

LMP 331i



Precision Screw-in transmitter

Stainless Steel Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 40 bar

Output signal

2-wire: 4 ... 20 mA
3-wire: 0 ... 10 V
others on request

Product characteristics

- ▶ thermal error in compensated range
-20 ... 80 °C: 0.2 % FSO
TC 0.02 % FSO / 10K
- ▶ Turn-Down 1:10
- ▶ communication interface for
adjusting offset, span and damping



Optional versions

- ▶ IS-versions
Ex ia = intrinsically safe
for gases and dusts
- ▶ adjustment of nominal pressure
gauges (factory-provided)

The precision screw-in transmitter LMP 331i demonstrate the further development of our industrial pressure transmitters.

The signal processing of sensor signal is done by digital electronics with 16-bit analogue digital converter. Consequently it is possible to conduct an active compensation and the transmitters with excellent measurements and exceptionally attractive price to offer on the market.

Preferred areas of use are

-  Chemical / petrochemical industry
-  Environmental engineering
(water / sewage / recycling)



Pressure ranges ¹								
Nominal pressure gauge / absolute	[bar]	0.4	1	2	4	10	20	40
Level gauge	[mH ₂ O]	4	10	20	40	100	200	400
Overpressure	[bar]	2	5	10	20	40	80	105
Burst pressure	[bar]	3	7.5	15	25	50	120	210
¹ On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.								
Output signal / Supply								
Standard	2-wire: 4 ... 20 mA / V _S = 12 ... 36 V _{DC}							
Option IS-protection	2-wire: 4 ... 20 mA / V _S = 14 ... 28 V _{DC}							
Options analog signal	2-wire: 4 ... 20 mA with communication interface ²							
	3-wire: 0 ... 10 V / V _S = 14 ... 36 V _{DC} 0 ... 10 V with communication interface ²							
² only possible with electrical connection Binder series 723 (7-pin)								
Performance								
Accuracy performance after turn-down	IEC 60770 ³ : ≤ ± 0.1 % FSO no change of accuracy ⁴ for calculation use the following formula (for nominal pressure ranges ≤ 0.40 bar see note 4): ≤ ± [0.1 + 0.015 x turn-down] % FSO with turn-down = nominal pressure range / adjusted range e.g. with a turn-down of 1:10 following accuracy is calculated: ≤ ± (0.1 + 0.015 x 10) % FSO i.e. accuracy is ≤ ± 0.25 % FSO							
Permissible load	current 2-wire: R _{max} = [(V _S - V _S min) / 0.02 A] 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 x turn-down) % FSO / year at reference conditions							
Response time	approx. 5 msec							
Adjustability	configuration of following parameters possible (interface / software necessary ⁵): - electronic damping: 0 ... 100 sec - offset: 0 ... 90 % FSO - turn down of span: max. 1:10							
³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)								
⁴ except nominal pressure ranges □ ≤ 0.40 bar; for these calculation of accuracy is as follows: ≤ ± (0.1 + 0.02 x turn-down) % FSO e.g. turn-down of 1:3: ≤ ± (0.1 + 0.02 x 3) % FSO i.e. accuracy is ≤ ± 0.16 % FSO								
⁵ software, interface, and cable have to be ordered separately (software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or higher, and XP)								
Thermal effects (Offset and Span) / Permissible temperatures								
Tolerance band	[% FSO]	≤ ± (0.2 x turn-down)		in compensated range		-20 ... 80 °C		
TC, average	[% FSO / 10 K]	± (0.02 x turn-down)		in compensated range		-20 ... 80 °C		
Permissible temperatures	medium: -25 ... 125 °C		electronics / environment: -25 ... 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							
Materials								
Pressure port	stainless steel 1.4404 (316 L)							
Housing	stainless steel 1.4404 (316 L)							
Seals	FKM others on request							
Diaphragm	stainless steel 1.4435 (316L)							
Media wetted parts	pressure port, seals, diaphragm							
Mechanical stability								
Vibration	10 g RMS (20 ... 2000 Hz)		according to DIN EN 60068-2-6					
Shock	100 g / 11 msec.		according to DIN EN 60068-2-27					
Explosion protection (only for 4 ... 20 mA / 2-wire)								
Approvals DX19-LMP 331i	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 max. values	U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 0 μH, the supply connections have an inner capacity of max. 27 nF to the housing							
Ambient temperature range	in zone 0: -20 ... 60 °C with p _{atm} 0.8 bar up to 1.1 bar				in zone 1 or higher: -20 ... 65 °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							
Miscellaneous								
Current consumption	signal output current: max. 25 mA				signal output voltage: max. 7 mA			
Weight	approx. 200 g							
Installation position	any ⁶							
Operational life	100 million load cycles							
CE-conformity	EMC Directive: 2014/30/EU							
ATEX Directive	2014/34/EU							
⁶ Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges P _N ≤ 1 bar.								

Wiring diagrams						
<p>2-wire-system (current)</p>			<p>3-wire-system (voltage)</p>			
Pin configuration						
Electrical connections	ISO 4400	Binder 723 (5-pin)	Binder 723 (7-pin)	M12x1/ metal (4-pin)	field housing	cable colours (IEC 60757)
supply +	1	3	3	1	IN +	wh (white)
supply -	2	4	1	2	IN -	bn (brown)
signal + (only for 3-wire)	3	1	6	3	OUT +	gn (green)
shield	ground pin	5	2	4		gnye (green-yellow)
Communication interface ⁷	RxD	-	4	-	-	-
	TxD	-	5	-	-	-
	GND	-	7	-	-	-
⁷ may not be transmitted directly with the PC (the suitable adapter is available as accessory)						
Electrical connections (dimensions in mm / inch)						
standard		optional				
ISO 4400 (IP 65)	M12x1 4-pin (IP 67)	Binder series 723 5-pin (IP 67)	Binder series 723 7-pin (IP 67)	cable outlet, with PVC cable (IP 67) ^{8, 9}	cable outlet, with ventilation tube (IP 68) ⁸	compact field housing (IP 67)
⇒ universal field housing stainless steel 316L with cable gland M20x1.5 (ordering code 880) and other versions on request						
⁸ different cable types and lengths available, permissible temperature depends on kind of cable						
⁹ standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)						
Mechanical connection (dimensions in mm / inch)						
standard		with RS232		pressure port		
				G3/4" DIN 3852 with flush sensor		
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Ordering code LMP 331i

LMP 331i		□	□	□	-	□	□	□	-	□	-	□	□	□	-	□	□	□	-	□	□	□			
Pressure																									
	in bar	4	3	0																					
	in mH ₂ O	4	3	1																					
Input																									
	[mH ₂ O]																								
	[bar]																								
	4				4	0	0	0																	
	10				1	0	0	1																	
	20				2	0	0	1																	
	40				4	0	0	1																	
	100				1	0	0	2																	
	200				2	0	0	2																	
	400				4	0	0	2																	
	customer				9	9	9	9															consult		
Output																									
	4 ... 20 mA / 2-wire								1																
	Intrinsic safety 4 ... 20 mA / 2-wire								E																
	0 ... 10 V / 3-wire								3																
	customer								9														consult		
Accuracy (at nominal pressure)																									
	0.1 %								1																
	customer								9														consult		
Electrical connection																									
	Male and female plug ISO 4400									1	0	0													
	Male plug Binder series 723 (5-pin)									2	0	0													
	Compact field housing stainless steel 1.4404 (316L)									8	5	0													
	Male and female plug Binder series 723 (7-pin)									A	0	0													
	Male plug M12x1 (4-pin) / metal for analog output									M	1	0													
	Male plug M12x1 (4-pin) / metal for digital output									M	1	3													
	Cable outlet with PVC cable ¹									T	A	0													
	Cable outlet ²									T	R	0													
	customer									9	9	9											consult		
Mechanical connection																									
	G3/4" DIN 3852 with flush sensor										K	0	0												
	customer										9	9	9										consult		
Seals																									
	FKM																					1			
	customer																					9	consult		
Special version																									
	standard																					1	1	1	
	RS-232 interface ⁸																					1	2	1	
	customer																					9	9	9	consult

¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C), optionally cable with ventilation tube
² cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable
³ RS-232 interface only possible with el. connection Binder serie 723 (7pin)
 Software, Interface and cable for LMP 331i with option RS-232 have to be order separately
 (Ordering code: CIS-G; Software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or newer and XP)

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