



LMP 331i

Precision Screw-in Transmitter

Stainless Steel Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 40 bar

Output signal

2-wire: 4 ... 20 mA

3-wire: 0 ... 10 V

others on request

Product characteristics

- ▶ thermal error in compensated range
-20 ... 80 °C: 0.2 % FSO
TC 0.02 % FSO / 10K

Optional versions

- ▶ IS-versions
Ex ia = intrinsically safe
for gases and dusts

The precision screw-in transmitter LMP 331i demonstrate the further development of our industrial pressure transmitters.

The signal processing of sensor signal is done by digital electronics with 16-bit analogue digital converter. Consequently, it is possible to conduct an active compensation and the transmitters with excellent measurements and exceptionally attractive price to offer on the market.

Preferred areas of use are



Chemical / petrochemical industry



Environmental engineering
(water / sewage / recycling)



| Pressure ranges | | | | | | | | |
|------------------------|---------------------|-----|-----|----|----|-----|-----|-----|
| Nominal pressure gauge | [bar] | 0.4 | 1 | 2 | 4 | 10 | 20 | 40 |
| Level gauge | [mH ₂ O] | 4 | 10 | 20 | 40 | 100 | 200 | 400 |
| Overpressure | [bar] | 2 | 5 | 10 | 20 | 40 | 80 | 105 |
| Burst pressure ≥ | [bar] | 3 | 7.5 | 15 | 25 | 50 | 120 | 210 |

| Output signal / Supply | |
|--|--|
| Standard | 2-wire: 4 ... 20 mA / $V_S = 12 ... 36 V_{DC}$ |
| Option IS-version | 2-wire: 4 ... 20 mA / $V_S = 14 ... 28 V_{DC}$ |
| Options analogue signal | 3-wire: 0 ... 10 V / $V_S = 14 ... 36 V_{DC}$ |
| Performance | |
| Accuracy ¹ | ≤ ± 0.1 % FSO |
| Permissible load | current 2-wire: $R_{max} = [(V_S - V_S \text{ min}) / 0.02 A] \Omega$ voltage 3-wire: $R_{min} = 10 k\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ |
| Long term stability | ≤ ± 0.1 % FSO / year at reference conditions |
| Response time | approx. 5 msec |
| ¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | |
| Thermal effects (offset and span) / Permissible temperatures | |
| Tolerance band [% FSO] | ≤ ± 0.2 in compensated range -20 ... 80 °C |
| TC, average [% FSO / 10 K] | ± 0.02 in compensated range -20 ... 80 °C |
| Permissible temperatures | medium: -25 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 100 °C |
| Electrical protection | |
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |
| Materials | |
| Pressure port | stainless steel 1.4404 (316 L) |
| Housing | stainless steel 1.4404 (316 L) |
| Option compact field housing | stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) |
| Seals | FKM others on request |
| Diaphragm | stainless steel 1.4435 (316L) |
| Media wetted parts | pressure port, seals, diaphragm |
| Mechanical stability | |
| Vibration | 20 g RMS / 10 ... 2000 Hz according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec half sine according to DIN EN 60068-2-27 |
| Explosion protection (only for 4 ... 20 mA / 2-wire) | |
| Approvals DX19-LMP 331i | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIC T135 °C Da |
| Safety technical max. values | $U_i = 28 V$, $I_i = 93 mA$, $P_i = 660 mW$, $C_i \approx 0 nF$, $L_i \approx 0 \mu H$, the supply connections have an inner capacity of max. 27 nF to the housing |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 65 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m |
| Miscellaneous | |
| Current consumption | signal output current: max. 25 mA signal output voltage: max. 7 mA |
| Weight | approx. 200 g |
| Installation position | any ² |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU |
| ATEX Directive | 2014/34/EU |

² Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1 \text{ bar}$.

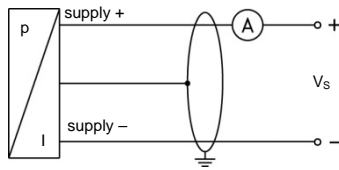
LMP 331i

Precision Screw-in Transmitter

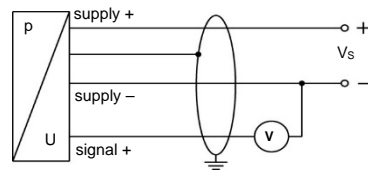
Technical Data

Wiring diagrams

2-wire-system (current)



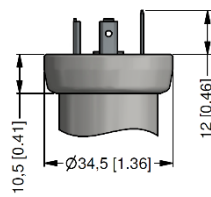
3-wire-system (voltage)



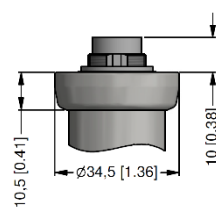
Pin configuration

| Electrical connections | ISO 4400 | Binder 723 (5-pin) | M12x1/ metal (4-pin) | compact field housing | cable colours (IEC 60757) |
|----------------------------|---------------------|--------------------|----------------------|-----------------------|---------------------------|
| | | | | | |
| supply + | 1 | 3 | 1 | IN + | WH (white) |
| supply - | 2 | 4 | 2 | IN - | BN (brown) |
| signal + (only for 3-wire) | 3 | 1 | 3 | OUT + | GN (green) |
| shield | ground pin \oplus | 5 | 4 | \oplus | GNYE (green-yellow) |

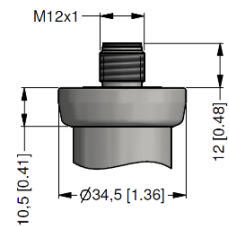
Electrical connections (dimensions mm / in)



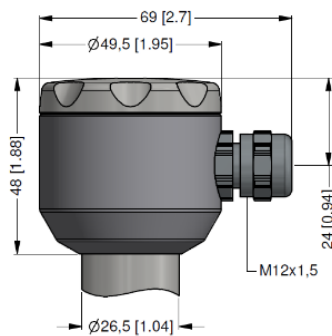
ISO 4400
(IP 65)



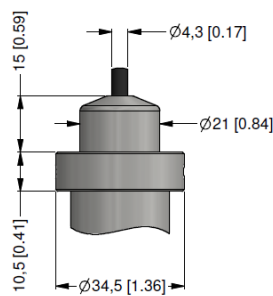
Binder series 723, 5-pin
(IP 67)



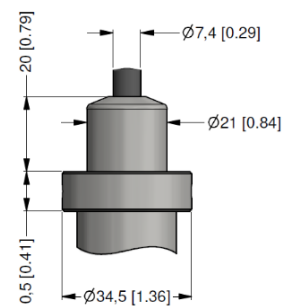
M12x1, 4-pin
(IP 67)



compact field housing
(IP 67)



cable outlet,
with PVC cable (IP 67) ³



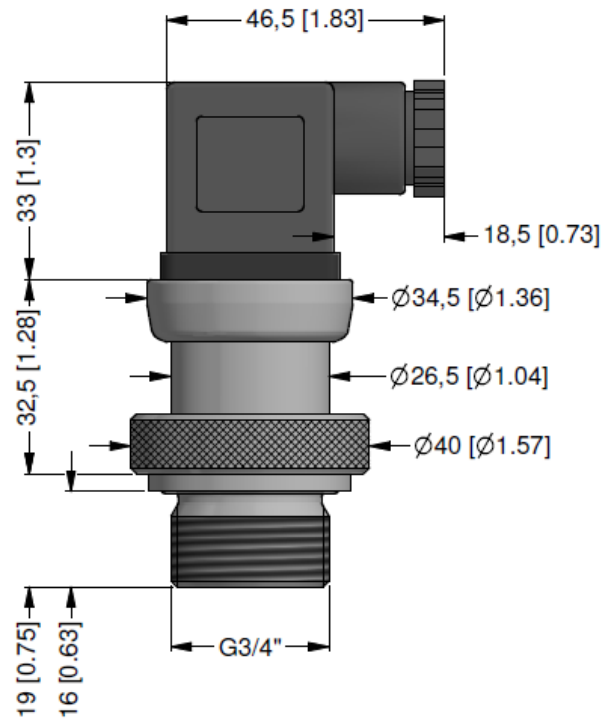
cable outlet,
cable with ventilation tube (IP 68) ⁴

⇒ universal field housing stainless steel 316L with cable gland M20x1.5 (ordering code 880) and other versions on request

³ standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)

⁴ different cable types and lengths available, permissible temperature depends on kind of cable

Mechanical connection (dimensions mm / in)



G3/4" DIN 3852 with flush sensor

⇒ metric threads and other versions on request

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Ordering code LMP 331i

LMP 331i

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| Pressure | | | | | | | | | | | | | |
|--------------------------------|---|----------------------|---|---|---|---|---|---|---|---|---|---|---------|
| | | in bar | 4 | 3 | 0 | | | | | | | | |
| | | in mH ₂ O | 4 | 3 | 1 | | | | | | | | |
| Input | [mH ₂ O] | [bar] | | | | | | | | | | | |
| | 4 | 0.4 | | | | 4 | 0 | 0 | 0 | | | | |
| | 10 | 1.0 | | | | 1 | 0 | 0 | 1 | | | | |
| | 20 | 2.0 | | | | 2 | 0 | 0 | 1 | | | | |
| | 40 | 4.0 | | | | 4 | 0 | 0 | 1 | | | | |
| | 100 | 10 | | | | 1 | 0 | 0 | 2 | | | | |
| | 200 | 20 | | | | 2 | 0 | 0 | 2 | | | | |
| | 400 | 40 | | | | 4 | 0 | 0 | 2 | | | | |
| | customer | | | | | 9 | 9 | 9 | 9 | | | | consult |
| Output | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | 1 | | | | |
| | intrinsic safety 4 ... 20 mA / 2-wire | | | | | | | | E | | | | |
| | 0 ... 10 V / 3-wire | | | | | | | | 3 | | | | |
| | customer | | | | | | | | 9 | | | | consult |
| Accuracy (at nominal pressure) | | | | | | | | | | | | | |
| | 0.1 % FSO | | | | | | | | 1 | | | | |
| | customer | | | | | | | | 9 | | | | consult |
| Electrical connection | | | | | | | | | | | | | |
| | male and female plug ISO 4400 | | | | | | | | 1 | 0 | 0 | | |
| | male plug Binder series 723 (5-pin) | | | | | | | | 2 | 0 | 0 | | |
| | male plug M12x1 (4-pin) / metal | | | | | | | | M | 1 | 0 | | |
| | cable outlet with PVC cable (IP67) ¹ | | | | | | | | T | A | 0 | | |
| | cable outlet, | | | | | | | | T | R | 0 | | |
| | cable with ventilation tube (IP68) ² | | | | | | | | | | | | |
| | compact field housing | | | | | | | | 8 | 5 | 0 | | |
| | stainless steel 1.4301 (304) | | | | | | | | | | | | |
| | customer | | | | | | | | 9 | 9 | 9 | | consult |
| Mechanical connection | | | | | | | | | | | | | |
| | G3/4" DIN 3852 | | | | | | | | | | | | |
| | with flush sensor | | | | | | | | K | 0 | 0 | | |
| | customer | | | | | | | | 9 | 9 | 9 | | consult |
| Seal | | | | | | | | | | | | | |
| | FKM | | | | | | | | | | 1 | | |
| | customer | | | | | | | | | | 9 | | consult |
| Special version | | | | | | | | | | | | | |
| | standard | | | | | | | | | | 1 | 1 | 1 |
| | customer | | | | | | | | | | 9 | 9 | 9 |
| | | | | | | | | | | | | | consult |

¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
² code TR0 = PVC cable, cable with ventilation tube available in different types and lengths