

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

Optional versions

- ▶ IS-protection zone 0
- ▶ SIL 2 (Safety Integrity Level)
- ▶ cable protection via corrugated pipe
- ▶ 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

level measurement in container

water treatment plants

water recycling



Fuel / Oil

fuel storage

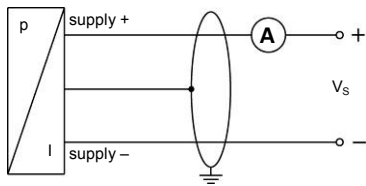
tank farm



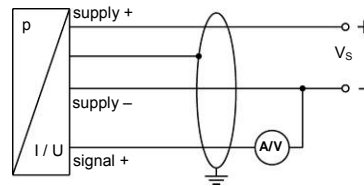
Input pressure range															
Nominal pressure gauge	[bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25	
Level	[mH ₂ O]	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	
Overpressure	[bar]	0.5	1	1	2	5	5	10	10	20	40	40	80	80	
Burst pressure \geq	[bar]	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50	50	120	120	
Output signal / Supply															
Standard		2-wire: 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$													
Option Ex-protection		2-wire: 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$													
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 ≥ 0.4 bar: $\leq \pm 0.35\%$ FSO option 1: nominal pressure ≥ 0.4 bar: $\leq \pm 0.25\%$ FSO option 2: for all nominal pressures: $\leq \pm 0.1\%$ FSO													
Permissible load		current 2-wire: $R_{max} = [(V_S - V_S \text{ min}) / 0.02 A] \Omega$ current 3-wire: $R_{max} = 500 \Omega$ voltage 3-wire: $R_{min} = 10 k\Omega$													
Influence effects		supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω													
Long term stability		$\leq \pm 0.1\%$ 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]	$\leq \pm 1$										$\leq \pm 0.75$			
in compensated range	[°C]	0 ... 70													
Permissible temperatures															
Permissible temperatures		medium: -10 ... 70 °C										storage: -25 ... 70 °C			
Electrical protection 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				PUR (-10 ... 70 °C) black				FEP ⁴ (-10 ... 70 °C) black					
³ cable with integrated air 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 others on request													
Diaphragm		stainless steel 1.4435 (316L)													
Protection cap		POM													
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, $C_i \approx 0$ nF, $L_i \approx 0$ μ 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 μ H/m													
Miscellaneous															
Option SIL ⁵ 2 application		according to IEC 61508 / IEC 61511													
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: 2004/108/EC													
ATEX Directive		94/9/EG													
⁵ not in combination with the accuracy 0.1%, only for 4...20mA / 2-wire															

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

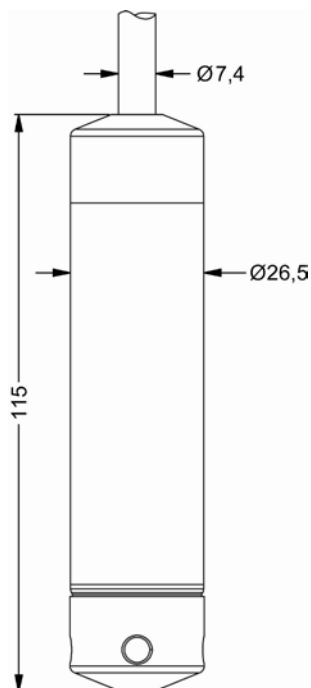


Pin configuration

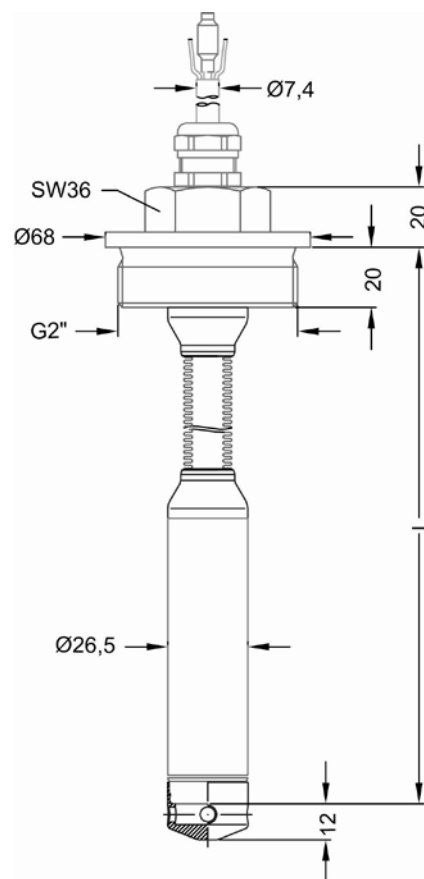
Electrical connection	cable colours (DIN 47100)
Supply +	wh (white)
Supply -	bn (brown)
Signal + (only 3-wire)	gn (green)
Shield	ye/gn (yellow / green)

Dimensions (in mm)

standard

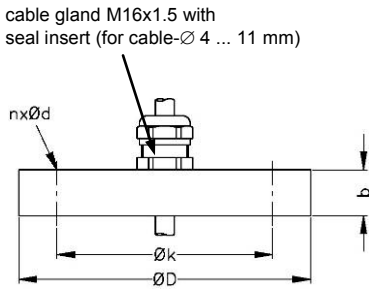
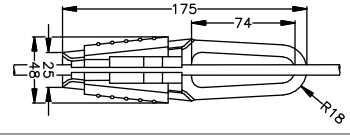



option



cable protection
with corrugated pipe

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

Mounting flange with cable gland	
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
Version	Size (in mm)
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
Weight	
DN25 / PN40	1.4 kg
DN50 / PN40	3.2 kg
DN80 / PN16	4.8 kg
Ordering type	Ordering code
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
Terminal clamp	
Technical data	
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
Ordering type	Ordering code
Terminal clamp, steel, zinc plated	Z100528
Terminal clamp, stainless steel 1.4301 (304)	Z100527
Display program	
<p>CIT 200 Process display with LED display</p> <p>CIT 250 Process display with LED display and contacts</p> <p>CIT 300 Process display with LED display, contacts and analogue output</p> <p>CIT 350 Process display with LED display, bargraph, contacts and analogue output</p> <p>CIT 400 Process display with LED display, contacts, analogue output and Ex-approval</p> <p>CIT 600 Multichannel process display with graphics-capable LC display</p> <p>CIT 650 Multichannel process display with graphics-capable LC display and datalogger</p> <p>CIT 700 Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts</p> <p>PA 440 Field display with 4-digit LC display</p>	
<p>For further information please contact our sales department or visit our homepage: http://www.bdsensors.com</p>	
 <p>cable gland M16x1.5 with seal insert (for cable-\varnothing 4 ... 11 mm)</p>	
	
	

This data sheet contains product specification, properties are not guaranteed. Subject to change without notice.

Ordering code LMP 307

LMP 307



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														consult	
Housing																					
	Stainless steel 1.4404 (316L)						1														
	customer						9														consult
Diaphragm																					
	Stainless steel 1.4435 (316L)						1														
	customer						9														consult
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														
	SIL2 with Intrinsic safety 4 ... 20 mA / 2-wire						ES														
	customer						9														consult
Seals																					
	FKM						1														
	customer						9														consult
Accuracy																					
	standard for P _N ≥ 0.4 bar	0.35 %					3														
	standard for P _N < 0.4 bar	0.5 %					5														
	option 1 for P _N ≥ 0.4 bar	0.25 %					2														
	option 2	0.1 % ¹					1														
	customer						9														consult
Electrical connection																					
	PVC-cable ²						1														
	PUR-cable ²						2														
	FEP-cable ²						3														
	customer						9														consult
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												
	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 version																					
	standard								0	0	0										
	cable protection with stainless steel corrugated pipe with pipe length in m								1	0	3			9	9	9					consult
	customer								9	9	9										consult

¹ not in combination with SIL

² cable with integrated air tube for atmospheric pressure reference

Standard lengths 3 / 5 / 10 / 15 / 20 m are available from stock, special lengths are manufactured order-related, price per meter (see above).

