

# 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  
range (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)

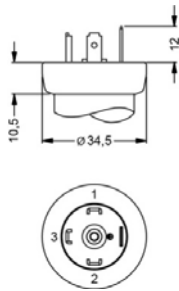


Pressure ranges <sup>1</sup>							
Nominal pressure gauge / absolute [bar]	0.4	1	2	4	10	20	40
Level gauge [mH <sub>2</sub> O]	4	10	20	40	100	200	400
Overpressure [bar]	2	5	10	20	40	80	105
Burst pressure [bar]	3	7.5	15	25	50	120	210
<sup>1</sup> On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.							
Output signal / Supply							
Standard	2-wire: 4 ... 20 mA / V <sub>S</sub> = 12 ... 36 V <sub>DC</sub>						
Option IS-version	2-wire: 4 ... 20 mA / V <sub>S</sub> = 14 ... 28 V <sub>DC</sub>						
Options analogue signal	2-wire: 4 ... 20 mA with communication interface <sup>2</sup>						
	3-wire: 0 ... 10 V / V <sub>S</sub> = 14 ... 36 V <sub>DC</sub> 0 ... 10 V with communication interface <sup>2</sup>						
<sup>2</sup> only possible with electrical connection Binder series 723 (7-pin)							
Performance							
Accuracy performance after turn-down - TD ≤ 1:5 - TD > 1:5	IEC 60770 <sup>3</sup> : ≤ ± 0.1 % FSO no change of accuracy <sup>4</sup> 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 <sub>max</sub> = [(V <sub>S</sub> - V <sub>S</sub> min) / 0.02 A] Ω voltage 3-wire: R <sub>min</sub> = 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 (with option communication interface RS232)	configuration of following parameters possible (interface / software necessary <sup>5</sup> ): - electronic damping: 0 ... 100 sec - offset: 0 ... 90 % FSO - turn down of span: max. 1:10						
<sup>3</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)							
<sup>4</sup> 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							
<sup>5</sup> 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)						
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm)						
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	$U_i = 28 \text{ V}$ , $I_i = 93 \text{ mA}$ , $P_i = 660 \text{ mW}$ , $C_i \approx 0 \text{ nF}$ , $L_i \approx 0 \text{ }\mu\text{H}$ , the supply connections have an inner capacity of max. 27 nF to the housing					
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with $p_{\text{atm}}$ 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 $\mu\text{H}/\text{m}$					
Miscellaneous						
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA					
Weight	approx. 200 g					
Installation position	any <sup>6</sup>					
Operational life	100 million load cycles					
CE-conformity	EMC Directive: 2014/30/EU					
ATEX Directive	2014/34/EU					
<sup>6</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 deviations in the zero point for pressure ranges $P_N \leq 1 \text{ bar}$ .						
Wiring diagrams						
2-wire-system (current)			3-wire-system (voltage)			
Pin configuration						
Electrical connections	ISO 4400	Binder 723 (5-pin)	Binder 723 (7-pin)	M12x1/ metal (4-pin)	compact 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 $\oplus$	5	2	4	$\oplus$	GNYE (green-yellow)
Communication interface <sup>7</sup>	RxD	-	4	-	-	-
	TxD	-	5	-	-	-
	GND	-	7	-	-	-
<sup>7</sup> may not be transmitted directly with the PC (the suitable adapter is available as accessory)						

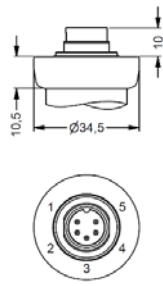
Electrical connections (dimensions in mm)

standard

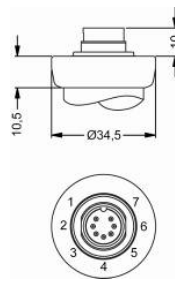


ISO 4400  
(IP 65)

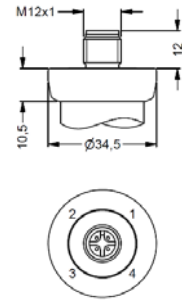
options



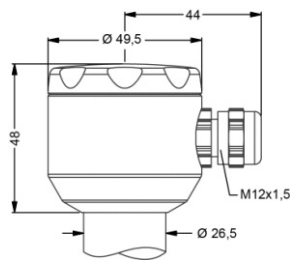
Binder series 723 5-pin  
(IP 67)



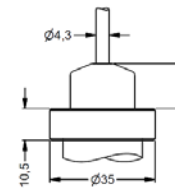
Binder series 723 7-pin  
(IP 67)



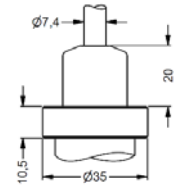
M12x1 4-pin  
(IP 67)



compact field housing  
(IP 67)



cable outlet,  
with PVC cable (IP 67)<sup>8</sup>



cable outlet, cable with  
ventilation tube (IP 68)<sup>9</sup>

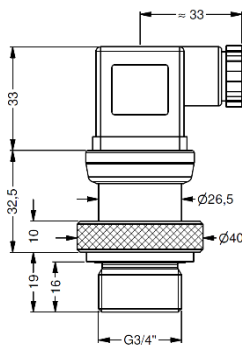
⇒ universal field housing stainless steel 316L with cable gland M20x1.5 (ordering code 880) and other versions on request

<sup>8</sup> different cable types and lengths available, permissible temperature depends on kind of cable

<sup>9</sup> standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)

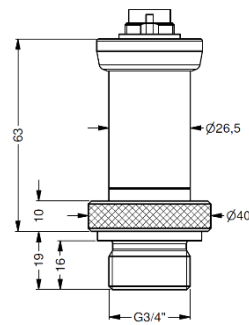
Mechanical connection (dimensions in mm)

standard



G3/4" DIN 3852  
with flush sensor

with communication interface RS232



G3/4" DIN 3852  
with flush sensor

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## Ordering code LMP 331i

LMP 331i

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Pressure																				
	in bar	4	3	0																
	in mH <sub>2</sub> O	4	3	1																
Input		[mH <sub>2</sub> O]	[bar]																	
	4	0.4		4	0	0	0													
	10	1.0		1	0	0	1													
	20	2.0		2	0	0	1													
	40	4.0		4	0	0	1													
	100	10		1	0	0	2													
	200	20		2	0	0	2													
	400	40		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 % FSO							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										
	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 (IP67) <sup>1</sup>							T	A	0										
	cable outlet, cable with ventilation tube (IP68) <sup>2</sup>							T	R	0										
	compact field housing stainless steel 1.4301 (304)							8	5	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
Special version																				
	standard																			1 1 1
	communication interface RS232 <sup>3</sup>																			1 2 1
	customer																			9 9 9

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

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

<sup>3</sup> communication interface RS232 only possible with el. connection Binder series 723 (7-pin)

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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