

Pressure transmitter PASCAL Ci4 with threaded connection Type series CI410.

In Proud Partnership with Labom

PAQUIN
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Application area

- Plant and mechanical engineering
- Chemical and petrochemical industry
- General process technology
- Removable display and control unit
- Degree of protection IP 69K
- Oxygen free of oil and grease

Application

The digital pressure transmitter PASCAL Ci4 is suitable for measuring the relative and absolute pressure of gases, vapors and liquids. Due to the design the transmitter is suitable for highest requirements. The 4 operation buttons allow an easy and fast parameterisation.

Especially for use in hydrogen applications a calculation tool is available with which the suitable sensor diaphragm material (with/without gold plating) can be determined on the basis of the available process data.

Features

- Pressure transmitter for the measuring of relative and absolute pressures of gases, vapors and liquids
- Stainless steel case in sturdy design, degree of protection IP 65/67
- Accuracy $\leq 0.1\%$
- High-resolution graphic 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
- Nominal range 0.25 bar to 600 bar
- Turndown up to 100:1
- Measuring rate up to 100 Hz
- Output signal 4...20 mA with HART® protocol
- Configuration memory
- Digital communication via PDM/EDD, FDT/DTM, 375/475 Field Communicator
- Output functions: linear, invers, square root, table function with up to 64 support points
- Media temperature $-40...100\text{ }^{\circ}\text{C}$
- Wetted parts stainless steel
- Case design:
 - process connection bottom
 - process connection at back
- Process connections: various screw-in thread with internal diaphragm
- Approved according to NAMUR 95

Options

- Accuracy $\leq 0.075\%$
- Gold coating of sensor diaphragm (thickness 6 μm)
- Thin film sensor for H₂-applications
- Approvals/Certificates
 - Explosion protection (ATEX/IECEX/UKEX) for gases and dust
 - Classification per SIL2
 - Material certificate per EN 10204-3.1
 - Calibration certificate per EN 10204-3.1
 - Certificate for hydrogen resistance per EN 10204-3.1
- As per UKCA regulations
- Operating software LAB4Level for level measurements

Technical data

Measuring ranges

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

| Nominal range | Measuring span | | Overload capacity | Higher overload (option) | Lower measuring range limit ** | Sensor type |
|------------------|----------------|------------|-----------------------------|--------------------------|--------------------------------|--|
| | min | max | | | | |
| 0...1 bar * | 0.01 bar | 2 bar | 3 bar | - | 100 mbar abs | Piezoresistive |
| 0...4 bar * | 0.04 bar | 5 bar | 10 bar | - | 100 mbar abs | |
| 0...16 bar * | 0.16 bar | 17 bar | 60 bar | - | 100 mbar abs | |
| 0...40 bar * | 0.4 bar | 41 bar | 100 bar | - | 100 mbar abs | |
| 0...100 bar * | 1 bar | 101 bar | 200 bar | - | 100 mbar abs | |
| -0.25...0.25 bar | 0.0025 bar | 0.5 bar | 1 bar | 6 bar | 750 mbar abs | |
| -1...1 bar | 0.01 bar | 2 bar | 3 bar | 10 bar | 30 mbar abs | |
| -1...4 bar | 0.04 bar | 5 bar | 10 bar | 25 bar | 30 mbar abs | |
| -1...16 bar | 0.16 bar | 17 bar | 60 bar | 120 bar | 30 mbar abs | |
| -1...40 bar | 0.4 bar | 41 bar | 100 bar | 120 bar | 30 mbar abs | |
| -1...100 bar | 1 bar | 101 bar | 200 bar | - | 30 mbar abs | |
| -1...100 bar | 1 bar | 101 bar | 200 bar | - | 0 mbar abs | |
| -1...400 bar | 4 bar | 401 bar | see table A (order details) | - | 0 mbar abs | Thin film for H ₂ -applications |
| -1...600 bar | 6 bar | 601 bar | see table A (order details) | - | 0 mbar abs | |
| -1...100 bar | 1 bar | 101 bar | 200 bar | - | 0 mbar abs | Thin film |
| -1...400 bar | 4 bar | 401 bar | see table B (order details) | - | 0 mbar abs | |
| 0...1 bar abs | 0.01 bar abs | 1 bar abs | 3 bar abs | - | 30 mbar abs | Piezoresistive |
| 0...4 bar abs | 0.04 bar abs | 4 bar abs | 10 bar abs | - | 30 mbar abs | |
| 0...16 bar abs | 0.16 bar abs | 16 bar abs | 60 bar abs | - | 30 mbar abs | |
| 0...40 bar abs | 0.4 bar abs | 40 bar abs | 120 bar abs | - | 30 mbar abs | |

* Short term or sporadic measurement in vacuum range permitted up to lower measuring limit. Lower range value up to -1 bar rel. adjustable

** Vacuum-proof designs are available upon request

Constructional design / case

Design: Two-chamber case, continuously rotatable by $\pm 170^\circ$

Case surface blasted

Material case:
 ■ Stainless steel mat.no. 1.4301/1.4305 (304/303)
 ■ Stainless steel mat.no. 1.4404 (316L)

Material front cover:
 ■ 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: 4K4H per EN 60721 3-4

Vibration resistance per EN 61298-3:
 10...60 Hz: ± 0.35 mm
 60...1000 Hz: 5 g

Material window:
 ■ Macrolon
 ■ Non-splintering glass (requires front cover of stainless steel)

Elec. connection:

- 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

Further connections upon request

Terminal blocks:

- Spring clamp terminals up to 1.5 mm²
- Pole terminals up to 2.5 mm²
- Screw terminals up to 2.5 mm²

Weight:

Approx. 1.4 kg

Type plate:

Laser marking

Process connection

| | |
|-----------|--|
| Position: | <ul style="list-style-type: none"> ■ bottom ■ back * |
| | * Flush mounting upon request |
| Design: | <ul style="list-style-type: none"> ■ G 1/2 B per DIN EN 837-1 ■ G 1/4 B per DIN EN 837-1 ■ G1/4 A per DIN EN ISO 1179-2 (DIN 3852-11) model E ■ 1/2 " NPT ■ 1/4 " NPT |
| | Further process connections upon request |

Material wetted parts

| Sensor | Material diaphragm | Material socket |
|--|---|-------------------------|
| Piezoresistive | 1.4404/1.4435 (316L) optional: gold-coated (6 µm) | 1.4404/1.4435 (316L) |
| Thin film | 1.4542 (630) | 1.4301/1.4542 (304/630) |
| Thin film for H ₂ -applications | Stainless steel | Stainless steel |

Measuring system

| Sensor | System filling |
|--|---|
| Piezoresistive | Synthetic oil, free of silicone FD1, FDA listed |
| Thin Film | dry |
| Thin film for H ₂ -applications | dry |

Accuracy

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

Reference accuracy:

Per EN 60770 incl. non-linearity, hysteresis and repeatability refer to the adjusted measuring span:

| For piezoresistive sensor and thin film sensor | | |
|--|----------------|-----------------|
| Nominal range | Turndown ≤ 5:1 | Turndown > 5:1 |
| 1 - 400 bar | ≤ ± 0.1 % | ≤ ± 0.02 % x TD |
| 0.25 bar | ≤ ± 0.15 % | ≤ ± 0.03 % x TD |

| For thin film sensor for H ₂ -applications | | |
|---|----------------|-----------------|
| Nominal range | Turndown ≤ 5:1 | Turndown > 5:1 |
| 1 - 600 bar | ≤ ± 0.15 % | ≤ ± 0.03 % x TD |

Option for piezoresistive sensor:

| Nominal range | Turndown ≤ 3,75:1 | Turndown > 3,75:1 |
|---------------|-------------------|-------------------|
| 1 - 40 bar | ≤ ± 0.075 % | ≤ ± 0.02 % x TD |

Long-term drift:

Refer to nominal range:

| Nominal range | Piezoresistive / thin film sensor | Thin film sensor for H ₂ - applications |
|---------------|-----------------------------------|--|
| 100 bar | ≤ 0.1 %/Jahr | ≤ 0.2 %/Jahr |
| 400 bar | | ≤ 0.25 %/Jahr |
| 600 bar | | ≤ 0.2 %/Jahr |

Operational availability: < 12 s

Response time t_{90} at current output:
 For 20 Hz measuring rate: typ. 120 ms
 For 100 Hz measuring rate: typ. 50 ms

Temperature influence, case:

| For piezoresistive sensor and thin film sensor | | |
|--|-------------------------------|-----------------------|
| Nominal range | Temp. -20...80 °C | Temp. -40...-20 °C |
| 1 - 400 bar | ≤ ± 0.1 %/10K , max. 0.3 % | typical ≤ ± 0.2 %/10K |
| 0.25 bar | ≤ ± 0.15 %/10K, max. 0.4 % | |

| For thin film sensor for H ₂ applications | | |
|--|-------------------------------|-----------------------|
| Nominal range | Temp. -20...80 °C | Temp. -40...-20 °C |
| 1 - 600 bar | ≤ ± 0.2 %/10K , max. 0.3 % | typical ≤ ± 0.6 %/10K |

Indication

Display:

- High-resolution graphic display with backlight
- 4-button operation
- Freely configurable display modes
- continuously rotatable
- Optional: Remote display and control unit (max. 10 m)

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 |
| | Digital communication: | HART ® protocol, version 7 |
| | Device driver: | |
| | | <ul style="list-style-type: none">■ EDD für SIMATIC PDM■ DTM for PACTware or compatible systems (FDT compliance)■ EDD for 375 / 475 Field Communicator |
| Function: | | <ul style="list-style-type: none">■ 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: | 20 Hz, switchable to 100 Hz | |
| Resolution: | 0.5 µA | |
| 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) |
| Media: | -40...100 °C |
| 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 |
| UKEX: | CML 21UKEX21179X Ⓢ 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 |

Detailed information can be found in the Ex instructions XA_010 and XA_011 (depending on the Ex versions, see order details).

| | |
|--------|---|
| EMC *: | Per DIN EN 61326-1, NAMUR NE21 * A deviation of accuracy due to EMC influence up to 0.25 % is impossible for a design with process connection at the back. |
| SIL 2: | Functional safety per EN 61508, classification per SIL2 For detailed information see SIL instruction SA_001 |
| NAMUR: | Approved according to NE95, Test report TP14033 available upon request |

Parameterisation, simulation and adjustment

Parameterisation

| Parameter | Values | Default setting |
|---|--|--------------------------------------|
| Device | | |
| device ID | 16 digits, freely selectable | LABOM PASCAL Ci4 |
| lower range value | at any value within nominal range | 0 bar respectively 0 bar abs. |
| upper range value | at any value within nominal range | end of nominal range |
| measuring rate | 20 Hz, 100 Hz | 20 Hz |
| 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 |
| 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, xxxx.x, xxxxx | auto |
| display mode | five values, four values, three values, two values, big display | four values |
| main value | pressure, current (%), current (mA) | pressure |
| secondary values | pressure, current (%), current (mA), sensor temperature, device ID, HART-TAG, HART descriptor, <empty> | current (%), current (mA), device ID |
| Current output | | |
| output function | linear, inverse response, by square root, table function | linear |
| table function | % of m.r., output current | depends on device |
| number of table points | 2...64 | 2 (0 % ≡ 4 mA, 100 % ≡ 20 mA) |
| lower current limit | 3.8...4.0 mA | 3.8 mA |
| upper current limit | 20...21 mA | 20.5 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 |

Diagnostic functions

| Self- diagnosis | 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 | For process pressure and sensor temperature | / |
| Measuring circuit diagnostics | | |
| loop-test | Setting of a fixed current value at the output | 3.55...21.5 mA |
| pressure simulation | Setting a fixed pressure value, it also considers damping and tabular function unlike the current simulation | Nominal range |

Adjustment

| Type | Description |
|-----------------------|---|
| zero point correction | adjusts reading to zero at ambient pressure (for differential and gauge pressure devices) |
| position correction | adjusts reading of mounted device to zero at ambient pressure |
| lower adjustment | adjusts reading to applied pressure (affects zero point + span) |
| upper adjustment | 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 |

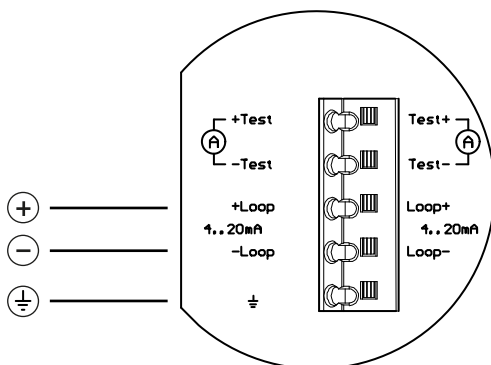
Alternative and additional possibilities of parameterisation for devices with level software LAB4Level

| Parameter | Values | Default setting |
|---------------------------------|--|--|
| Display and control unit | | |
| 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 |
| display mode | level 4 values, level 2 values, five values, four values, three values, two values, big display | level 4 values |
| main value | filling height, volume, weight, pressure, current in %, current in mA | filling height |
| secondary values | filling height, volumen, weight, pressure, 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 (= linear) |
| table function | 64 support points (filling heights/volume) | |
| Current output | | |
| measured value | height, volume, weight, pressure (equal 4...20 mA) | height |
| number of table points | 0 / 2...64 | 0 |

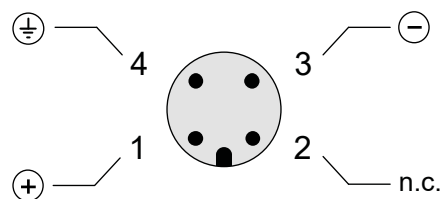
Diagnostic functions

| Measuring circuit diagnostics | | |
|-------------------------------|---|---|
| simulation function | pressure, filling height, volume, weight (mass), current | / |
| min/max values | for process pressure, sensor temperature, filling height, volume and weight | / |

Connection diagram



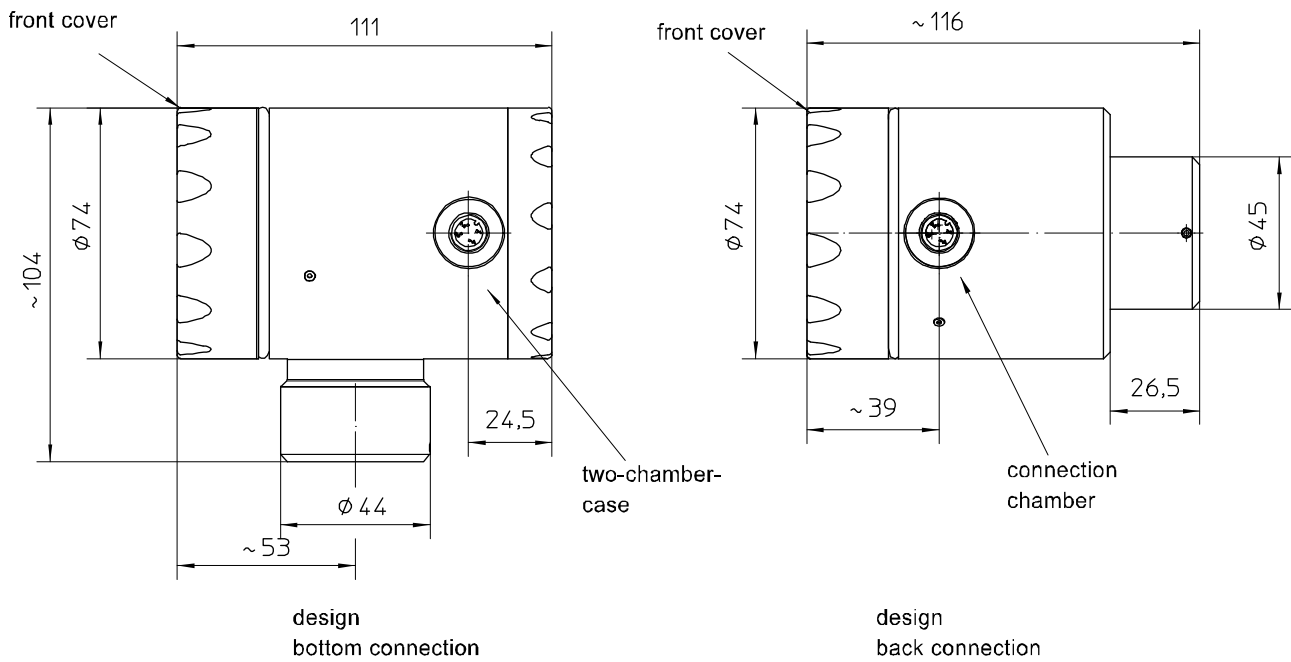
Cable gland



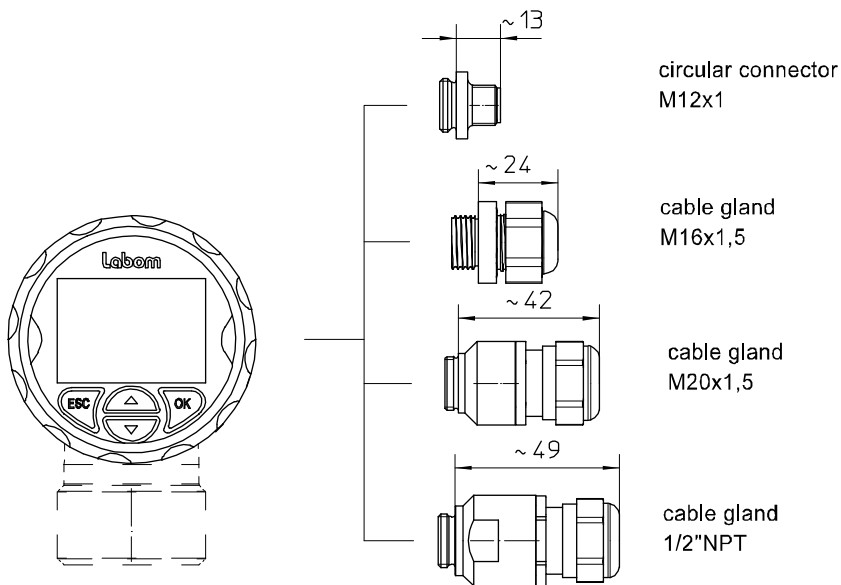
Circular connector M12 x 1

Dimensions

Case

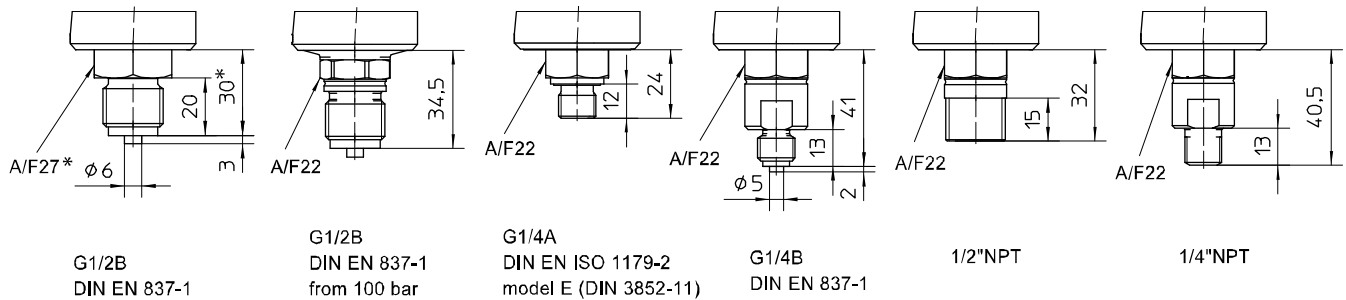


Electrical connections



All dimensions are in mm

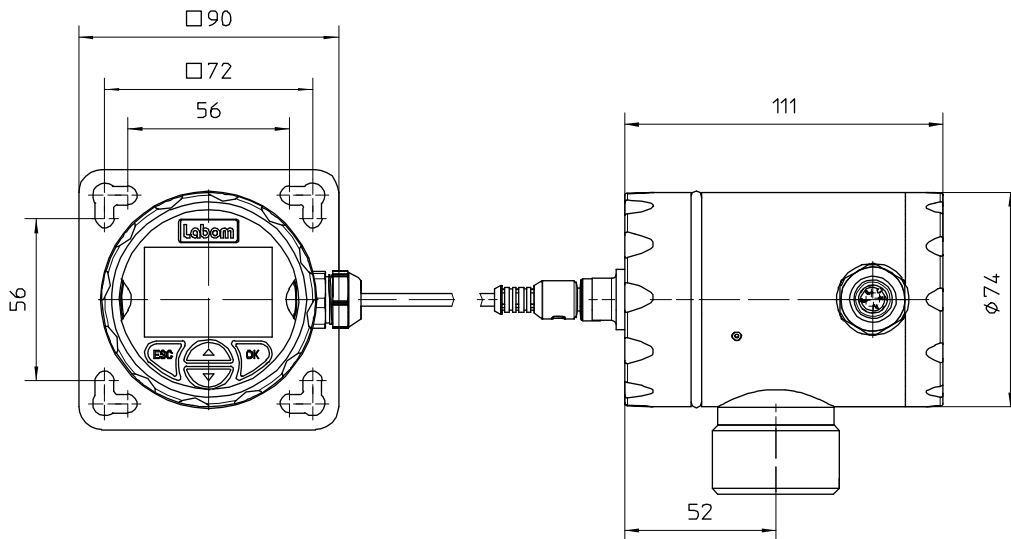
Process connections



* Deviations possible due to design

All dimensions are in millimeters

Remote display and control unit (Type series MC1140)











All dimensions are in mm

Order details

| Pressure transmitter PASCAL Ci4 with threaded connection | | | | | | | | | |
|--|---------------------------|---|--------------------------|-----------------------------|--------------------------|--|--------|--|--|
| CI4100 | process connection bottom | | | | | | | | |
| CI4103 | process connection back | | | | | | | | |
| | nominal range | turndown | overload limit[bar] | higher overload limit [bar] | Ex marking (see below) | sensor type | | | |
| A1053 | 0...1 bar | TD up to 100:1 | 3 | - | S66 / S76 / S86 | piezoresistive | | | |
| A1056 | 0...4 bar | | 10 | - | S66 / S76 / S86 | | | | |
| A1059 | 0...16 bar | | 60 | - | S66 / S76 / S86 | | | | |
| A1061 | 0...40 bar | | 100 | - | S66 / S76 / S86 | | | | |
| A1063 | 0...100 bar | | 200 | - | S62 / S77 / S87 | | | | |
| A1178 | -0.25...0.25 bar | | 1 | - | S66 / S76 / S86 | | | | |
| A1153 | -1...1 bar | | 3 | - | S62 / S77 / S87 | | | | |
| A1156 | -1...4 bar | | 10 | - | S62 / S77 / S87 | | | | |
| A1159 | -1...16 bar | | 60 | - | S62 / S77 / S87 | | | | |
| A1161 | -1...40 bar | | 100 | - | S62 / S77 / S87 | | | | |
| A1163 | -1...100 bar | | 200 | - | S62 / S77 / S87 | | | | |
| A1178.1 | -0.25...0.25 bar | | - | 6 | S62 / S77 / S87 | | | | |
| A1153.1 | -1...1 bar | | - | 10 | S62 / S77 / S87 | | | | |
| A1156.1 | -1...4 bar | | - | 25 | S62 / S77 / S87 | | | | |
| A1159.1 | -1...16 bar | | - | 120 | S62 / S77 / S87 | | | | |
| A1161.1 | -1...40 bar | | - | 120 | S62 / S77 / S87 | | | | |
| A3163.6 | -1...100 bar | | 200 | - | S66 / S76 / S86 | thin film for H ₂ -applications | | | |
| A3166.6 | -1...400 bar | | see table A ¹ | - | S66 / S76 / S86 | | | | |
| A3168.6 | -1...600 bar | | see table A ¹ | - | S66 / S76 / S86 | | | | |
| A3163 | -1...100 bar | | 200 | - | S66 / S76 / S86 | thin film | | | |
| A3166 | -1...400 bar | see table B ² | - | S66 / S76 / S86 | | | | | |
| B1053 | 0...1 bar abs | 3 | - | S66 / S76 / S86 | piezoresistive | | | | |
| B1056 | 0...4 bar abs | 10 | - | S66 / S76 / S86 | | | | | |
| B1059 | 0...16 bar abs | 60 | - | S66 / S76 / S86 | | | | | |
| B1061 | 0...40 bar abs | 120 | - | S62 / S77 / S87 | | | | | |
| F1 | parameterisation | factory settings (standard) | | | | | | | |
| F2 | | as per customer's specification (pls. specify) | | | | | | | |
| H21 | output signal | 4...20 mA, with HART-protocol | | | | | | | |
| Y1. | material case | stainless steel mat.-no. 1.4301 (304/303) | | | | | | | |
| Y2. | | stainless steel mat.-no. 1.4404 (316) | | | | | | | |
| 1 | material front cover | polypropylene (black), window Macrolon | | | | | | | |
| 2 | | stainless steel like case, window non splintering glass | | | | | | | |
| 3 | | stainless steel like case, closed, without window | | | | | | | |
| | | | | default language | available language | | | | |
| M21.1 | display | High-resolution graphic display with backlight, intuitive 4-button operation, quick access to device data | | German (standard) | English, German | | | | |
| M22.1 | | | | English | | | | | |
| M22.2 | | | | English | English, Chinese | | | | |
| M23.1 | | | | Chinese | | | | | |
| M23.2 | | | | English | English, Spanish, French | | | | |
| M23.3 | | | | Spanish | | | | | |
| M25.1 | | | | French | English, Polish, German | | | | |
| M25.2 | | | | English | | | | | |
| M25.3 | | | | Polish | English, Turkish, German | | | | |
| M26.1 | | | | German | | | | | |
| M26.2 | | | | English | English, Turkish, German | | | | |
| M26.3 | | | | Turkish | | | | | |
| M1 | | | | | | | German | | |
| | | | | | 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 mat.-no. 1.4404 (316L), for cable Ø 5-9 mm |
| T15. | | | M20 x 1.5 polyamide, for cable Ø 7-13 mm |
| T17. | | | M20 x 1.5 stainless steel mat.-no. 1.4404 (316L), 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 |
| 5 | | | pole terminals 2.5 mm ² |
| 6 | | | screwed terminals 2.5 mm ² |
| T30 | | | circular connector M12 x 1 (4-pin) |
| K1010 | | process connection | G1/2 B per EN 837-1 |
| K1002 | G1/4 B per EN 837-1 | | |
| K1024 | G1/4 A per DIN EN ISO 1179-2 (DIN 3852-11) model E | | |
| K1070 | 1/2" NPT | | |
| K1072 | 1/4" NPT | | |
| K9999 | as per indication | | |

| Additional features (to be indicated if required) | | | |
|---|---|--|--|
| J304 | coating | gold coating of internal sensor diaphragm (thickness 6 µm), for hydrogen applications ³ | |
| Q11 | accuracy | ≤ 0.075 ⁴ | |
| S66 | | 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 |
| S76 | | IECEX | Ex ia IIC TX Ga/Gb, Gb Ex ia IIIC Txx°C Da/Db, Db |
| S86 | | UKEX |  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 |
| S62 | | 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 |
| S87 | | UKEX |  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 |
| T4 | degree of protection | IP 69K ⁵ | |
| X4 | operating software LAB4Level for level applications | | |
| W1020 | material certificate | per EN 10204-3.1, wetted parts ⁶ | |
| W1201 | calibration certificate | per EN 10204-3.1, 5 measuring points | |
| W1251 | certificate | per EN 10204-3.1, for hydrogen applications | |
| W2602 | functional safety per EN 61508, classification per SIL2 | | |
| W2660 | as per UKCA regulations | | |
| W4001 | oxygen free of oil and grease ⁷ | | |

| Accessories | | |
|-------------|--|--|
| MC1140 | PASCAL Ci4 remote display and control unit including wall bracket | |
| | 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 (further lengths upon request) |
| 1 | Internal cable clamps | spring clamp terminals up to 1.5 mm ² |
| 2 | | pole terminals 2.5 mm ² |
| 3 | | screwed terminals 2.5 mm ² |
| T1 | degree of protection | IP 65 / IP 67 (standard) |
| 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 |

Order code (example): **CI4100 – A1056 – F1 – H21 – Y12 – T200 – K1010**

¹ overload limit (UE) depending on process connection (see table A)

² overload limit (UE) depending on process connection (see table B)

³ possible for piezoresistive nominal ranges up to 100 bar only

⁴ for nominal ranges: 1...40 bar and 1...16 bar abs at a turndown of $\leq 3.75:1$ only

⁵ requires front cover of stainless steel

⁶ not possible with thin film sensors (order code A3163 and A3166 and A3163.6, A3166.6 and A3168.6)

⁷ operating conditions for the option "Oxygen free of oil and grease" depending on process connection and sensor type (see table C)

Table A: Overload limit (UE) for nominal range -1...400 and -1...600 bar depending on process connection

| Process connection (s. order details) | Overload limit |
|---------------------------------------|----------------|
| K1010, K1002, K1070, K1072 | 1050 bar |
| K1024 | 640 bar |

Table B: Overload limit (UE) for nominal range -1...400 bar depending on process connection

| Process connection (s. order details) | Overload limit |
|---------------------------------------|----------------|
| K1010, K1002, K1070, K1072 | 600 bar |
| K1024 | 640 bar |

Table C: Operating conditions for the option "Oxygen free of oil and grease" depending on process connection and sensor type

| Process connection + sensor type (s. order details) | Restriction temperature | Restriction pressure |
|--|-------------------------|----------------------|
| K1010, K1002, K1070, K1072 + thin film | none | none |
| K1010, K1002, K1070, K1072 + thin film for H2-applications | Tmax ≤ 60 °C | Pmax ≤ 80 bar |

* The combination of the process connection G1/4 A per DIN EN ISO 1179-2 (DIN 3852-11) model E (K1024) and the option "Oxygen free of oil and grease" is possible upon request.