

LMP 331

Screw-In Transmitter

Stainless Steel Sensor



accuracy according to IEC 60770:
Standard: 0.35 % FSO
Option: 0.25 % / 0.1 % FSO

LMP 331
Stainless Steel
Screw-In Transmitter

Nominal pressure

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

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)



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		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 _{s min}) / 0.02] 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		2-Leiter: ≤ 10 msec 3-Leiter: ≤ 3 msec													
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) ² with optional accuracy 0,1 % FSO the response time is 200 msec															
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)															
Approval DX19-LMP 331		IBExU10ATEX1068X Zone 0: II 1 G Ex ia IIC T4 Ga Zone 20: II 1 D Ex iaD 20 T 85°C													
Safety technical maximum values		U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i ≈ 0nF, L _i ≈ 0 μH													
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 (media wetted)		standard: FKM option: EPDM NBR others on request													
Diaphragm		stainless steel 1.4435 (316L)													
Media wetted parts		pressure port, seals, diaphragm													

Miscellaneous	
Optionally SIL 2 application	according to IEC 61508 / IEC 61511
Current consumption	signal output current: max. 25 mA signal output voltage: max. 5 mA
Weight	approx. 200 g
Installation position	any ³
Operational life	> 100 x 10 ⁶ cycles
CE-conformity	EMC Directive: 2004/108/EC

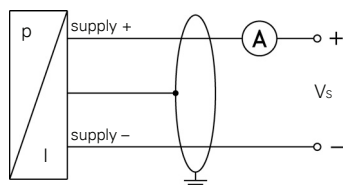
³ Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviation in the zero point for pressure ranges $P_N \leq 1$ bar.

Pin configuration

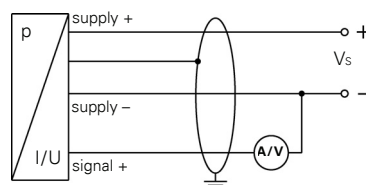
Electrical connections	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	1	IN +	wh (white)
Supply -	2	4	2	IN -	bn (brown)
Signal + (only for 3-wire)	3	1	3	OUT +	gn (green)
Shield	ground pin	5	4	$\perp$	gn/ye (green / yellow)

Wiring diagrams

2-wire-system (current)

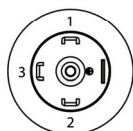
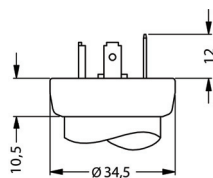


3-wire-system (current/voltage)



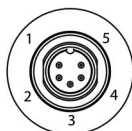
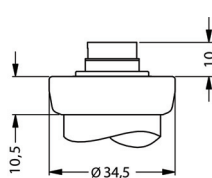
Electrical connections (dimensions in mm)

standard

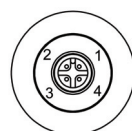
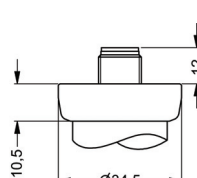


ISO 4400
(IP 65)

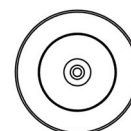
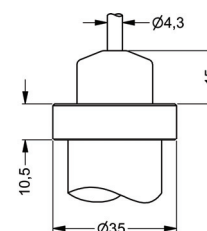
option



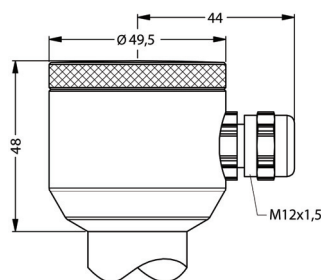
Binder Series 723 5-pin
(IP 67)



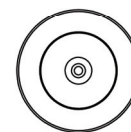
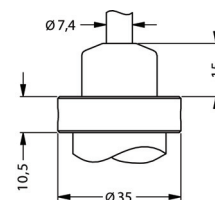
M12x1 4-pin
(IP 67)



cable outlet with PVC cable
(IP 67)⁴



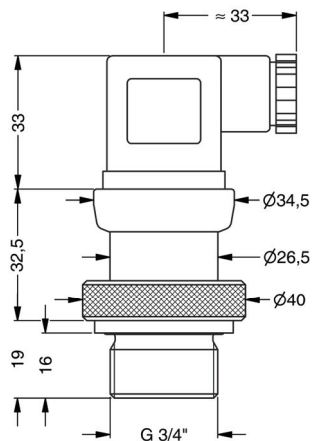
compact field housing
(IP 67)



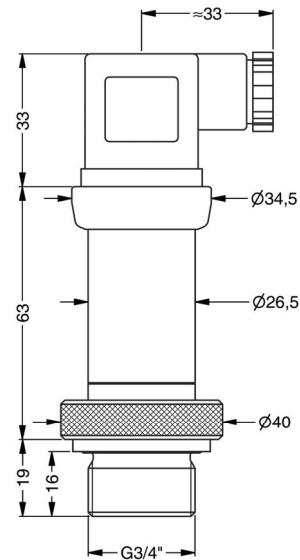
cable outlet, cable with ventilation tube
(IP 68)⁵

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-version

G3/4" flush (DIN 3852)
with ISO 4400

Screw-In Transmitter**LMK 331****Characteristics**

- ▶ ceramic sensor
- ▶ accuracy according to IEC 60770:
0.5 % FSO
- ▶ nominal pressure ranges
from 0 ... 400 mbar
up to 0 ... 60 bar
- ▶ different electrical and
mechanical connections
- ▶ option SIL 2 application
according to IEC 61508 / IEC 61511

**Screw-In Transmitter****LMK 351****Characteristics**

- ▶ capacitive ceramic sensor
optionally with diaphragm
Al₂O₃ 99.9 %
- ▶ accuracy according to IEC 60770:
0.35 % / 0.25 % FSO
- ▶ nominal pressure ranges
from 0 ... 40 mbar
up to 0 ... 10 bar
- ▶ option IS-version



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