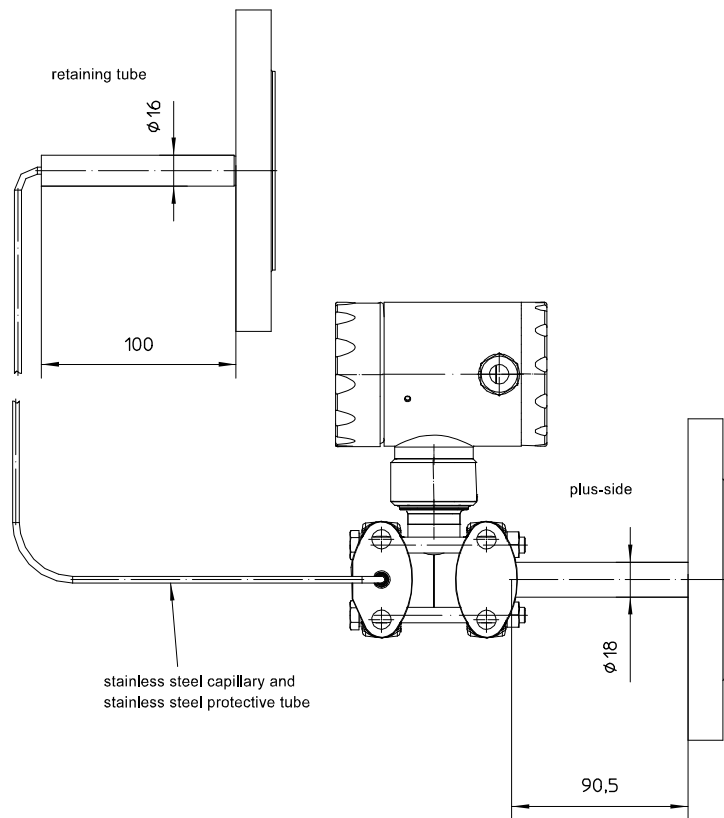
Direct connection plus-sided with distance tube

(see order code variation C)



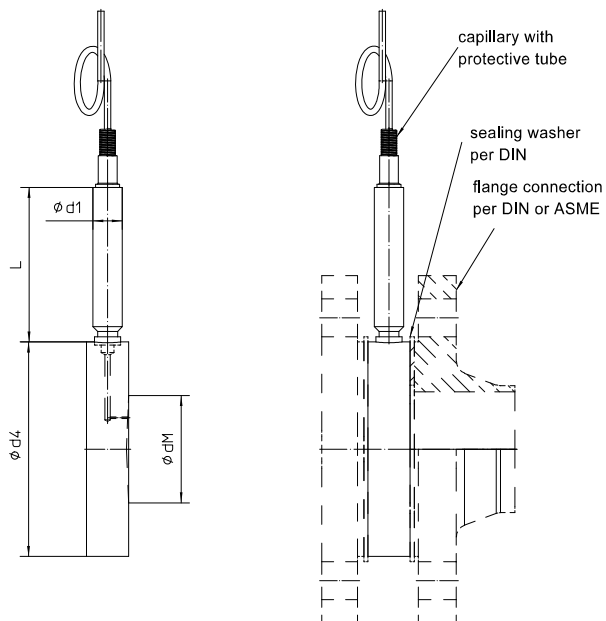
Direct connection plus-sided with distance tube, capillary connection minus-sided

(see order code variation D)



Process connections

Cell diaphragm seal

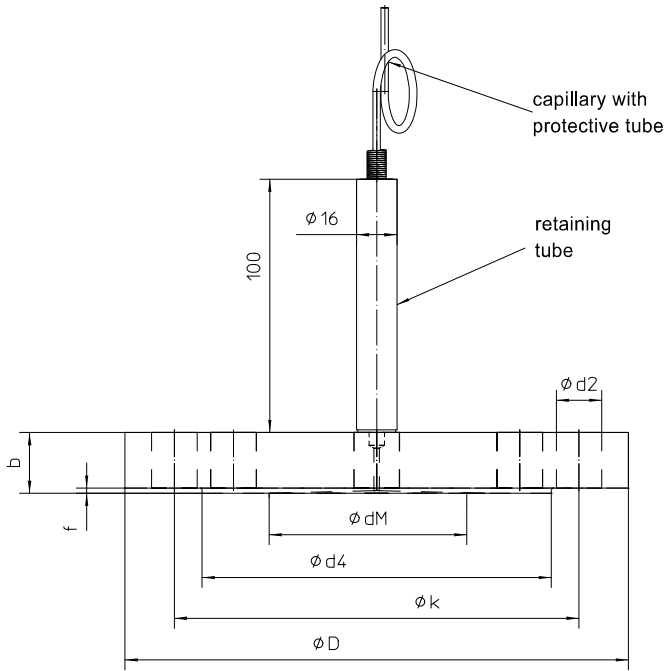


| Dimensions (mm) following EN 1092-1 | | | | | | |
|-------------------------------------|----------|-----|----|----|------|----|
| DN | PN | d4 | dM | b | L | d1 |
| 50 | 16...400 | 102 | 51 | 20 | 73.5 | 14 |
| 80 | 16...400 | 138 | 86 | 20 | 73.5 | 14 |
| 100 | 16...400 | 158 | 86 | 20 | 73.5 | 14 |

| Dimensions (mm) following ASME B 16.5 | | | | | | |
|---------------------------------------|------------|-----|----|----|------|----|
| DN | Class | d4 | dM | b | L | d1 |
| 2" | 150...2500 | 100 | 51 | 22 | 73.5 | 14 |
| 3" | 150...2500 | 134 | 86 | 22 | 73.5 | 14 |
| 4" | 150...2500 | 158 | 86 | 20 | 73.5 | 14 |

Optionally available with extended diaphragm

Flange-type diaphragm seal



Dimensions (mm) following EN 1092-1

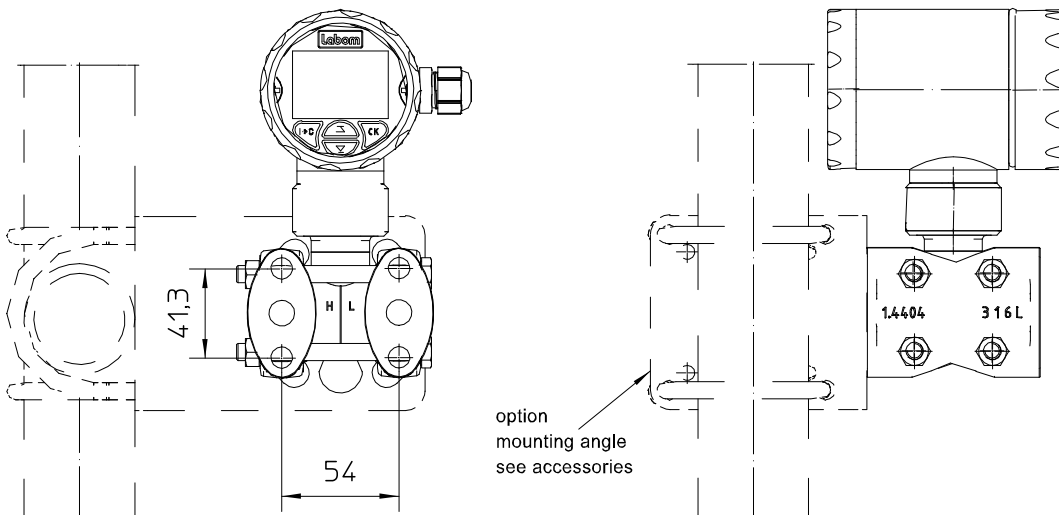
| DN | PN | D | dM | d4 | k | d2 | bore holes | b | f | Weight approx. |
|-----|---------|-----|----|-----|-----|----|------------|----|---|----------------|
| 50 | 10...40 | 165 | 51 | 102 | 125 | 18 | 4 | 20 | 2 | 3.2 kg |
| 50 | 100 | 180 | 51 | 102 | 135 | 22 | 4 | 26 | 2 | 4.0 kg |
| 80 | 10...40 | 200 | 86 | 138 | 160 | 18 | 8 | 24 | 2 | 5.0 kg |
| 80 | 100 | 215 | 86 | 138 | 170 | 22 | 8 | 28 | 2 | 5.6 kg |
| 100 | 10...16 | 220 | 86 | 158 | 180 | 18 | 8 | 20 | 2 | 6.0 kg |

Dimensions (mm) following ASME B 16.5

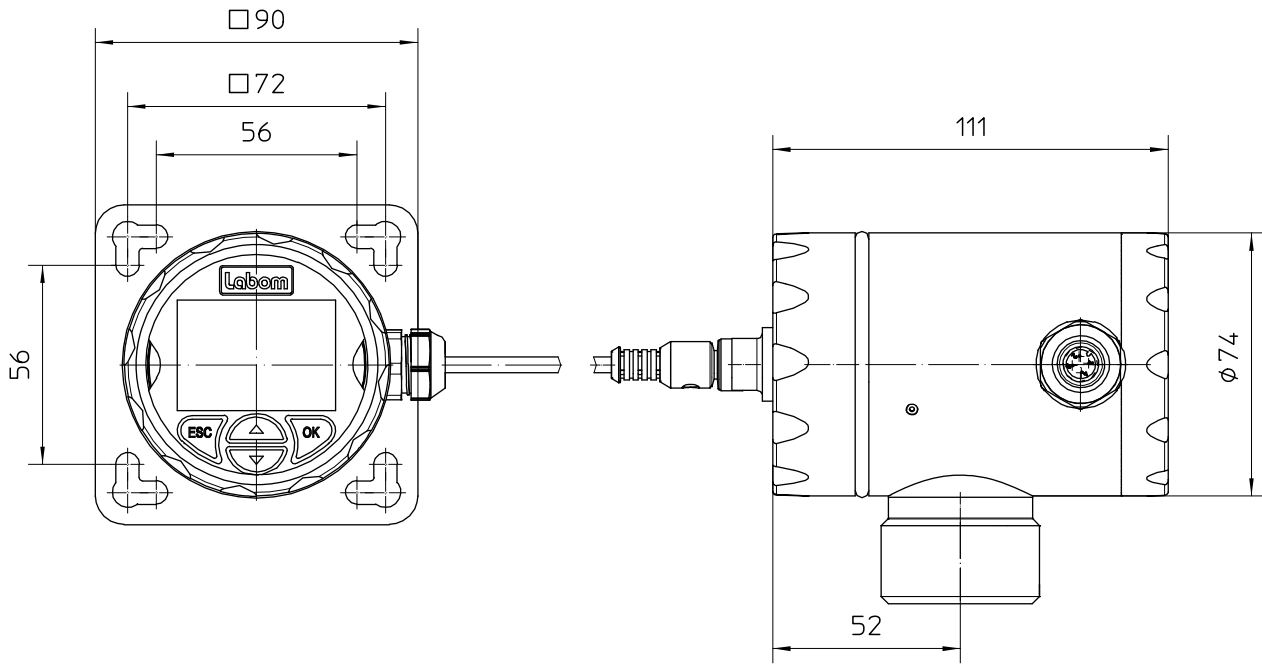
| DN | Class | D | dM | d4 | k | d2 | bore holes | b | f | Weight approx. |
|----|-------|-----|-----|-----|-------|----|------------|------|---|----------------|
| 2" | 150 | 150 | 51 | 92 | 120.7 | 19 | 4 | 19.5 | 2 | 3.2 kg |
| 2" | 300 | 165 | 51 | 92 | 127.0 | 19 | 8 | 22.7 | 2 | 4.1 kg |
| 3" | 150 | 190 | 86 | 127 | 152.4 | 19 | 4 | 24.3 | 2 | 5.2 kg |
| 3" | 300 | 210 | 86 | 127 | 168.3 | 22 | 8 | 29.0 | 2 | 5.7 kg |
| 4" | 150 | 230 | 116 | 158 | 190.5 | 19 | 8 | 24.3 | 2 | 7.0 kg |
| 4" | 300 | 255 | 116 | 158 | 200.0 | 22 | 8 | 32.2 | 2 | 11.0 kg |

Optionally available with extended diaphragm

Mounting

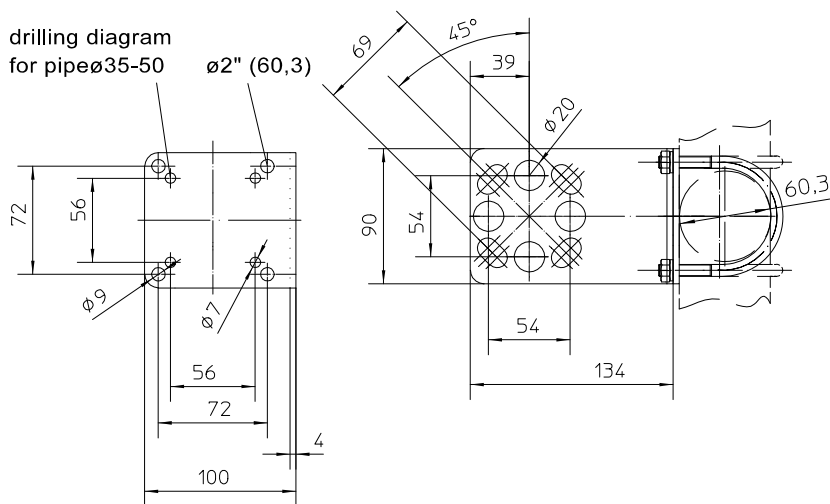


Remote display and control unit (Type series MC1140)



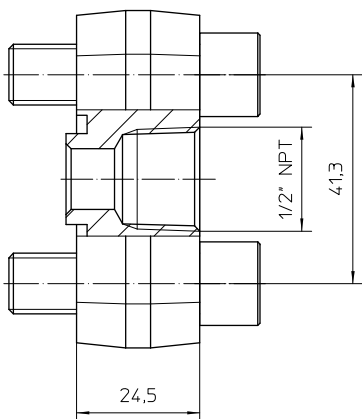
All dimensions are in mm

Mounting angle for wall and pipe-mounting (Type series MM1500)



All dimensions are in mm

Oval flange (Type series MC1060)



All dimensions are in mm

Order details

Pressure and level transmitter PASCAL Ci4 Delta P highly overload protected, Type series CI4350

| Order details PASCAL Ci4 Delta P CI4350 | | | | |
|-----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------|
| CI4350 | Pressure and level transmitter PASCAL Ci4 Delta P, highly overload protected | | | |
| A1008.2 | nominal range | 100 mbar | turndown up to 100:1 please note the min. measuring span | static overload and overload protection up to 160 bar |
| A1573.2 | | 500 mbar | | |
| A1618.2 | | 3 bar | | |
| A1059.2 | | 16 bar | | |
| F1 | parameterisation | factory settings (standard) | | |
| F2 | | as per customer's specification | | |
| H21 | output signal pressure | 4...20 mA, with HART-protocol | | |
| Y1. | material case | stainless steel mat.-no. 1.4301/1.4305 (304/303) | | |
| Y2. | | stainless steel mat.-no. 1.4404 (316L) | | |
| 1 | material front cover | polypropylene (black), window Macrolon | | |
| 2 | | stainless steel (see case), window non-splintering glass | | |
| 3 | | stainless steel (see case), closed, without window | | |
| | | | default language | available language |
| | display | High-resolution graphic display with backlight, intuitive 4-button operation, quick access to device data | German (Standard) | English, German |
| M21.1 | | | English | |
| M22.1 | | | English | English, Chinese |
| M22.2 | | | Chinese | |
| M23.1 | | | English | English, Spanish, French |
| M23.2 | | | Spanish | |
| M23.3 | | | French | |
| M25.1 | | | English | English, Polish, German |
| M25.2 | | | Polish | |
| M25.3 | | | German | |
| M26.1 | | | English | English, Turkish, German |
| M26.2 | | | Turkish | |
| M26.3 | | | German | |
| M1 | | | | without display |
| T20. | electrical connection | cable gland | M16 x 1.5 polyamide, for cable Ø 4.5-10 mm | |
| T22. | | | M16 x 1.5 stainless steel, for cable Ø 5-9.5 mm | |
| T15. | | | M20 x 1.5 polyamide, for cable Ø 7-13 mm | |
| T17. | | | M20 x 1.5 stainless steel, for cable Ø 8-13 mm | |
| T27. | | | 1/2" NPT polyamide, for cable Ø 6-12 mm | |
| 0 | | cable clamps | spring clamp terminals up to 1.5 mm ² (Standard) | |
| 5 | | | pole terminals 2.5 mm ² | |
| 6 | screw terminals 2.5 mm ² | | | |
| T30 | | circular connector M12 x 1 (4-polig) | | |

| Additional features (to be indicated in case of need, only): | | | | |
|--------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------|----------------------------------------------|--|
| S62 | Ex marking ¹ | ATEX | ⊕ II 1/2G, II 2G Ex ia IIC TX Ga/Gb, Gb | |
| | | | ⊕ II 1/2D, II 2D Ex ia IIIC Txx °C Da/Db, Db | |
| S77 | | IECEX | Ex ia IIC TX Ga/Gb, Gb | |
| | | | Ex ia IIIC Txx °C Da/Db, Db | |
| T4 | degree of protection | IP 69K ¹ | | |
| X4 | software LAB4Level for level application | | | |
| W1020 | material certificate | per EN 10204-3.1, wetted parts | | |
| W1201 | calibration certificate | per EN 10204-3.1, 5 measuring points | | |
| W2602 | functional safety per EN 61508, classification per SIL2 (in preparation) | | | |
| W2673 | certificate of measuring equipment for Russian Federation ² | | | |

¹ requires front cover of stainless steel

² not for devices with Ex marking

| Process connection variation A: Capillary connection double-sided | | | | |
|-------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------|
| Diaphragm seals identical on both sides | | | | |
| DA1... | desig per EN 1092-1 | raised face | model B1 | |
| DA2... | | | model B2 (necessary in case of special materials) | |
| 420 | nominal width/nominal pressure | DN 50, PN 10...40 | | |
| 450 | | DN 50, PN 100 | | |
| 620 | | DN 80, PN 10...40 | | |
| 650 | | DN 80, PN 100 | | |
| 710 | | DN 100, PN 10...16 | | |
| DA51... | flange-type per ASME B16.5 | raised face | RF 125-250 AA | |
| DA5... | | | RFSF (necessary in case of special materials) | |
| 310 | nominal width/class | DN 2", class 150 | | |
| 320 | | DN 2", class 300 | | |
| 510 | | DN 3", class 150 | | |
| 520 | | DN 3", class 300 | | |
| 610 | | DN 4", class 150 | | |
| 620 | | DN 4", class 300 | | |
| DC4... | cell-type per EN 1092-1 | raised face | model B1 | |
| DC1... | | | model B2 (necessary in case of special materials) | |
| 480 | nominal width/nominal pressure | DN 50, PN 16...400 | | |
| 680 | | DN 80, PN 16...400 | | |
| 780 | | DN 100, PN 16...400 | | |
| DC31... | cell-type per ASME B16.5 | Dichtleiste | RF 125-250 AA | |
| DC3... | | | RFSF (necessary in case of special materials) | |
| 310 | nominal width/class | DN 2", class 150...2500 | | |
| 510 | | DN 3", class 150...2500 | | |
| 610 | | DN 4", class 150...2500 | | |
| B52... | measuring device connection | diaphragm seale with capillary and stainless steel protective tube | | |
| 11 | | capillary length | 1 m | |
| 12 | | | 1,6 m | |
| 13 | | | 2,5 m | |
| 14 | | | 4 m | |
| 15 | | | 6 m | |
| 16 | | | 8 m | |
| 17 | | | 10 m | |
| 22 | | | 12 m | |
| 1 | material wetted parts | | stainless steel mat.-no. 1.4404/1.4435 (316L) | |
| 3 | | Hasteloy | | |
| 2 | | Tantal | | |
| 62 | | stainless steel 316L with PTFE-Vorlage (max. PN 40), high vacuum-resistant, max. temperature 260 °C | | |
| | | <u>pressure transmission fluid</u> | <u>design temperature process</u> | |
| L22 | system filling | synthetic oil, free of silicone FD1 | -10...140 °C | standard max. design temperature, please specify different temperatures. Code T... |
| L23 | | | -50...230 °C | |
| L31 | | vacuum- and high temperature oil FV3H | -10...400 °C | |
| L10 | | Low temperature oil FM5 | -90...160 °C | |
| L30 | | Halocarbon oil FC | -30...190 °C | |
| | ambient temperature | -40...80 °C (Please note the temperature limits of the pressure transmission fluid) | | |
| U2 | | -10...50 °C | | |
| U... | | different ambient temperature, please specify in writing | | |

| Process connection variation B: Capillary connection plus-sided | | | | | |
|-----------------------------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------|--------------|
| Diaphragm seal plus-sided | | | | | |
| DA1... | flange-type per EN 1092-1 | raised face | model B1 | | |
| DA2... | | | model B2 (necessary in case of special materials) | | |
| 420 | nominal width/nominal pressure | DN 50, PN 10...40 | | | |
| 450 | | DN 50, PN 100 | | | |
| 620 | | DN 80, PN 10...40 | | | |
| 650 | | DN 80, PN 100 | | | |
| 710 | | DN 100, PN 10...16 | | | |
| DA51... | flange-type per ASME B16.5 | raised face | RF 125-250 AA | | |
| DA5... | | | RFSF (necessary in case of special materials) | | |
| 310 | nominal width/class | DN 2", class 150 | | | |
| 320 | | DN 2", class 300 | | | |
| 510 | | DN 3", class 150 | | | |
| 520 | | DN 3", class 300 | | | |
| 610 | | DN 4", class 150 | | | |
| 620 | | DN 4", class 300 | | | |
| DC4... | cell-type per EN 1092-1 | Dichtleiste | model B1 | | |
| DC1... | | | model B2 (necessary in case of special materials) | | |
| 480 | nominal width/nominal pressure | DN 50, PN 16...400 | | | |
| 680 | | DN 80, PN 16...400 | | | |
| 780 | | DN 100, PN 16...400 | | | |
| DC31... | cell-type per ASME B16.5 | raised face | RF 125-250 AA | | |
| DC3... | | | RFSF (necessary in case of special materials) | | |
| 310 | nominal width/class | DN 2", class 150...2500 | | | |
| 510 | | DN 3", class 150...2500 | | | |
| 610 | | DN 4", class 150...2500 | | | |
| B52... | measuring device connection | diaphragm seal with capillary and stainless steel protective tube | | | |
| 11 | | capillary length | 1 m | | |
| 12 | | | 1,6 m | | |
| 13 | | | 2,5 m | | |
| 14 | | | 4 m | | |
| 15 | | | 6 m | | |
| 16 | | | 8 m | | |
| 17 | | | 10 m | | |
| 22 | | | 12 m | | |
| 1 | material wetted parts | | stainless steel mat.-no. 1.4404/1.4435 (316L) | | |
| 3 | | Hasteloy | | | |
| 2 | | Tantal | | | |
| 62 | | stainless steel 316L with PTFE-Vorlage (max. PN 40), high vacuum-resistant, max. temperature 260 °C | | | |
| | | <u>pressure transmission fluid</u> | <u>design temperature process</u> | | |
| L22 | system filling | synthetic oil, free of silicone FD1 | -10...140 °C | standard max. design temperature, please specify different temperatures. Code T... | |
| L23 | | | -50...230 °C | | |
| L31 | | vacuum- and high temperature oil FV3H | -10...400 °C | | |
| L10 | | | Low temperature oil FM5 | | -90...160 °C |
| L30 | | | Halocarbon oil FC | | -30...190 °C |
| | | -40...80 °C (Please note the temperature limits of the pressure transmission fluid) | | | |
| U2 | ambient temperature | -10...50 °C | | | |
| U... | | different ambient temperature, as in writing | | | |
| Process flange minus-sided | | | | | |
| K511.. | process flange | stainless steel 316L, connection per DIN EN 61518 process connection 1/4 – 18 NPT mounting thread 7/16 – 20 UNF | | | |
| 3 | ventilation | without, with sealing plug of stainless steel 316L | | | |
| 4 | | with vent valve of stainless steel 316L | | | |
| 2 | gasket | EPDM, FDA compliant, temperature range -40...85 °C | | | |
| 1 | | FKM (Viton), temperature range -20...85 °C | | | |
| G1 | diaphragm material | stainless steel mat.-no. 1.4404 (316L) | | | |

| Process connection Variante C: Direct connection plus-sided with distance tube | | | | |
|--------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------|
| Diaphragm seal plus-sided | | | | |
| DA1... | flange-type per EN 1092-1 | raised face | model B1 | |
| DA2... | | | model B2 (necessary in case of special materials) | |
| 420 | nominal width/nominal pressure | DN 50, PN 10...40 | | |
| 450 | | DN 50, PN 100 | | |
| 620 | | DN 80, PN 10...40 | | |
| 650 | | DN 80, PN 100 | | |
| 710 | | DN 100, PN 10...16 | | |
| DA51... | flange-type per ASME B16.5 | raised face | RF 125-250 AA | |
| DA5... | | | RFSF (necessary in case of special materials) | |
| 310 | nominal width/class | DN 2", class 150 | | |
| 320 | | DN 2", class 300 | | |
| 510 | | DN 3", class 150 | | |
| 520 | | DN 3", class 300 | | |
| 610 | | DN 4", class 150 | | |
| 620 | | DN 4", class 300 | | |
| 1 | material wetted parts | stainless steel mat.-no. 1.4404/1.4435 (316L) | | |
| 3 | | Hasteloy | | |
| 2 | | Tantal | | |
| 62 | | stainless steel 316L with PTFE-Vorlage (max. PN 40), high vacuum-resistant, max. temperature 260 °C | | |
| | | <u>pressure transmission fluid</u> | <u>design temperature process</u> | |
| L22 | system filling | synthetic oil, free of silicone FD1 | -10...140 °C | standard max. design temperature, please specify different temperatures. Code T... |
| L23 | | | -50...230 °C | |
| L31 | | vacuum- and high temperature oil FV3H | -10...400 °C | |
| L10 | | Low temperature oil FM5 | -90...160 °C | |
| L30 | | Halocarbon oil FC | -30...190 °C | |
| | ambient temperature | -40...80 °C (Please note the temperature limits of the pressure transmission fluid) | | |
| U2 | | -10...50 °C | | |
| U... | | different ambient temperature, as in writing | | |
| Process flange plus-sided | | | | |
| K511.. | process flange | stainless steel 316L, connection per DIN EN 61518, process connection 1/4 – 18 NPT mounting thread 7/16 – 20 UNF | | |
| 3 | ventilation | without, with sealing plug of stainless steel 316L | | |
| 4 | | with vent valve of stainless steel 316L | | |
| 2 | gasket | EPDM, FDA compliant, temperature range -40...85 °C | | |
| 1 | | FKM (Viton), temperature range -20...85 °C | | |
| G1 | diaphragm material | stainless steel mat.-no. 1.4404 (316L) | | |

| Process connection Variante D: Direct connection plu-sided with distance tube, capillary connection minus-sided | | | | |
|-----------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------|
| Diaphragm seal plus-sided | | | | |
| DA1... | flange-type per EN 1092-1 | raised face | model B1 | |
| DA2... | | | model B2 (necessary in case of special materials) | |
| 420 | nominal width/nominal pressure | DN 50, PN 10...40 | | |
| 450 | | DN 50, PN 100 | | |
| 620 | | DN 80, PN 10...40 | | |
| 650 | | DN 80, PN 100 | | |
| 710 | | DN 100, PN 10...16 | | |
| DA51... | flange-type per ASME B16.5 | raised face | RF 125-250 AA | |
| DA5... | | | RF5F (necessary in case of special materials) | |
| 310 | nominal width/class | DN 2", class 150 | | |
| 320 | | DN 2", class 300 | | |
| 510 | | DN 3", class 150 | | |
| 520 | | DN 3", class 300 | | |
| 610 | | DN 4", class 150 | | |
| 620 | | DN 4", class 300 | | |
| A413.. | measuring device connection | Direct diaphragm seal with distance tube 90,5 mm | | |
| 1 | material wetted parts | stainless steel mat.-no. 1.4404/1.4435 (316L) | | |
| 3 | | Hasteloy | | |
| 2 | | Tantal | | |
| 62 | | stainless steel 316L with PTFE-Vorlage (max. PN 40), high vacuum-resistant, max. temperature 260 °C | | |
| | | <u>pressure transmission fluid</u> | <u>design temperature process</u> | |
| L22 | system filling | synthetic oil, free of silicone FD1 | -10...140 °C | standard max. design temperature, please specify different temperatures. Code T... |
| L23 | | | -50...230 °C | |
| L31 | | vacuum- and high temperature oil FV3H | -10...400 °C | |
| L10 | | Low temperature oil FM5 | -90...160 °C | |
| L30 | | Halocarbon oil FC | -30...190 °C | |
| | ambient temperature | -40...80 °C (Please note the temperature limits of the pressure transmission fluid) | | |
| U2 | | -10...50 °C | | |
| U... | | different ambient temperature, as in writing | | |

| Diaphragm seal plus-sided with capillary | | | | |
|------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------|
| DA1... | flange-type per EN 1092-1 | raised face | model B1 | |
| DA2... | | | model B2 (necessary in case of special materials) | |
| 420 | nominal width/nominal pressure | DN 50, PN 10...40 | | |
| 450 | | DN 50, PN 100 | | |
| 620 | | DN 80, PN 10...40 | | |
| 650 | | DN 80, PN 100 | | |
| 710 | | DN 100, PN 10...16 | | |
| DA51... | flange-type per ASME B16.5 | raised face | RF 125-250 AA | |
| DA5... | | | RFSF (necessary in case of special materials) | |
| 310 | nominal width/class | DN 2", class 150 | | |
| 320 | | DN 2", class 300 | | |
| 510 | | DN 3", class 150 | | |
| 520 | | DN 3", class 300 | | |
| 610 | | DN 4", class 150 | | |
| 620 | | DN 4", class 300 | | |
| DC4... | cell-type per EN 1092-1 | raised face | model B1 | |
| DC1... | | | model B2 (necessary in case of special materials) | |
| 480 | nominal width/nominal pressure | DN 50, PN 16...400 | | |
| 680 | | DN 80, PN 16...400 | | |
| 780 | | DN 100, PN 16...400 | | |
| DC31... | cell-type per ASME B16.5 | raised face | RF 125-250 AA | |
| DC3... | | | RFSF (necessary in case of special materials) | |
| 310 | nominal width/class | DN 2", class 150...2500 | | |
| 510 | | DN 3", class 150...2500 | | |
| 610 | | DN 4", class 150...2500 | | |
| B52... | measuring device connection | diaphragm seale with capillary and stainless steel protective tube | | |
| 11 | | capillary length | 1 m | |
| 12 | | | 1,6 m | |
| 13 | | | 2,5 m | |
| 14 | | | 4 m | |
| 15 | | | 6 m | |
| 16 | | | 8 m | |
| 17 | | | 10 m | |
| 22 | | | 12 m | |
| 1 | material wetted parts | | stainless steel mat.-no. 1.4404/1.4435 (316L) | |
| 3 | | Hasteloy | | |
| 2 | | Tantal | | |
| 62 | | stainless steel 316L with PTFE-Vorlage (max. PN 40), high vacuum-resistant, max. temperature 260 °C | | |
| | | <u>pressure transmission fluid</u> | <u>design temperature process</u> | |
| L22 | system filling | synthetic oil, free of silicone FD1 | -10...140 °C | Standard max. design temperature, please specify different temperatures. Code T... |
| L23 | | | -50...230 °C | |
| L31 | | vacuum- and high temperature oil FV3H | -10...400 °C | |
| L10 | | Low temperature oil FM5 | -90...160 °C | |
| L30 | | Halocarbon oil FC | -30...190 °C | |
| | ambient temperature | -40...80 °C (Please note the temperature limits of the pressure transmission fluid) | | |
| U2 | | -10...50 °C | | |
| U... | | different ambient temperature, as in writing | | |

| Accessories | | |
|--------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MM1500-A11 | mounting angle | for wall and pipe-mounting Ø 35-50 mm of stainless steel, incl. screws 7/16-20 UNF |
| MM1500-A12 | | for wall and pipe-mounting Ø 2" of stainless steel, incl. screws 7/16-20 UNF |
| MC1060-A134 | oval flange | oval flange 1/2-14 NPT per EN 61518, modal A of stainless steel mat.-no. 1.4404 (316L), incl. 2 screws 7/16-20 UNF, material stainless steel, incl. gasket FKM EPDM |
| MC1060-A133 | | oval flange 1/2-14 NPT per EN 61518, modal A of stainless steel mat.-no. 1.4404 (316L), incl. 2 screws 7/16-20 UNF, material stainless steel, incl. gasket FKM Viton |
| MC1140 | wall bracket | PASCAL Ci4 remote display and control unit including device holder material stainless steel, incl. front ring with seal and blind cap with circular connector M12x1 |
| A1. | connection cable | length: 10 m, material: PUR, with circular connector M12 x1, komplett verdrahtet |
| 1 | internal cable clamps | spring clamp terminals up to 1.5 mm ² |
| 2 | | pole terminals 2.5 mm ² |
| 3 | | screw terminals 2.5 mm ² |
| T4 | degree of protection | IP 69 K ¹ |
| MZ8120-A11 | mounting set for wall bracket | 2 mounting brackets for pipe and frame mounting Ø 30-50 mm, incl. nuts and washers |
| MZ8120-A12 | | 2 mounting brackets for pipe and frame mounting Ø 40-64 mm, incl. nuts and washers |
| MC1020 | HART-Modem | RS 232 -interface |
| MC1040 | | USB-interface |
| MC1041 | | USB-interface, Ex |

Order code (example): **CI4350 – A1008.2 – F1 – H21 – Y12 – T200 – DA1620 - B52111 - L22**