

# LMP 307

## Stainless Steel Probe

Stainless Steel Sensor

accuracy according to IEC 60770:  
standard: 0.35 % FSO  
option: 0.25 % / 0.1 % FSO



### Nominal pressure

from 0 ... 1 mH<sub>2</sub>O up to 0 ... 250 mH<sub>2</sub>O

### Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

others on request

### Special characteristics

- ▶ diameter 27 mm
- ▶ small thermal effect
- ▶ excellent accuracy
- ▶ excellent long term stability

### Optional versions

- ▶ IS-protection zone 0
- ▶ SIL 2 (Safety Integrity Level)
- ▶ Drinking water certificate acc. to DVGW and KTW
- ▶ different kinds of cables
- ▶ different kinds of seal materials

The stainless steel probe LMP 307 is designed for continuous level measurement in water and clean or waste fluids.

Basic element is a high quality stainless steel sensor with high requirements for exact measurement with excellent long term stability.

### Preferred areas of use are

#### Water / filtrated sewage



drinking water system  
ground water level measurement  
rain spillway basin  
pump and booster stations  
water treatment plants  
water recycling



#### Fuel / Oil

fuel storage  
tank farm



Input pressure range														
Nominal pressure gauge	[bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25
Level	[mH <sub>2</sub> O]	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250
Overpressure	[bar]	0.5	1	1	2	5	5	10	10	20	40	40	80	80
Burst pressure $\geq$	[bar]	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50	50	120	120
Output signal / Supply														
Standard		2-wire: 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$						SIL-version: $V_S = 14 \dots 28 V_{DC}$						
Option Ex-protection		2-wire: 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$						SIL-version: $V_S = 14 \dots 28 V_{DC}$						
Option Accuracy 0.1 % FSO		2-wire: 4 ... 20 mA / $V_S = 12 \dots 36 V_{DC}$						3-wire: 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$						
Options 3-wire		3-wire: 0 ... 20 mA / $V_S = 14 \dots 30 V_{DC}$						0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$						
Performance														
Accuracy		standard: nominal pressure < 0.4 bar: $\leq \pm 0.5$ % FSO												
		nominal pressure $\geq 0.4$ bar: $\leq \pm 0.35$ % FSO												
		option 1: nominal pressure $\geq 0.4$ bar: $\leq \pm 0.25$ % FSO												
		option 2: for all nominal pressures: $\leq \pm 0.1$ % FSO												
Permissible load		current 2-wire: $R_{max} = [(V_S - V_S \text{ min}) / 0.02 \text{ A}] \Omega$												
		current 3-wire: $R_{max} = 500 \Omega$												
		voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$												
Influence effects		supply: 0.05 % FSO / 10 V						load: 0.05 % FSO / k $\Omega$						
Long term stability		$\leq \pm 0.1$ % FSO / year at reference condition												
Response time		2-wire: $\leq 10$ msec;						3-wire: $\leq 3$ msec						
<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)														
Thermal effects (Offset and Span)														
Nominal pressure $P_N$	[bar]	< 0.40						$\geq 0.40$						
Tolerance band	[% FSO]	$\leq \pm 1$						$\leq \pm 0.75$						
in compensated range	[°C]	0 ... 70												
Permissible temperatures														
Permissible temperatures		medium: -10 ... 70 °C						storage: -25 ... 70 °C						
Electrical protection <sup>2</sup>														
Short-circuit protection		permanent												
Reverse polarity protection		no damage, but also no function												
Electromagnetic compatibility		emission and immunity according to EN 61326												
<sup>2</sup> additional external overvoltage protection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request														
Electrical connection														
Cable with sheath material <sup>3</sup>		PVC	(-5 ... 70 °C)	grey										
		PUR	(-10 ... 70 °C)	black										
		FEP <sup>4</sup>	(-10 ... 70 °C)	black										
		TPE-U	(-10 ... 70 °C)	blue (with drinking water certificate)										
<sup>3</sup> cable with integrated air tube for atmospheric pressure reference														
<sup>4</sup> do not use freely suspended probes with an FEP cable if effects due to highly charging processes are expected														
Materials (media wetted)														
Housing		stainless steel 1.4404 (316L)												
Seals		FKM; EPDM (with drinking water certificate)										others on request		
Diaphragm		stainless steel 1.4435 (316L)												
Protection cap		POM												
Explosion protection (only for 4 ... 20 mA / 2-wire)														
Approvals		IBExU10ATEX1122 X												
DX9-LMP 307		zone 0: II 1G Ex ia IIC T4 Ga						zone 20: II 1D Ex ia IIC T85°C Da						
Safety technical maximum 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												
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 ... 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 $\mu\text{H}/\text{m}$						
Miscellaneous														
Option SIL <sup>5</sup> 2 application		according to IEC 61508 / IEC 61511												
drinking water certificate <sup>6</sup>		According to DVGW W 270 and UBA KTW (With order please indicate if her device must be certificated for drinking water.)												
Current consumption		signal output current: max. 25 mA / signal output voltage: max. 7 mA												
Weight		approx. 200 g (without cable)												
Ingress protection		IP 68												
CE-conformity		EMC Directive: 2014/30/EU												
ATEX Directive		2014/34/EU												
<sup>5</sup> not in combination with the accuracy 0.1%, only for 4...20mA / 2-wire														
<sup>6</sup> only possible with EPDM seal in combination with TPE-U cable; not possible with IS-protection (explosion protection)														

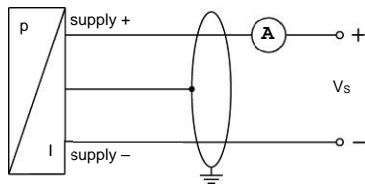
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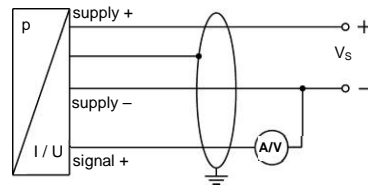
Technical Data

## Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

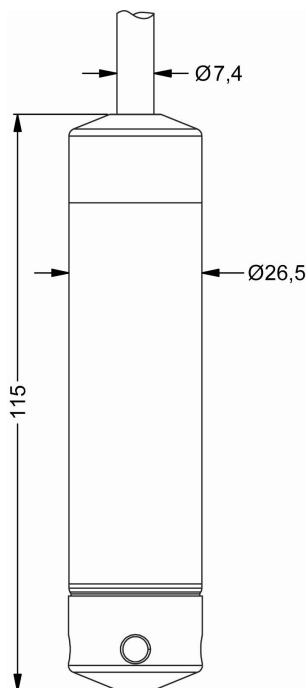


## Pin configuration

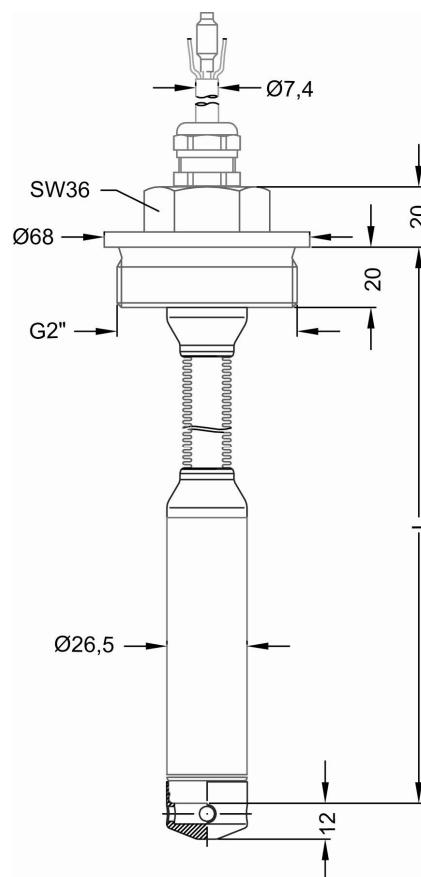
Electrical connection	cable colours (DIN 47100)
Supply +	wh (white)
Supply -	bn (brown)
Signal + (only 3-wire)	gn (green)
Shield	ye/gn (yellow / green)

## Dimensions (in mm)

standard



option



cable protection  
with corrugated pipe

⇒ Total length of devices with accuracy 0.1 % FSO IEC 60770 increases by 35 mm!

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Accessories

Mounting flange with cable gland	
<b>Technical data</b>	
Suitable for	all probes
Flange material	stainless steel 1.4404 (316L)
Material of cable gland	standard: brass, nickel plated on request: stainless steel 1.4305 (303); plastic
Seal insert	material: TPE (ingress protection IP 68)
Hole pattern	according to DIN 2507
<b>Version</b>	<b>Size (in mm)</b>
DN25 / PN40	D = 115, k = 85, b = 18, n = 4, d = 14
DN50 / PN40	D = 165, k = 125, b = 20, n = 4, d = 18
DN80 / PN16	D = 200, k = 160, b = 20, n = 8, d = 18
<b>Weight</b>	
DN25 / PN40	1.4 kg
DN50 / PN40	3.2 kg
DN80 / PN16	4.8 kg
<b>Ordering type</b>	
DN25 / PN40 with cable gland brass, nickel plated	ZMF2540
DN50 / PN40 with cable gland brass, nickel plated	ZMF5040
DN80 / PN16 with cable gland brass, nickel plated	ZMF8016
<b>Ordering code</b>	
<b>Terminal clamp</b>	
<b>Technical data</b>	
Suitable for	all probes with cable $\varnothing$ 5.5 ... 10.5 mm
Material	standard: steel, zinc plated optionally: stainless steel 1.4301 (304)
Weight	approx. 160 g
<b>Ordering type</b>	<b>Ordering code</b>
Terminal clamp, steel, zinc plated	Z100528
Terminal clamp, stainless steel 1.4301 (304)	Z100527
<b>Display program</b>	
<b>CIT 200</b> Process display with LED display	
<b>CIT 250</b> Process display with LED display and contacts	
<b>CIT 300</b> Process display with LED display, contacts and analogue output	
<b>CIT 350</b> Process display with LED display, bargraph, contacts and analogue output	
<b>CIT 400</b> Process display with LED display, contacts, analogue output and Ex-approval	
<b>CIT 600</b> Multichannel process display with graphics-capable LC display	
<b>CIT 650</b> Multichannel process display with graphics-capable LC display and datalogger	
<b>CIT 700</b> Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts	
<b>PA 440</b> Field display with 4-digit LC display	
For further information please contact our sales department or visit our homepage: <a href="http://www.bdsensors.com">http://www.bdsensors.com</a>	

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