

# LMP 307

## Stainless Steel Probe

Stainless Steel Sensor

accuracy according to IEC 60770:  
standard: 0.35 % FSO  
options: 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 26.5 mm
- ▶ small thermal effect
- ▶ high accuracy
- ▶ good long term stability

### Optional versions

- ▶ IS-version  
Ex ia = intrinsically safe for gas and dust
- ▶ SIL 2 (Safety Integrity Level)
- ▶ drinking water certificate according to DVGW and KTW
- ▶ different kinds of cables and elastomers
- ▶ petrol-version  
welded pressure sensor and housing
- ▶ mounting with stainless steel pipe

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

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

### Preferred areas of use are

#### Water / filtrated sewage

drinking water systems  
ground water level measurement  
rain spillway basins  
pump and booster stations  
level measurement in containers  
water treatment plants  
water recycling



#### Fuel and oil

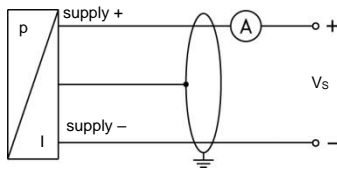
fuel storage  
tank farms



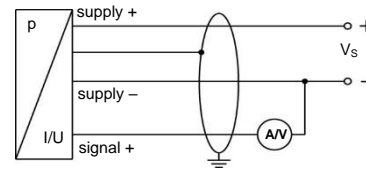
Input pressure range														
Nominal pressure gauge	[bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25
Level	[mH <sub>2</sub> O]	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250
Overpressure	[bar]	0.5	1	1	2	5	5	10	10	20	40	40	80	80
Burst pressure ≥	[bar]	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50	50	120	120
Output signal / Supply														
Standard	2-wire:	4 ... 20 mA / V <sub>S</sub> = 8 ... 32 V <sub>DC</sub>							SIL-version: V <sub>S</sub> = 14 ... 28 V <sub>DC</sub>					
Option IS-version	2-wire:	4 ... 20 mA / V <sub>S</sub> = 10 ... 28 V <sub>DC</sub>							SIL-version: V <sub>S</sub> = 14 ... 28 V <sub>DC</sub>					
Options 3-wire	3-wire:	0 ... 20 mA / V <sub>S</sub> = 14 ... 30 V <sub>DC</sub>							0 ... 10 V / V <sub>S</sub> = 14 ... 30 V <sub>DC</sub>					
Performance														
Accuracy <sup>1</sup>	standard:	nominal pressure < 0.4 bar:							≤ ± 0.5 % FSO					
		nominal pressure ≥ 0.4 bar:							≤ ± 0.35 % FSO					
	option 1:	nominal pressure ≥ 0.4 bar:							≤ ± 0.25 % FSO					
	option 2:	for all nominal pressures:							≤ ± 0.1 % FSO					
Permissible load	current 2-wire:	R <sub>max</sub> = [(V <sub>S</sub> - V <sub>S min</sub> ) / 0.02 A] Ω							voltage 3-wire: R <sub>min</sub> = 10 kΩ					
	current 3-wire:	R <sub>max</sub> = 500 Ω												
Influence effects	supply:	0.05 % FSO / 10 V							load: 0.05 % FSO / kΩ					
Long term stability	≤ ± 0.1 % FSO / year at reference conditions													
Response time	2-wire:	≤ 10 msec							3-wire: ≤ 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 <sub>N</sub>	[bar]	< 0.40							≥ 0.40					
Tolerance band	[% FSO]	≤ ± 1							≤ ± 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	Ø 7.4 mm											
	PUR (-10 ... 70 °C)	black	Ø 7.4 mm											
	FEP <sup>4</sup> (-10 ... 70 °C)	black	Ø 7.4 mm											
	TPE-U (-10 ... 70 °C)	blue	Ø 7.4 mm (without / with drinking water certificate)											
Bending radius	static installation: 10-fold cable diameter							dynamic application: 20-fold cable diameter						
<sup>3</sup> shielded cable with integrated ventilation 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 (without / with drinking water certificate), welded version <sup>5</sup>											others on request		
Diaphragm	stainless steel 1.4435 (316L)													
Protection cap	POM-C													
Cable sheath	PVC, PUR, FEP, TPE-U													
<sup>5</sup> not in combination with SIL version and only in combination with FEP cable possible														
Explosion protection (only for 4 ... 20 mA / 2-wire)														
Approvals DX19-LMP 307	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 maximum values	U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 mA, P <sub>i</sub> = 660 mW, C <sub>i</sub> ≈ 0 nF, L <sub>i</sub> ≈ 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 <sub>atm</sub> 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 μH/m												
Miscellaneous														
Option SIL 2 version <sup>6</sup>	according to IEC 61508 / IEC 61511													
Drinking water certificate <sup>7</sup>	according to DVGW W 270 and UBA KTW (with order the indication "with drinking water certificate" is necessary)													
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>6</sup> not in combination with the accuracy 0.1 %, only for 4...20 mA / 2-wire														
<sup>7</sup> only possible with EPDM seal in combination with TPE-U cable; not possible with IS-version (explosion protection)														

### Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

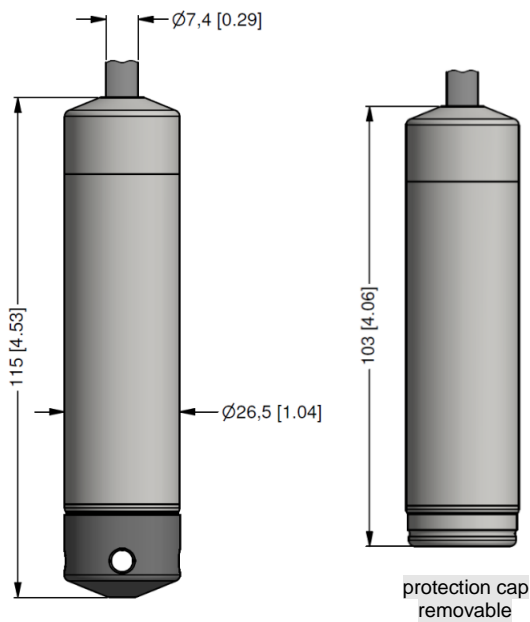


### Pin configuration

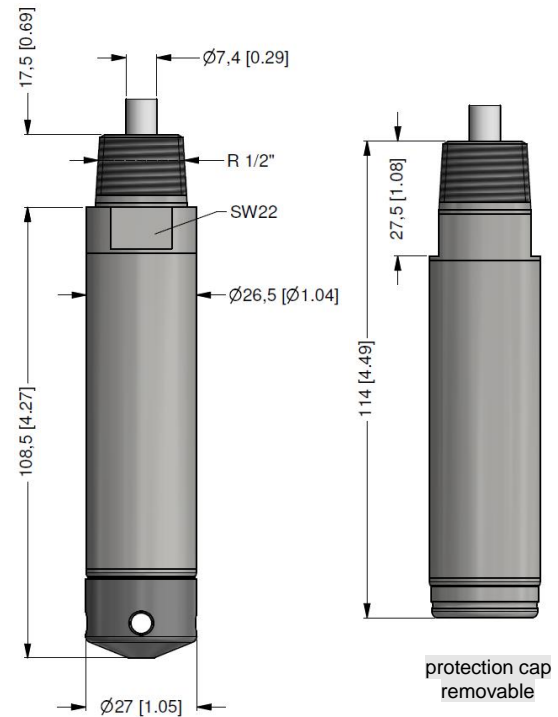
Electrical connection	cable colours (IEC 60757)
Supply +	WH (white)
Supply -	BN (brown)
Signal + (only 3-wire)	GN (green)
Shield	GNYE (green-yellow)

### Dimensions (mm / in)

Standard



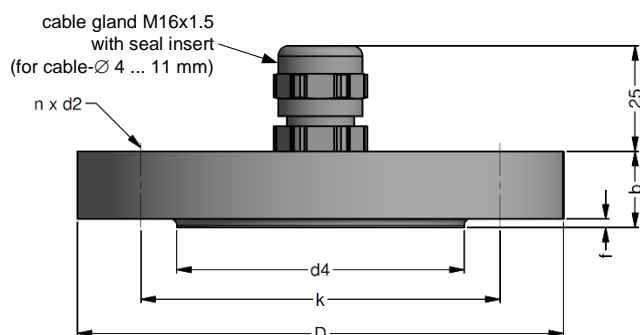
Option



prepared for mounting with stainless steel pipe

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

## Mounting flange with cable gland



dimensions in mm			
size	DN25 / PN40	DN50 / PN40	DN80 / PN16
b	18	20	20
D	115	165	200
d2	14	18	18
d4	68	102	138
f	2	3	3
k	85	125	160
n	4	4	8

### Technical data

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		
Ordering type	Ordering code	Weight	
DN25 / PN40 with cable gland brass, nickel plated	ZMF2540	1.4 kg	
DN50 / PN40 with cable gland brass, nickel plated	ZMF5040	3.2 kg	
DN80 / PN16 with cable gland brass, nickel plated	ZMF8016	4.8 kg	

## Terminal clamp



### Technical data

Suitable for	all probes with cable Ø 5.5 ... 10.5 mm		
Material of housing	standard: steel, zinc plated      optionally: stainless steel 1.4301 (304)		
Material of clamping jaws and positioning clips	PA (fibre-glass reinforced)		
Dimensions (mm)	174 x 45 x 32		
Hook diameter	20 mm		
Ordering type	Ordering code	Weight	
Terminal clamp, steel, zinc plated	Z100528	approx. 160 g	
Terminal clamp, stainless steel 1.4301 (304)	Z100527		

## Display program

- CIT 200** Process display with LED display
- CIT 250** Process display with LED display and contacts
- CIT 300** Process display with LED display, contacts and analogue output
- CIT 350** Process display with LED display, bargraph, contacts and analogue output
- CIT 400** Process display with LED display, contacts, analogue output and Ex-approval
- CIT 600** Multichannel process display with graphics-capable LC display
- CIT 650** Multichannel process display with graphics-capable LC display and datalogger
- CIT 700 / CIT 750** Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts
- PA 440** Field display with 4-digit LC display



