SensaCo Ltd.

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
  ranges (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)

SensaCo Ltd. |6 Fortuna Court | Calleva Park |Aldermaston | RG7 8UB | U.K.
www.sensaco.co.uk

Pressure ranges [1]								
Nominal pressure gauge	[bar]	0.4	1	2	4	10	20	40
Level gauge	[mH_2O]	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.

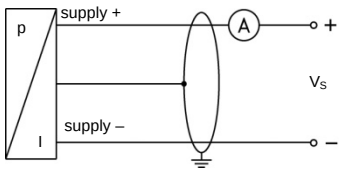
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC}
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}
Options analogue signal	2-wire: 4 ... 20 mA with communication interface [2] 3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC} 0 ... 10 V with communication interface [2]
[2] only possible with electrical connection Binder series 723 (7-pin)	
Performance	
Accuracy performance after turn-down - TD ≤ 1:5 - TD > 1:5	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 (with option communication interface RS232)	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)
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 T135 °C Da
Safety technical max. values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, $C_i \approx 0$ nF, $L_i \approx 0$ µH, 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_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-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

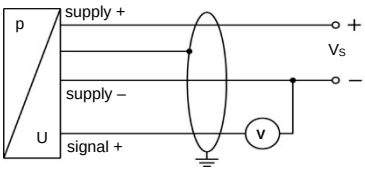
[6] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1$ bar.

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



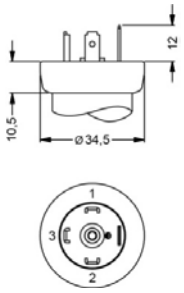
Pin configuration

Electrical connections	ISO 4400	Binder 723 (5-pin)	Binder 723/423 (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 ⏚	5	2	4	⏚	GNYE (green-yellow)
Communication interface [7] RxD	-	-	4	-	-	-
TxD	-	-	5	-	-	-
GND	-	-	7	-	-	-

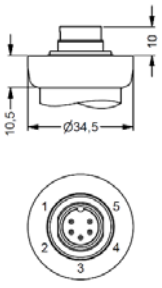
[7] may not be transmitted directly with the PC (the suitable adapter is available as accessory)

Electrical connections (dimensions in mm)

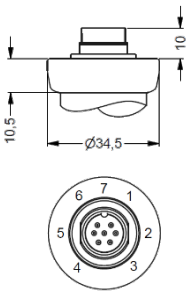
standard **options**



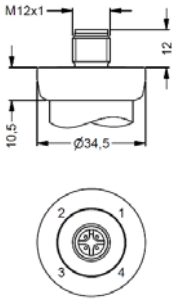
ISO 4400
(IP 65)



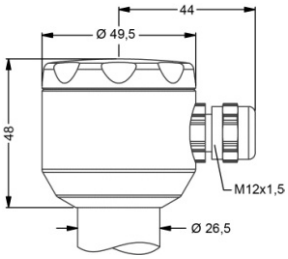
Binder series 723, 5-pin
(IP 67)



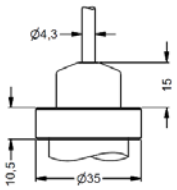
Binder series 723, 7-pin
(IP 67)



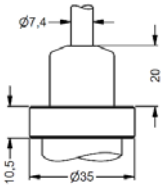
M12x1, 4-pin
(IP 67)



compact field housing
(IP 67)



cable outlet,
with PVC cable (IP 67) [8]



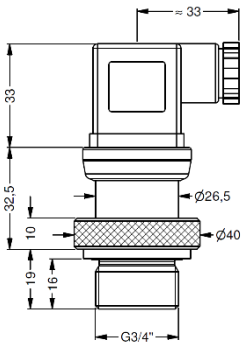
cable outlet, cable with
ventilation tube (IP 68) [9]

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

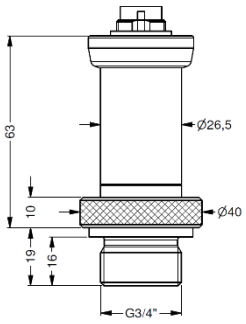
[8] *different cable types and lengths available, permissible temperature depends on kind of cable*
[9] *standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)*

Mechanical connection (dimensions in mm)

standard **with communication interface RS232**



G3/4" DIN 3852
with flush sensor



G3/4" DIN 3852
with flush sensor

Windows® is a registered trade mark of Microsoft Corporation

SensaCo Ltd. |6 Fortuna Court | Calleva Park |Aldermaston | RG7 8UB | U.K.

www.sensaco.co.uk

Ordering code LMP 331i

LMP 331i ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Pressure		
in bar	4 3 0	
in mH_2O	4 3 1	
Input [mH_2O] [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 plug Binder series 723 (7-pin) and female plug Binder series 423 (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) [1]	T A 0	
cable outlet, cable with ventilation tube (IP68) [2]	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
Seal		
FKM	1	
customer	9	consult
Special version		
standard	1 1 1	
communication interface RS232 [3]	1 2 1	
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] communication interface RS232 only possible with electrical connection Binder serie 723/423 (7-pin)
software, interface and cable for LMP 331i with option RS232 have to be order separately
(ordering code: CIS-G; software appropriate for Windows® 95, 98, 2000, NT version 4.0 or newer and XP)

01.04.2022