

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 mH₂O up to 0 ... 250 mH₂O

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 ₂ 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 _S = 8 ... 32 V _{DC}						SIL-version: V _S = 14 ... 28 V _{DC}						
Option IS-version		2-wire: 4 ... 20 mA / V _S = 10 ... 28 V _{DC}						SIL-version: V _S = 14 ... 28 V _{DC}						
Options 3-wire		3-wire: 0 ... 20 mA / V _S = 14 ... 30 V _{DC}						0 ... 10 V / V _S = 14 ... 30 V _{DC}						
Performance														
Accuracy ¹		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 _{max} = [(V _S - V _{S min}) / 0.02 A] Ω						voltage 3-wire: R _{min} = 10 kΩ						
		current 3-wire: R _{max} = 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						
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)														
Thermal effects (Offset and Span)														
Nominal pressure P _N	[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 ²														
Short-circuit protection		permanent												
Reverse polarity protection		no damage, but also no function												
Electromagnetic compatibility		emission and immunity according to EN 61326												
² 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 ³		PVC (-5 ... 70 °C) grey Ø 7.4 mm												
		PUR (-10 ... 70 °C) black Ø 7.4 mm												
		FEP ⁴ (-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						
³ shielded cable with integrated ventilation tube for atmospheric pressure reference														
⁴ 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 ⁵						others on request						
Diaphragm		stainless steel 1.4435 (316L)												
Protection cap		POM-C												
Cable sheath		PVC, PUR, FEP, TPE-U												
⁵ 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 _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 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 _{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 μH/m												
Miscellaneous														
Option SIL 2 version ⁶		according to IEC 61508 / IEC 61511												
Drinking water certificate ⁷		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												
⁶ not in combination with the accuracy 0.1 %, only for 4...20 mA / 2-wire														
⁷ only possible with EPDM seal in combination with TPE-U cable; not possible with IS-version (explosion protection)														

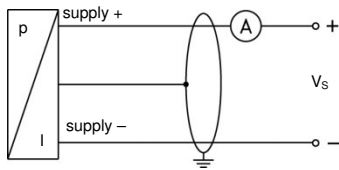
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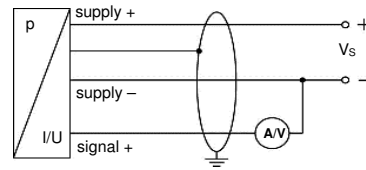
Technical Data

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

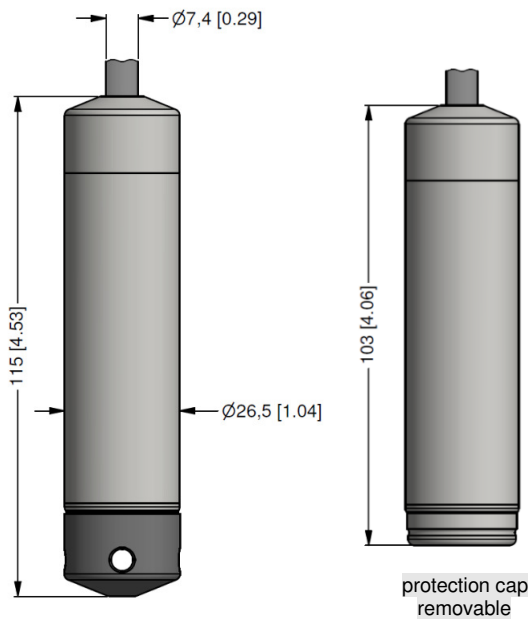


Pin configuration

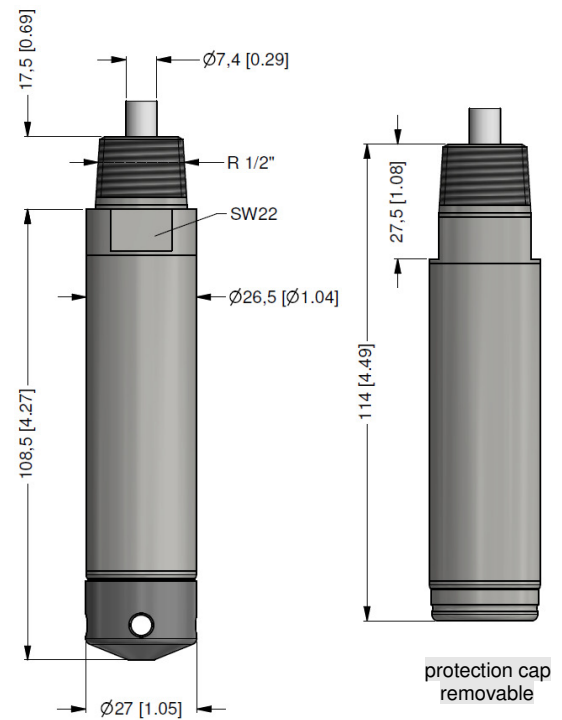
Electrical connection	cable colours (IEC 60757)
Supply +	WH (white)
Supply -	BN (brown)
Signal + (only 3-wire)	GN (green)
Shield	GNYE (green-yellow)

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

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Ordering code LMP 307

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Pressure		in bar	4	5	0											
		in mH ₂ O	4	5	1											
Input		[mH ₂ 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 ¹											3T				
petrol-version:	without (welded version) ^{2,4}											21				
	customer											9				
Accuracy												consult				
	standard for p _N ≥ 0.4 bar	0.35 % FSO											3			
	standard for p _N < 0.4 bar	0.5 % FSO											5			
	option 1 for p _N ≥ 0.4 bar	0.25 % FSO											2			
	option 2	0.1 % FSO ²											1			
	customer											9				
Electrical connection												consult				
	PVC-cable (grey, Ø 7.4 mm) ³											1				
	PUR-cable (black, Ø 7.4 mm) ³											2				
	FEP-cable (black, Ø 7.4 mm) ³											3				
	TPE-U-cable (blue, Ø 7.4 mm) ³											4				
DVGW/KTW:	TPE-U-cable (blue, Ø 7.4 mm) ^{1,3}											F				
	customer											9				
Cable length												consult				
	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			
	special length	PVC											9 9 9			
	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			
	special length	PUR											9 9 9			
	standard: 5 m	FEP											0 0 5			
	standard: 10 m	FEP											0 1 0			
	special length	FEP											9 9 9			
	special length	TPE-U											9 9 9			
Special version												consult				
	standard											0 0 0				
	prepared for mounting with stainless steel											5 0 3				
	customer											9 9 9				

¹ 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)

² not in combination with SIL

³ shielded cable with integrated ventilation tube for atmospheric pressure reference

⁴ 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.