

LMP 331

Screw-In Transmitter

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 % / 0.1 % FSO



Nominal pressure

from 0 ... 100 mbar up to 0 ... 40 bar

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

others on request

Special characteristics

- ▶ pressure port G 3/4" flush
- ▶ excellent accuracy
- ▶ small thermal effect
- ▶ excellent long term stability

Optional versions

- ▶ accuracy 0.1% FSO IEC 60770
- ▶ IS-version: Ex ia = intrinsically safe for gases and dusts
- ▶ SIL 2 application according to IEC 61508 / IEC 61511
- ▶ different electrical connections
- ▶ customer specific versions
e. g. special pressure ranges

The screw-in transmitter LMP 331 has been designed for continuous level measurement and is characterized by an excellent performance and a robust construction. The modular construction allows the user the highest possible flexibility in the adaption of LMP 331.

Optional features like e.g. an intrinsically safe version or a functionally safe version (SIL 2) increase the advantages when launching and realizing projects for plants and systems.

Preferred areas of use are



Plant and Machine Engineering



Energy Industry



Environmental Engineering
(water – sewage – recycling)



LMP 331

Stainless Steel Screw-In Transmitter

Technical Data

| Input pressure range | | | | | | | | | | | | | | | | |
|--|---------------------|---|------|------|------|------|-----|-----|-----|----|----|--------------------------------|-----|-----|-----|--|
| Nominal pressure gauge | [bar] | 0.10 | 0.16 | 0.25 | 0.40 | 0.60 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | |
| Level | [mH ₂ O] | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | |
| Overpressure | [bar] | 0.5 | 1 | 1 | 2 | 5 | 5 | 10 | 10 | 20 | 40 | 40 | 80 | 80 | 105 | |
| Burst pressure ≥ | [bar] | 1.5 | 1.5 | 1.5 | 3 | 7.5 | 7.5 | 15 | 15 | 25 | 50 | 50 | 120 | 120 | 210 | |
| Vacuum resistance | | P _N ≥ 1 bar: unlimited vacuum resistance P _N < 1 bar: on request | | | | | | | | | | | | | | |
| Output signal / Supply | | | | | | | | | | | | | | | | |
| Standard | | 2-wire: 4 ... 20 mA / V _S = 8 ... 32 V _{DC} | | | | | | | | | | | | | | |
| Option IS-version | | 2-wire: 4 ... 20 mA / V _S = 10 ... 28 V _{DC} | | | | | | | | | | | | | | |
| Options 3-wire | | 3-wire: 0 ... 20 mA / V _S = 14 ... 30 V _{DC} 0 ... 10 V / V _S = 14 ... 30 V _{DC} | | | | | | | | | | | | | | |
| Performance | | | | | | | | | | | | | | | | |
| Accuracy ¹ | | standard: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO option 1: nominal pressure ≥ 0.4 bar: ≤ ± 0.25 % FSO option 2: for all nominal pressures: ≤ ± 0.1 % FSO | | | | | | | | | | | | | | |
| Permissible load | | current 2-wire: R _{max} = [(V _S - V _{Smin}) / 0.02 A] Ω current 3-wire: R _{max} = 500 Ω voltage 3-wire: R _{min} = 10 kΩ | | | | | | | | | | | | | | |
| Influence effects | | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ | | | | | | | | | | | | | | |
| Long term stability | | ≤ ± 0.1 % FSO / year | | | | | | | | | | | | | | |
| Response time | | 2-Leiter: ≤ 10 msec 3-Leiter: ≤ 3 msec | | | | | | | | | | | | | | |
| ¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | | | | | | | | | | | | | | | | |
| Thermal effects (Offset and Span) | | | | | | | | | | | | | | | | |
| Nominal pressure P _N | [bar] | ≤ 0.40 | | | | | | | | | | > 0.40 | | | | |
| Tolerance band | [% FSO] | ≤ ± 1 | | | | | | | | | | ≤ ± 0.75 | | | | |
| in compensated range | [°C] | 0 ... 70 | | | | | | | | | | -20 ... 85 | | | | |
| Permissible temperatures | | | | | | | | | | | | | | | | |
| Permissible temperatures | | medium: -40 ... 125 °C electronics / environment: -40 ... 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 | | | | | | | | | | | | | | |
| Mechanical stability | | | | | | | | | | | | | | | | |
| Vibration | | 10 g RMS (25 ... 2000 Hz) | | | | | | | | | | according to DIN EN 60068-2-6 | | | | |
| Shock | | 500 g / 1 msec | | | | | | | | | | according to DIN EN 60068-2-27 | | | | |
| Explosion protection (only for 4 ... 20 mA / 2-wire) | | | | | | | | | | | | | | | | |
| Approvals DX19-LMP 331 | | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T 85°C Da | | | | | | | | | | | | | | |
| Safety technical maximum values | | U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i ≈ 0nF, L _i ≈ 0 μH, the supply connections have an inner capacity of max. 27 nF opposite the housing | | | | | | | | | | | | | | |
| Permissible temperature for medium | | in zone 0: -20 ... 60 °C with p _{atm} 0.8 bar bis 1.1 bar in zone 1 or higher: -20 ... 70 °C | | | | | | | | | | | | | | |
| Conneting 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 | | | | | | | | | | | | | | |
| Materials | | | | | | | | | | | | | | | | |
| Pressure port | | stainless steel 1.4404 (316L) | | | | | | | | | | | | | | |
| Housing | | stainless steel 1.4404 (316L) | | | | | | | | | | | | | | |
| Seals | | standard: FKM option: EPDM NBR others on request | | | | | | | | | | | | | | |
| Diaphragm | | stainless steel 1.4435 (316L) | | | | | | | | | | | | | | |
| Media wetted parts | | pressure port, seals, diaphragm | | | | | | | | | | | | | | |

LMP 331

Stainless Steel Screw-In Transmitter

Technical Data

| Miscellaneous | | | | | |
|---|------------------------------------|--|---|---------------|---------------------------|
| Optionally SIL 2 application | according to IEC 61508 / IEC 61511 | | | | |
| Current consumption | signal output current: max. 25 mA | | signal output voltage: max. 7 mA | | |
| Weight | approx. 200 g | | | | |
| Installation position | any ³ | | | | |
| Operational life | > 100 x 10 ⁶ cycles | | | | |
| CE-conformity | EMC Directive: 2004/108/EC | | | | |
| ATEX Directive | 94/4/EG | | | | |
| ³ Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviation in the zero point for pressure ranges $P_N \leq 1$ bar. | | | | | |
| Pin configuration | | | | | |
| Electrical connections | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | field housing | cable colours (DIN 47100) |
| 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 | 5 | 4 | ⊥ | ye/gn (yellow/green) |
| Wiring diagrams | | | | | |
| 2-wire-system (current) | | | 3-wire-system (current/voltage) | | |
| Electrical connections (dimensions in mm) | | | | | |
| standard ISO 4400 (IP 65) Binder Series 723 5-pin (IP 67) | | option M12x1 4-pin (IP 67) cable outlet with PVC cable (IP 67) ⁴ compact field housing (IP 67) cable outlet, cable with ventilation tube (IP 68) ⁵ | | | |
| ⁴ standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C) | | | | | |
| ⁵ different cable types and lengths available, permissible temperature depends on kind of cable | | | | | |
| Mechanical connection (dimensions in mm) | | | | | |
| standard G3/4" flush (DIN 3852) with ISO 4400 | | | standard for SIL- and SIL-Ex-version⁶ G3/4" flush (DIN 3852) with ISO 4400 | | |
| ⁶ not in combination with the accuracy 0.1% | | | | | |

This data sheet contains product specification, properties are not guaranteed. Subject to change without notice.

Ordering code LMP 331

LMP 331

| | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

| | | | | | | | | | | | | | | | | | | | | |
|------------------------------|---|--------|---|---|--|---|---|---|---|----|---|---|---|--|--|--|--|---|---|---------|
| Pressure | | | | | | | | | | | | | | | | | | | | |
| | in bar | 4 | 3 | 0 | | | | | | | | | | | | | | | | |
| | in mH ₂ O | 4 | 3 | 1 | | | | | | | | | | | | | | | | |
| Input | [mH ₂ O] | [bar] | | | | | | | | | | | | | | | | | | |
| | 1 | 0.10 | | | | 1 | 0 | 0 | 0 | | | | | | | | | | | |
| | 1.6 | 0.16 | | | | 1 | 6 | 0 | 0 | | | | | | | | | | | |
| | 2.5 | 0.25 | | | | 2 | 5 | 0 | 0 | | | | | | | | | | | |
| | 4 | 0.40 | | | | 4 | 0 | 0 | 0 | | | | | | | | | | | |
| | 6 | 0.60 | | | | 6 | 0 | 0 | 0 | | | | | | | | | | | |
| | 10 | 1.0 | | | | 1 | 0 | 0 | 1 | | | | | | | | | | | |
| | 16 | 1.6 | | | | 1 | 6 | 0 | 1 | | | | | | | | | | | |
| | 25 | 2.5 | | | | 2 | 5 | 0 | 1 | | | | | | | | | | | |
| | 40 | 4.0 | | | | 4 | 0 | 0 | 1 | | | | | | | | | | | |
| | 60 | 6.0 | | | | 6 | 0 | 0 | 1 | | | | | | | | | | | |
| | 100 | 10 | | | | 1 | 0 | 0 | 2 | | | | | | | | | | | |
| | 160 | 16 | | | | 1 | 6 | 0 | 2 | | | | | | | | | | | |
| | 250 | 25 | | | | 2 | 5 | 0 | 2 | | | | | | | | | | | |
| | 400 | 40 | | | | 4 | 0 | 0 | 2 | | | | | | | | | | | |
| | customer | | | | | 9 | 9 | 9 | 9 | | | | | | | | | | | consult |
| Pressure port | | | | | | | | | | | | | | | | | | | | |
| | Stainless steel 1.4404 (316L) | | | | | 1 | | | | | | | | | | | | | | |
| | customer | | | | | 9 | | | | | | | | | | | | | | consult |
| Diaphragm | | | | | | | | | | | | | | | | | | | | |
| | Stainless steel 1.4435 (316L) | | | | | 1 | | | | | | | | | | | | | | |
| | customer | | | | | 9 | | | | | | | | | | | | | | consult |
| Output | | | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | | 1 | | | | | | | | | | |
| | 0 ... 20 mA / 3-wire | | | | | | | | | 2 | | | | | | | | | | |
| | 0 ... 10 V / 3-wire | | | | | | | | | 3 | | | | | | | | | | |
| | Intrinsic safety 4 ... 20 mA / 2-wire | | | | | | | | | E | | | | | | | | | | |
| | SIL2 4 ... 20 mA / 2-wire | | | | | | | | | 1S | | | | | | | | | | |
| | SIL2 with Intrinsic safety 4 ... 20 mA / 2-wire | | | | | | | | | ES | | | | | | | | | | |
| | customer | | | | | | | | | 9 | | | | | | | | | | consult |
| Seals | | | | | | | | | | | | | | | | | | | | |
| | FKM | | | | | | | | | 1 | | | | | | | | | | |
| | EPDM | | | | | | | | | 3 | | | | | | | | | | |
| | NBR | | | | | | | | | 5 | | | | | | | | | | |
| | customer | | | | | | | | | 9 | | | | | | | | | | consult |
| Electrical connection | | | | | | | | | | | | | | | | | | | | |
| | Male and female plug ISO 4400 | | | | | | | | | 1 | 0 | 0 | | | | | | | | |
| | Male plug Binder series 723 (5-pin) | | | | | | | | | 2 | 0 | 0 | | | | | | | | |
| | Cable outlet with PVC cable ¹ | | | | | | | | | T | A | 0 | | | | | | | | |
| | Cable outlet ² | | | | | | | | | T | R | 0 | | | | | | | | |
| | Male plug M12x1 (4-pin) / metal | | | | | | | | | M | 1 | 0 | | | | | | | | |
| | Compact field housing | | | | | | | | | 8 | 5 | 0 | | | | | | | | |
| | stainless steel 1.4305 | | | | | | | | | | | | | | | | | | | |
| | customer | | | | | | | | | 9 | 9 | 9 | | | | | | | | consult |
| Accuracy | | | | | | | | | | | | | | | | | | | | |
| | standard for P _N ≥ 0.4 bar | 0.35 % | | | | | | | | | | | 3 | | | | | | | |
| | standard for P _N < 0.4 bar | 0.5 % | | | | | | | | | | | 5 | | | | | | | |
| | option 1 for P _N ≥ 0.4 bar | 0.25 % | | | | | | | | | | | 2 | | | | | | | |
| | option 2 | 0.1 % | | | | | | | | | | | 1 | | | | | | | |
| | customer | | | | | | | | | | | | 9 | | | | | | | consult |
| Special version | | | | | | | | | | | | | | | | | | | | |
| | standard | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| | customer | | | | | | | | | | | | | | | | | 9 | 9 | 9 |

¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C), others on request

² cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable

