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_2O]	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}	SIL-version: V_S = 14 … 28 V_{DC}
Option IS-version	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	SIL-version: V_S = 14 … 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		
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: $R_{max} = [(V_S – V_{S\,min}) / 0.02\ A]\ \Omega$ 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 at reference conditions	
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)	
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 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. 7 mA
Weight	approx. 200 g	
Installation position	any [3]	
Operational life	> 100 x 10^6 cycles	
CE-conformity	EMC Directive: 2014/30/EU	
ATEX Directive	2014/34/EU	

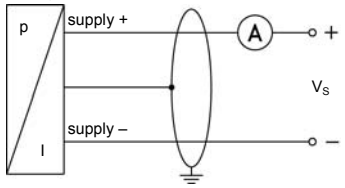
[3] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviation in the zero point for pressure ranges $P_N \leq 1$ bar.

Pin configuration

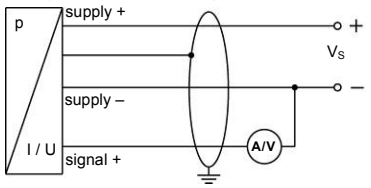
Electrical connections	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (IEC 60757)
Supply +	1	3	1	IN +	wh (white)
Supply –	2	4	2	IN –	bn (brown)
Signal + (only for 3-wire)	3	1	3	OUT +	gn (green)
Shield	ground pin	5	4	⏚	gnye (green-yellow)

Wiring diagrams

2-wire-system (current)

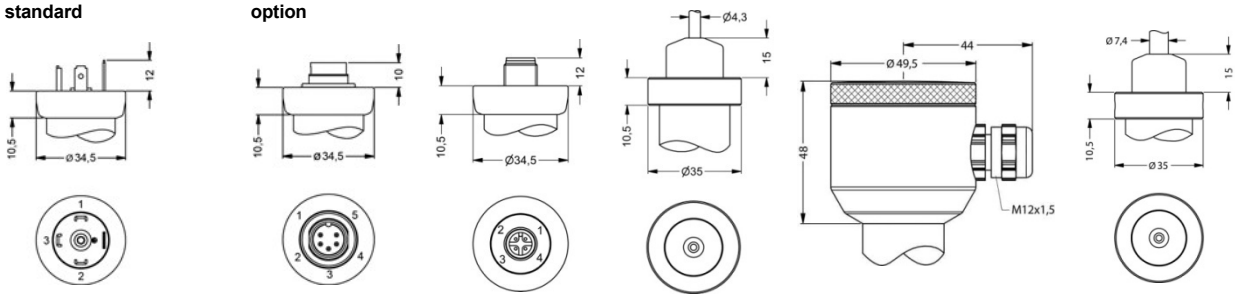


3-wire-system (current/voltage)



Electrical connections (dimensions in mm)

standard **option**

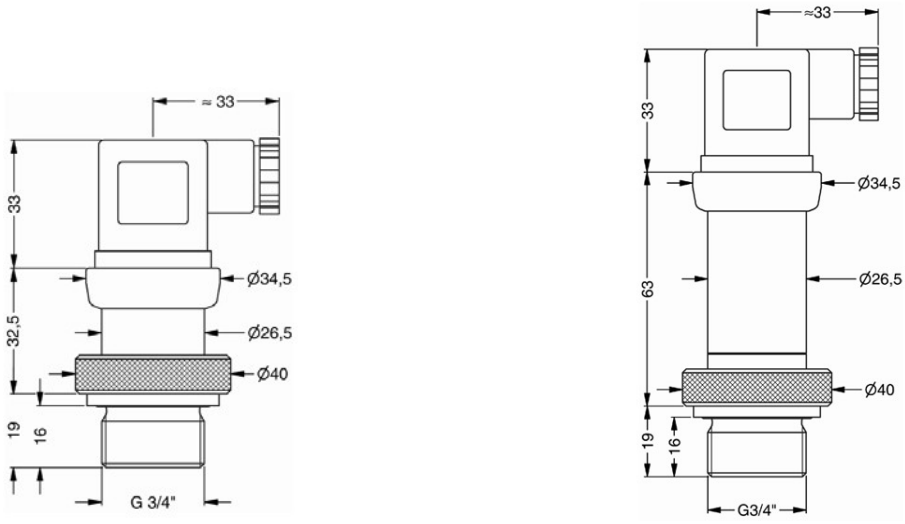


ISO 4400 (IP 65) | Binder Series 723 5-pin (IP 67) | M12x1 4-pin (IP 67) | cable outlet with PVC cable (IP 67) [4] | compact field housing (IP 67) | cable outlet, cable with ventilation tube (IP 68)[5]

[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 **standard for SIL and SIL Ex version [6]**



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

[6] not in combination with the accuracy 0.1%

Ordering code LMP 331

LMP 331 □□□-□□□□-□-□-□-□-□□□-□-□□□

Pressure			
	in bar	430	
	in mH_2O	431	
Input	**[mH_2O]**	**[bar]**	
	1	0.10	1000
	1.6	0.16	1600
	2.5	0.25	2500
	4	0.40	4000
	6	0.60	6000
	10	1.0	1001
	16	1.6	1601
	25	2.5	2501
	40	4.0	4001
	60	6.0	6001
	100	10	1002
	160	16	1602
	250	25	2502
	400	40	4002
	customer		9999 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
customer			9 consult
Electrical connection			
Male and female plug ISO 4400			100
Male plug Binder series 723 (5-pin)			200
Cable outlet with PVC cable [1]			TA0
Cable outlet [2]			TR0
Male plug M12x1 (4-pin) / metal			M10
Compact field housing stainless steel 1.4305			850
customer			999 consult
Accuracy			
standard for $P_N \geq 0.4$ bar	0.35 %		3
standard for $P_N < 0.4$ bar	0.5 %		5
option 1 for $P_N \geq 0.4$ bar	0.25 %		2
option 2	0.1 % [3]		1
customer			9 consult
Special version			
standard			000
customer			999 consult

Prices EXW Thierstein, excluding package

[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

[3] not in combination with SIL

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