



# 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

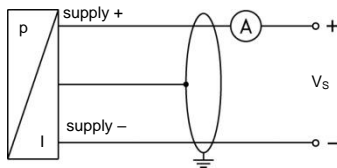
Miscellaneous	
Option SIL 2 version <sup>6</sup>	according to IEC 61508 / IEC 61511
Drinking water certificate <sup>7</sup>	according to DVGW W 270 and UBA KTW (with order the indication "with drinking water certificate" is necessary)
Current consumption	signal output current: max. 25 mA      signal 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

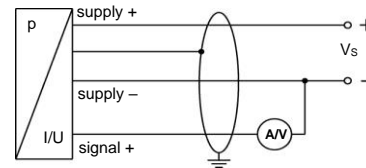
<sup>7</sup> only possible with EPDM seal in combination with TPE-U cable; not possible with IS-version (explosion protection)

### Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

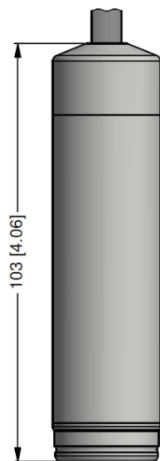
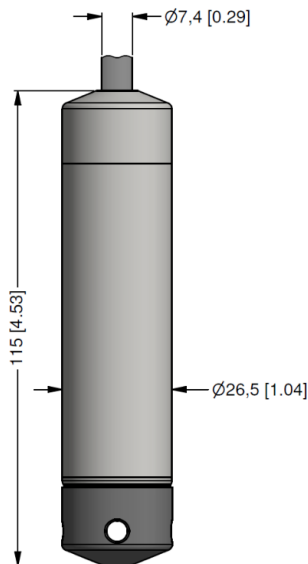


### Pin configuration

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

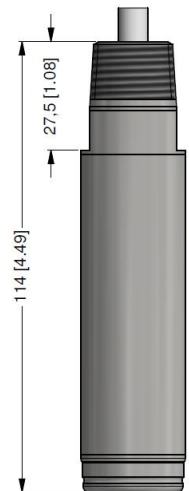
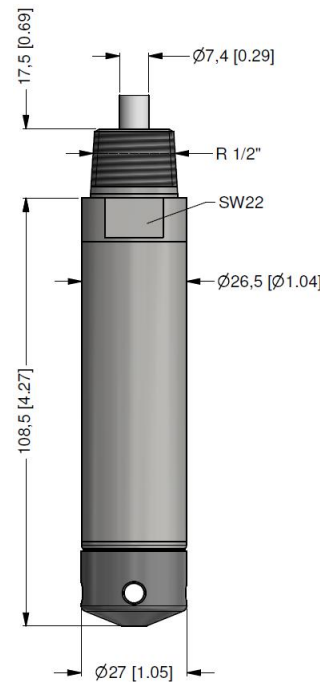
### Dimensions (mm / in)

#### Standard



protection cap removable

#### Option

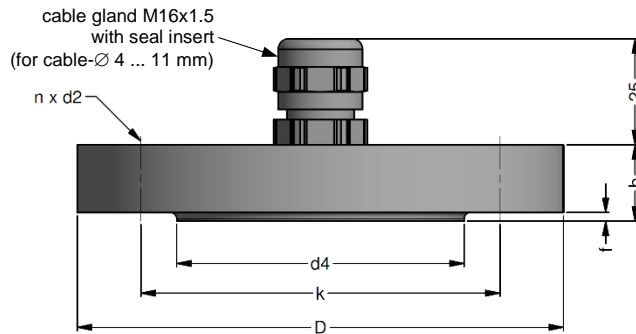


protection cap removable

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		Weight
DN25 / PN40 with cable gland brass, nickel plated		1.4 kg
DN50 / PN40 with cable gland brass, nickel plated		3.2 kg
DN80 / PN16 with cable gland brass, nickel plated		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		Weight
Terminal clamp, steel, zinc plated		approx. 160 g
Terminal clamp, stainless steel 1.4301 (304)		

Ordering code LMP 307

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		stainless steel 1.4404 (316L)	1													
	customer		9													
Diaphragm		stainless steel 1.4435 (316L)	1													
	customer		9													
Output		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															
Seals		FKM	1													
	EPDM		3													
DVGW/KTW:	EPDM <sup>1</sup>		3T													
petrol-version:	without (welded version) <sup>2,4</sup>		21													
	customer		9													
Accuracy		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		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		in m														
	standard: 3 m	PVC	0	0	3											
	standard: 5 m	PVC	0	0	5											
	standard: 10 m	PVC	0	1	0											
	standard: 15 m	PVC	0	1	5											
	standard: 20 m	PVC	0	2	0											
	<b>special length</b>	<b>PVC</b>	<b>9</b>	<b>9</b>	<b>9</b>											
	standard: 3 m	PUR	0	0	3											
	standard: 5 m	PUR	0	0	5											
	standard: 10 m	PUR	0	1	0											
	standard: 15 m	PUR	0	1	5											
	standard: 20 m	PUR	0	2	0											
	<b>special length</b>	<b>PUR</b>	<b>9</b>	<b>9</b>	<b>9</b>											
	standard: 5 m	FEP	0	0	5											
	standard: 10 m	FEP	0	1	0											
	<b>special length</b>	<b>FEP</b>	<b>9</b>	<b>9</b>	<b>9</b>											
	<b>special length</b>	<b>TPE-U</b>	<b>9</b>	<b>9</b>	<b>9</b>											
Special version		standard	0	0	0											
	prepared for mounting with stainless steel		5	0	3											
	customer		9	9	9											

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<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.