LMP 331

Screw-In Transmitter

Stainless Steel Sensor

accuracy according to IEC 61298-2:
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 61298-2
- 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} = 240 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-wire: ≤ 10 msec	3-wire: ≤ 3 msec
[1] accuracy according to IEC 61298-2 – 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

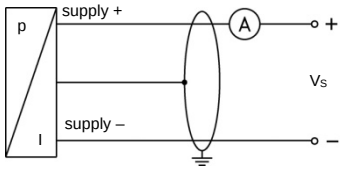
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	20 g RMS / 10 ... 2000 Hz according to DIN EN 60068-2-6
Shock	500 g / 1 msec half sine 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 ≈ 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 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 µH/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 ≤ 1 bar.*	

Pin configuration

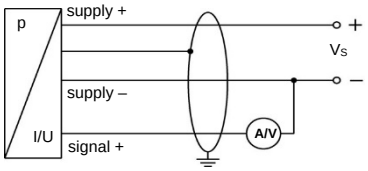
Electrical connections	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
Supply +	1	3	1	IN +	WH (white)
Supply –	2	4	2	IN –	BN (brown)
Signal + (only for 3-wire)	3	1	3	OUT +	GN (green)
Shield	ground pin ⏚	5	4	⏚	GNYE (green-yellow)

Wiring diagrams

2-wire-system (current)

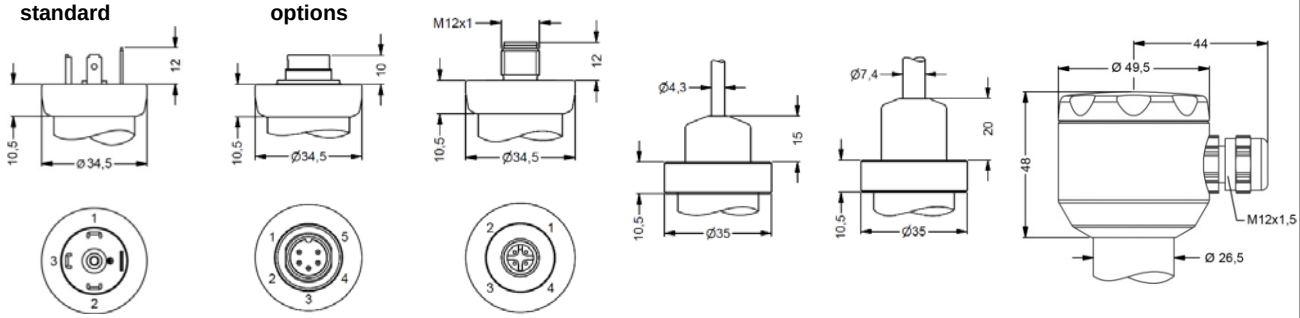


3-wire-system (current / voltage)



Electrical connections (dimensions in mm)

standard **options**



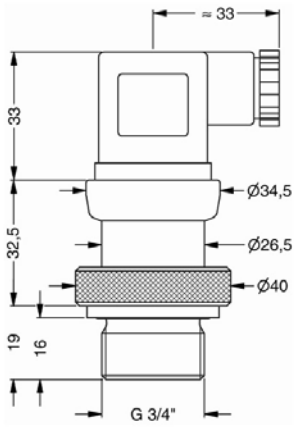
ISO 4400 (IP 65) | Binder series 723, 5-pin (IP 67) | M12x1, 4-pin (IP 67)

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

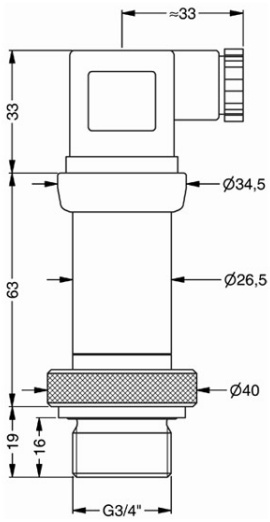
Mechanical connection (dimensions in mm)

standard



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

SIL- and SIL-Ex-version



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

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BD|SENSORS pressure measurement

Ordering code LMP 331

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			Code	
Pressure				
		in bar	4 3 0	
		in mH_2O	4 3 1	
Input	**[mH_2O]**	**[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 … 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	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 $p_N \geq 0.4$ bar:	0.35 % FSO	3	
	standard for $p_N < 0.4$ bar:	0.50 % FSO	5	
	option 1 for $p_N \geq 0.4$ 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 … 70 °C), others on request
[2] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[3] not in combination with SIL

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