

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

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

Optional versions

- 3 accuracy 0.1% FSO IEC 60770
- 3 IS-version:
Ex ia = intrinsically safe
for gases and dusts
- 3 SIL 2 application according to
IEC 61508 / IEC 61511
- 3 different electrical connections
- 3 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.

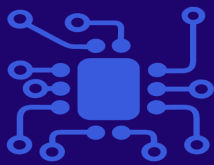
Preferred areas of use are

Plant and machine engineering

Energy industry

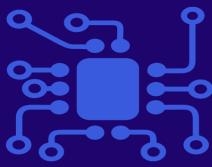
Environmental engineering
(water – sewage – recycling)

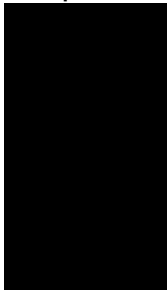
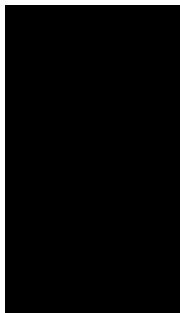
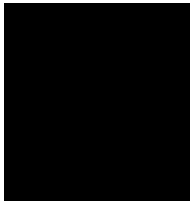
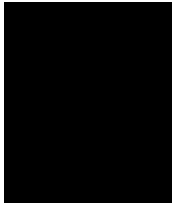
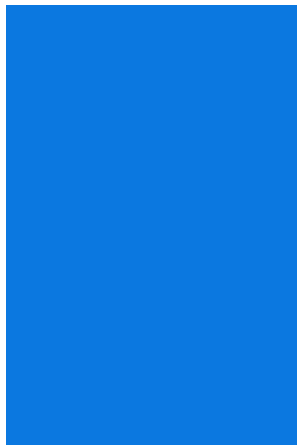
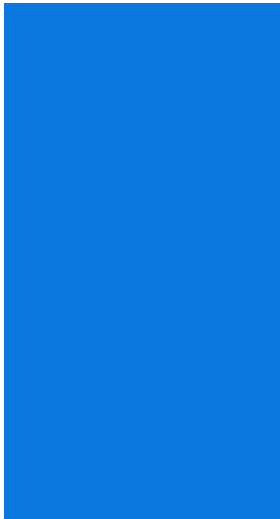




SensaCo Ltd.

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 $\hat{0}$	[bar]	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50	50	120	120	210
Vacuum resistance	$p_N \hat{0}$ 1 bar: unlimited vacuum resistance $p_N < 1$ bar: on request														
Output signal / Supply															
Standard	2-wire: 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$ SIL-version: $V_S = 14 \dots 28 V_{DC}$														
Option IS-version	2-wire: 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$ SIL-version: $V_S = 14 \dots 28 V_{DC}$														
Options 3-wire	3-wire: 0 ... 20 mA / $V_S = 14 \dots 30 V_{DC}$ 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$														
Performance															
Accuracy ¹	standard: nominal pressure < 0.4 bar: $\hat{0} \pm 0.5 \%$ FSO nominal pressure $\hat{0}$ 0.4 bar: $\hat{0} \pm 0.35 \%$ FSO option 1: nominal pressure $\hat{0}$ 0.4 bar: $\hat{0} \pm 0.25 \%$ FSO option 2: for all nominal pressures: $\hat{0} \pm 0.1 \%$ FSO														
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{Smin}) / 0.02 A] T$ current 3-wire: $R_{max} = 240 T$ voltage 3-wire: $R_{min} = 10 kT$														
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kT														
Long term stability	$\hat{0} \hat{N}$ 0.1 % FSO / year at reference conditions														
Response time ²	2-wire: $\hat{0}$ 10 msec 3-wire: $\hat{0}$ 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]	$\hat{0}$ 0.40							> 0.40						
Tolerance band	[% FSO]	$\hat{0} \hat{N}$ 1							$\hat{0} \hat{N}$ 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 T135 °C Da														
Safety technical maximum values	$U_i = 28 V$, $I_i = 93 mA$, $P_i = 660 mW$, $C_i \hat{A}$ 0nF, $L_i \hat{A}$ 0 σH , 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 up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °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 $\mu H/m$														
Materials															
Pressure port	stainless steel 1.4404 (316L)														
Housing	stainless steel 1.4404 (316L)														
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm)														
Seals	standard: FKM option: EPDM others on request														
Diaphragm	stainless steel 1.4435 (316L)														
Media wetted parts	pressure port, seals, diaphragm														
Miscellaneous															
Optionally SIL 2 version ³	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 ⁴														
Operational life	100 million load cycles														
CE-conformity	EMC Directive: 2014/30/EU														
ATEX Directive	2014/34/EU														
³ only for 4...20mA / 2-wire; not in combination with the accuracy 0.1% ⁴ 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 $p_N \hat{0}$ 1 bar.															



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	5	4		GNYE (green-yellow)
Wiring diagrams					
2-wire-system (current) p supply + Vs I supply –			3-wire-system (current / voltage) p supply + Vs supply – I/U signal + A/V		
Electrical connections (dimensions in mm)					
standard		options			
		   			
ISO 4400 (IP 65)		Binder series 723, 5-pin (IP 67)M12x1, 4-pin (IP 67)cable outlet with PVC cable (IP 67) ⁵ cable outlet, cable with ventilation tube (IP 68) ⁶ compact field housing (IP 67)			
⁵ standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C) ⁶ different cable types and lengths available, permissible temperature depends on kind of cable					
Mechanical connection (dimensions in mm)					
standard			SIL- and SIL-Ex-version		
					
G3/4" flush (DIN 3852) with ISO 4400			G3/4" flush (DIN 3852) with ISO 4400		

Ordering code LMP 331

LMP 331

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Pressure																			
		in bar	4	3	0														
		in mH ₂ O	4	3	1														
Input	[mH ₂ O]	[bar]																	
	1.0	0.10				1	0	0	0										
	1.6	0.16				1	6	0	0										
	2.5	0.25				2	5	0	0										
	4.0	0.40				4	0	0	0										
	6.0	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 é 20 mA / 2-wire										1								
	0 é 20 mA / 3-wire										2								
	0 é 10 V / 3-wire										3								
	intrinsic safety 4 é 20 mA / 2-wire										E								
	SIL2 4 é 20 mA / 2-wire										1S								
	SIL2 with intrinsic safety										ES								
	4 é 20 mA / 2-wire																		
	customer										9								consult
Seal																			
	FKM										1								
	EPDM										3								
	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 (IP67) ¹											T	A	0					
	cable outlet,																		
	cable with ventilation tube (IP68) ²											T	R	0					
	male plug M12x1 (4-pin) / metal											M	1	0					
	compact field housing																		
	stainless steel 1.4301 (304)											8	5	0					
	customer											9	9	9					consult
Accuracy																			
	standard for p _N 0 0.4 bar:	0.35 % FSO													3				
	standard for p _N < 0.4 bar:	0.50 % FSO													5				
	option 1 for p _N 0 0.4 bar:	0.25 % FSO													2				
	option 2:	0.10 % FSO ³													1				
	customer														9				consult
Special version																			
	standard															0	0	0	
	customer															9	9	9	consult

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

² code TR0 = PVC cable, cable with ventilation tube available in different types and lengths

³ not in combination with SIL