



# LMP 308i

## Separable Precision Stainless Steel Probe with Stainless Steel Sensor

- ▶ diameter: 35 mm
- ▶ transmitter head and cable assembly plugged
- ▶ nominal pressure ranges from 0 ... 1.7 mH<sub>2</sub>O up to 0 ... 170 mH<sub>2</sub>O (0 ... 170 mbar up to 0 ... 17 bar)

The precision stainless steel submersible transmitter LMP 308i is suited for continuous level measurement of fluids compatible with stainless steel.

The LMP 308i based on a piezoresistive stainless steel sensor and features a high accuracy (0.05 % FSO BFSL) and a small thermal effect. The signal processing of the sensor signal is done via a digital amplifier with 16-bit A/D and D/A conversion. Now it's possible to compensate actively the sensor specific deviations like nonlinearity and thermal effects. In order to facilitate stock-keeping and maintenance the transmitter head is plugged to the cable assembly with a connector and can be changed easily.

In addition to the several cable materials (PVC, PUR and FEP) the customer has the possibility to consider different versions of cable protection. The submersible probe is suited for explosive area (zone 0).

Preferred areas of use are:

- ▶ environmental engineering: water supply, sewage treatment
- ▶ depth or level measurement in wells and open waters
- ▶ ground water level measurement
- ▶ level monitoring in open tanks

- ▶ output signal  
4 ... 20 mA / 2-wire or  
0 ... 10 V / 3-wire  
with **communication interface for adjusting offset, span and damping**
- ▶ accuracy  
**0.05 % FSO BFSL**  
(0.1 % FSO IEC 60770)
- ▶ thermal error for offset and span in temperature range -20 ... 70 °C: **0.2 % FSO, average TC 0.02 % FSO / 10 K**
- ▶ good long term stability
- ▶ option Ex version (only for 4 ... 20 mA / 2-wire) **TÜV 03 ATEX 2006 X**
- ▶ option cable protection with corrugated pipe

Characteristics

**LMP 308i**  
Smart Stainless Steel Level Transmitter



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Technical Data

Input pressure range							
Nominal pressure gauge [bar]	0.17	0.35	1	2	7	17	
Level [mH <sub>2</sub> O]	1.7	3.5	10	20	70	170	
Permissible overpressure [bar]	1	1	3	6	20	60	

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V <sub>s</sub> = 12 ... 36 V <sub>DC</sub>	Ex-protection: V <sub>s</sub> = 14 ... 28 V <sub>DC</sub>
Option	3-wire: 0 ... 10 V / V <sub>s</sub> = 14 ... 36 V <sub>DC</sub>	

Performance		
Accuracy	IEC 60770 <sup>1</sup> : ≤ ± 0.1 % FSO	BFSL: ≤ ± 0.05 % FSO
performance after turn-down (TD)	no change of accuracy <sup>2</sup> for calculation use the following formula (for nominal pressure ranges ≤ 0,35 bar see note 2): ≤ ± [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,min</sub> ) / 0.02] 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 % FSO / year	
Response time	200 ms – without consideration of the electronical damping	measuring rate 5/s
Adjustability	configuration of following parameters possible (interface / software necessary <sup>3</sup> ): - electronical damping: 0 ... 100 s - offset: 0 ... 90 % FSO - turn down of span: max. 1:10	

Thermal errors (Offset and Span)		
Tolerance band [% FSO]	≤ ± (0.2 x turn-down)	
TC, average [% FSO / 10 K]	± (0.02 x turn-down)	
in compensated range	-20 ... 70 °C	

Electrical protection <sup>4</sup>	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Option Ex protection only with 4 ... 20 mA / 2-wire DX13 - LMP 308i	zone 0 <sup>5</sup> : II 1 G EEx ia IIC T4 safety technical maximum values: U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 mA, P <sub>i</sub> = 660 mW, C <sub>i</sub> ≤ 1 nF, L <sub>i</sub> ≤ 10 μH

Permissible temperatures		
Medium	-20 ... 70 °C	Ex-protection: application in zone 0: -20 ... 60 °C application in zone 1 or higher: -20 ... 70 °C
Storage	-25 ... 70 °C	

<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

<sup>2</sup> except nominal pressure ranges ≤ 0.35 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>3</sup> software, interface, and cable have to be ordered separately (software appropriate for Windows<sup>®</sup> 95, 98, 2000, NT Version 4.0 or higher, and XP)

<sup>4</sup> additional external overvoltage protection unit in terminal box KL 1 and KL 2 with atmospheric pressure reference available on request

<sup>5</sup> approved for atmospheric pressure from 0.8 bar up to 1.1 bar

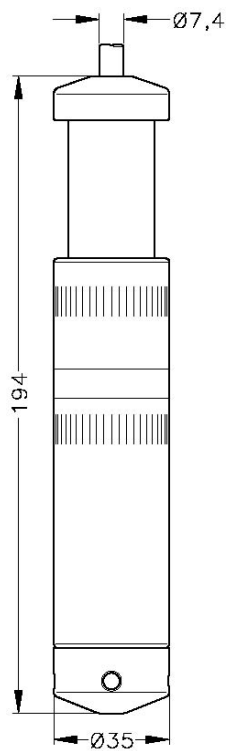
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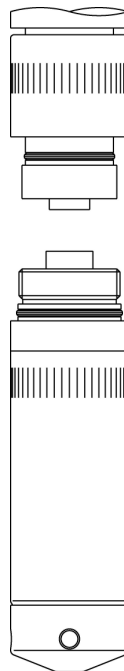
Technical Data

## Dimensions (in mm)

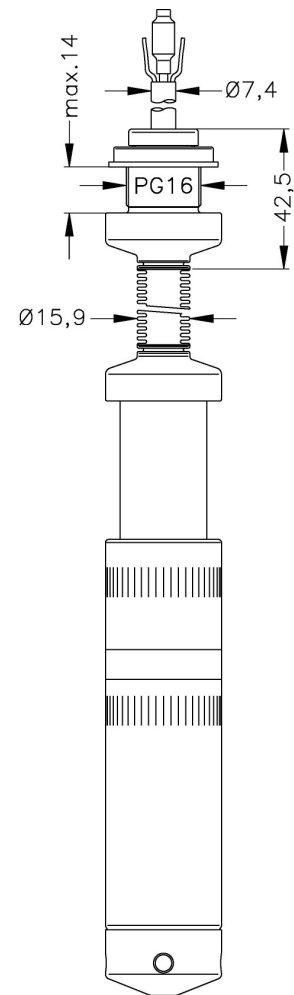
### Standard



separability of transmitter head and cable assembly



### Option



version with corrugated pipe

## Electrical connection

Cable with sheath material <sup>6</sup>

PVC grey  
PUR black  
FEP black  
others on request

<sup>6</sup> cable with integrated air tube for atmospheric pressure reference

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Technical Data

Materials	
Housing	stainless steel 1.4571 (316Ti)
Seals	FKM / EPDM / others on request
Diaphragm	stainless steel 1.4435 (316L)
Cable sheath	PVC / PUR / FEP / others on request

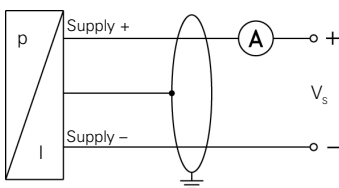
Miscellaneous	
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m
Current consumption	signal output current: max. 25 mA
Weight	approx. 250 g (without cable)
Ingress protection	IP 68

Mounting accessories (not part of delivery)	
Screw fitting, stainless steel 1.4571 (316Ti)	
Terminal clamp, stainless steel 1.4301 (304) or steel, zinc plated	

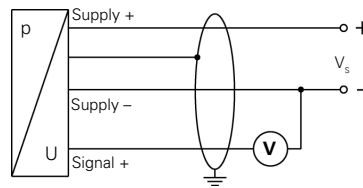
Pin configuration			
Electrical connection		Binder Series 723 <sup>7</sup> (7-pin)	cable colours (DIN 47100)
2-wire-system	Supply +	3	white
	Supply -	1	brown
	Ground	2	yellow / green (shield)
3-wire-system	Supply +	3	white
	Supply -	1	brown
	Signal +	6	green
	Ground	2	yellow / green (shield)
Communication interface <sup>8</sup>	RxD	4	-
	TxD	5	-
	GND	7	-

## Wiring diagram

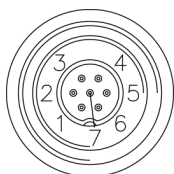
2-wire-system (current)



3-wire-system (voltage)



connector<sup>7</sup>



<sup>7</sup> in separated version

<sup>8</sup> may not be transmitted directly with the PC (the suitable adapter "Adapt 1" is available as accessory)

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