



# **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)

















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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 <sub>2</sub> 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 <sub>N</sub> ≥ 1 bar: unlimited vacuum resistance													
P <sub>N</sub> < 1 bar: on request															

Output signal / Supply							
Standard	2-wire: 4 20 mA / $V_S = 8$ 32 $V_{DC}$ SIL-version: $V_S = 14$ 28 $V_{DC}$						
Option IS-version	2-wire: 4 20 mA / V <sub>S</sub> = 10 28 V <sub>DC</sub> SIL-version: V <sub>S</sub> = 14 28 V <sub>DC</sub>						
Options 3-wire	3-wire: 0 20 mA / V <sub>S</sub> = 14 30 V <sub>DC</sub>						
	$0 \dots 10 \text{ V} / \text{V}_S = 14 \dots 30 \text{ V}_{DC}$						
Performance	7 2 30 20 20 20 20 20 20 20 20 20 20 20 20 20						
Accuracy1	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: $R_{\text{max}} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}] \Omega$						
	current 3-wire: $R_{\text{max}} = 500 \Omega$						
	voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$						
Influence effects	supply: 0.05 % FSO / 10 V						
Lang tarm atability	load: 0.05 % FSO / kΩ						
Long term stability  Response time <sup>2</sup>	≤ ± 0.1 % FSO / year at reference conditions  2-Leiter: ≤ 10 msec						
Kesponse une	3-Leiter: ≤ 3 msec						
	imit point adjustment (non-linearity, hysteresis, repeatability)						
<sup>2</sup> with optional accuracy 0,1 % FSO the	e response time is 200 msec						
Thermal effects (Offset and Spa	an)						
Nominal pressure P <sub>N</sub> [bar	•						
Tolerance band [% FSC							
in compensated range [°C	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	,						
Approvals	IBEXU 10 ATEX 1068 X / IECEX IBE 12.0027X						
DX19-LMP 331	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	in zone 0: -20 60 °C with p <sub>atm</sub> 0.8 bar bis 1.1 bar						
medium	in zone 1 or higher: -20 70 °C						
Conneting cables cable capacitance: signal line/shield also signal line / signal line: 160 pF/m							
(by factory)	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						
	others on request						
Dianbroom	stainless steel 1.4435 (316L)						
Diaphragm  Media wetted parts	pressure port, seals, diaphragm						

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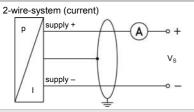
Miscellaneous		
Optionally SIL 2 application	according to IEC 61508 / IEC 61511	
Current consumption	signal output current: max. 25 mA	signal output voltage: max. 7 mA
Weight	approx. 200 g	
Installation position	any <sup>3</sup>	
Operational life	> 100 x 10 <sup>6</sup> cycles	
CE-conformity	EMC Directive: 2014/30/EU	
ATEX Directive	2014/34/EU	

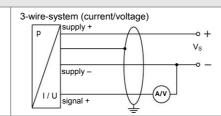
<sup>&</sup>lt;sup>3</sup> Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviation in the zero point for pressure ranges  $P_N \le 1$  bar.

#### Pin configuration

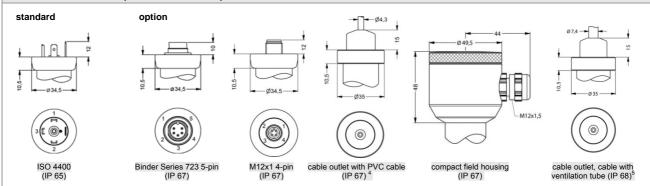
Electrical connections	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (IEC 60757)
Supply +	1	3	1	IN +	wh (white)
Supply –	2	4	2	IN –	bn (brown)
Signal + (only for 3-wire)	3	1	3	OUT +	gn (green)
Shield	ground pin	5	4	<u></u>	gnye (green-yellow)

#### Wiring diagrams



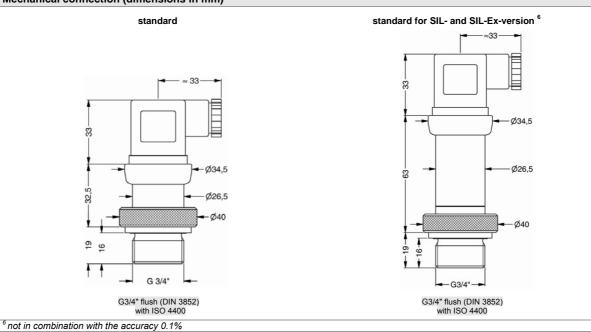


#### Electrical connections (dimensions in mm)



 $<sup>^4</sup>$  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)





#### Ordering code LMP 331 LMP 331 Pressure 4 3 0 4 3 1 in bar in mH<sub>2</sub>O 0 0 0 6 0 0 5 0 0 0 0 0 0 0 1 6 0 1 5 0 1 0 0 1 0 0 1 0 0 2 6 0 2 1 0.10 1 16 0.16 2.5 0.25 4 6 4 0.40 6 0.60 10 1.0 16 1.6 25 2.5 40 4.0 60 6.0 6 100 10 160 16 5 0 2 0 0 2 9 9 9 250 25 40 400 customer consult Stainless steel 1.4404 (316L) 9 customer consult Diaphragm Stainless steel 1.4435 (316L) 1 This dokument contains product specification; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice. customer 9 consult Output 4 ... 20 mA / 2-wire 1 0 ... 20 mA / 3-wire 2 0 ... 20 ml / 3 wire 10 v / 3-wire 11 v / 3 wire 12 v / 3-wire 12 v / 3 wire 13 v / 3 wire 14 v / 3 wire 15 v / 3 wire 16 v / 3 wire 17 v / 3 wire 18 v / 3 wire 3 Е 1S SIL2 with Intrinsic safety ES 4 ... 20 mA / 2-wire customer 9 consult FKM EPDM 3 customer consult Electrical connection 0 0 0 0 A 0 R 0 Male and female plug ISO 4400 1 2 T T Male plug Binder series 723 (5-pin) Cable outlet with PVC cable <sup>1</sup> Cable outlet <sup>2</sup> R 0 1 0 Male plug M12x1 (4-pin) / metal Compact field housing 8 5 0 stainless steel 1.4305 9 9 9 customer consult standard for P<sub>N</sub> ≥ 0.4 bar 0.35 % 3 standard for P<sub>N</sub>< 0.4 bar 0.5 % option 1 for $P_N \ge 0.4$ bar 0.25 % 2 0.1 % 3 option 2 customer 9 consult Special version standard 0 0 0 9 9 9 customer consult

## Prices EXW Thierstein, excluding package

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

 $<sup>^{2}</sup>$  cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable

<sup>3</sup> not in combination with SIL