

# 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

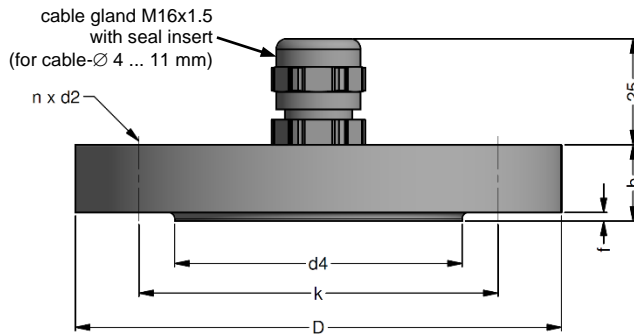
fuel storage  
tank farms



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
Max. ambient pressure (housing): 40 bar														
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						current 3-wire: R <sub>max</sub> = 500 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 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 T135 °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												
Permissible temperatures for environment		in zone 0: -20 ... 60 °C with p <sub>atm</sub> 0.8 bar up to 1.1 bar						in zone 1 or higher: -40/-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 <span style="float: right;">signal output voltage: max. 7 mA</span>
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	
<p>2-wire-system (current)</p>	<p>3-wire-system (current / voltage)</p>
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)	
<p><b>Standard</b></p>	<p><b>Option</b></p> <p style="text-align: center;">prepared for mounting with stainless steel pipe</p>
<p>⇒ Total length of devices with accuracy 0.1 % FSO IEC 60770 increases by 35 mm!</p>	

## 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

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## Ordering code LMP 307

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Pressure		in bar	4	5	0											
		in mH <sub>2</sub> O	4	5	1											
Input		[mH <sub>2</sub> O]	[bar]													
	1.0	0.10	1	0	0	0										
	1.6	0.16	1	6	0	0										
	2.5	0.25	2	5	0	0										
	4.0	0.40	4	0	0	0										
	6.0	0.60	6	0	0	0										
	10	1.0	1	0	0	1										
	16	1.6	1	6	0	1										
	25	2.5	2	5	0	1										
	40	4.0	4	0	0	1										
	60	6.0	6	0	0	1										
	100	10	1	0	0	2										
	160	16	1	6	0	2										
	250	25	2	5	0	2										
	customer		9	9	9	9										
Housing												consult				
	stainless steel 1.4404 (316L)											1				
	customer											9				
Diaphragm												consult				
	stainless steel 1.4435 (316L)											1				
	customer											9				
Output												consult				
	4 ... 20 mA / 2-wire											1				
	0 ... 20 mA / 3-wire											2				
	0 ... 10 V / 3-wire											3				
	intrinsic safety 4 ... 20 mA / 2-wire											E				
	SIL2 4 ... 20 mA / 2-wire											1S				
	SIL 2 with Intrinsic safety											ES				
	4 ... 20 mA / 2-wire											9				
	customer											consult				
Seals												consult				
	FKM											1				
	EPDM											3				
DVGW/KTW:	EPDM <sup>1</sup>											3T				
petrol-version:	without (welded version) <sup>2,4</sup>											21				
	customer											9				
Accuracy												consult				
	standard for p <sub>N</sub> ≥ 0.4 bar	0.35 % FSO											3			
	standard for p <sub>N</sub> < 0.4 bar	0.5 % FSO											5			
	option 1 for p <sub>N</sub> ≥ 0.4 bar	0.25 % FSO											2			
	option 2	0.1 % FSO <sup>2</sup>											1			
	customer											9				
Electrical connection												consult				
	PVC-cable (grey, Ø 7.4 mm) <sup>3</sup>											1				
	PUR-cable (black, Ø 7.4 mm) <sup>3</sup>											2				
	FEP-cable (black, Ø 7.4 mm) <sup>3</sup>											3				
	TPE-U-cable (blue, Ø 7.4 mm) <sup>3</sup>											4				
DVGW/KTW:	TPE-U-cable (blue, Ø 7.4 mm) <sup>1,3</sup>											F				
	customer											9				
Cable length												consult				
	in m															
	standard: 3 m	PVC											0			
	standard: 5 m	PVC											0			
	standard: 10 m	PVC											0			
	standard: 15 m	PVC											0			
	standard: 20 m	PVC											0			
	<b>special length</b>	<b>PVC</b>											<b>9</b>			
	standard: 3 m	PUR											0			
	standard: 5 m	PUR											0			
	standard: 10 m	PUR											0			
	standard: 15 m	PUR											0			
	standard: 20 m	PUR											0			
	<b>special length</b>	<b>PUR</b>											<b>9</b>			
	standard: 5 m	FEP											0			
	standard: 10 m	FEP											0			
	<b>special length</b>	<b>FEP</b>											<b>9</b>			
	<b>special length</b>	<b>TPE-U</b>											<b>9</b>			
Special version												consult				
	standard											0				
	prepared for mounting with stainless steel											5				
	customer											9				

<sup>1</sup> drinking water certification only possible with EPDM seal (code 3T) in combination with TPE-U cable (code F); not possible with IS version (explosion protection)

<sup>2</sup> not in combination with SIL

<sup>3</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference

<sup>4</sup> petrol-version only in combination with FEP cable

Standard lengths 3 / 5 / 10 / 15 / 20 m are available from stock, special lengths are manufactured order-related.