

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	
Max. ambient pressure (housing): 40 bar															
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							load: 0.05 % FSO / 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						
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 T135 °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														
Permissible temperatures for environment	in zone 0:	-20 ... 60 °C with p _{atm} 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													

LMP 307

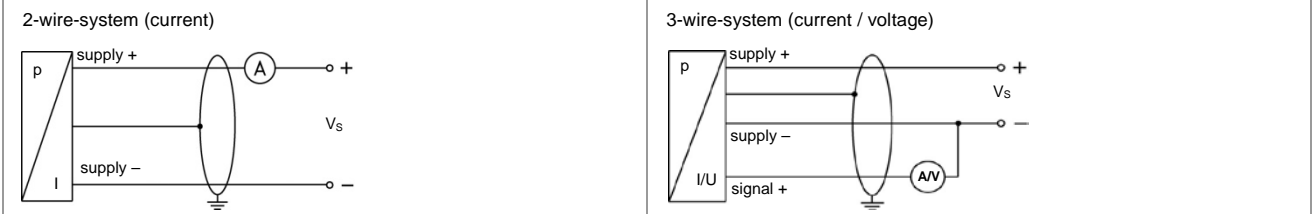
Stainless Steel Probe

Technical Data

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)

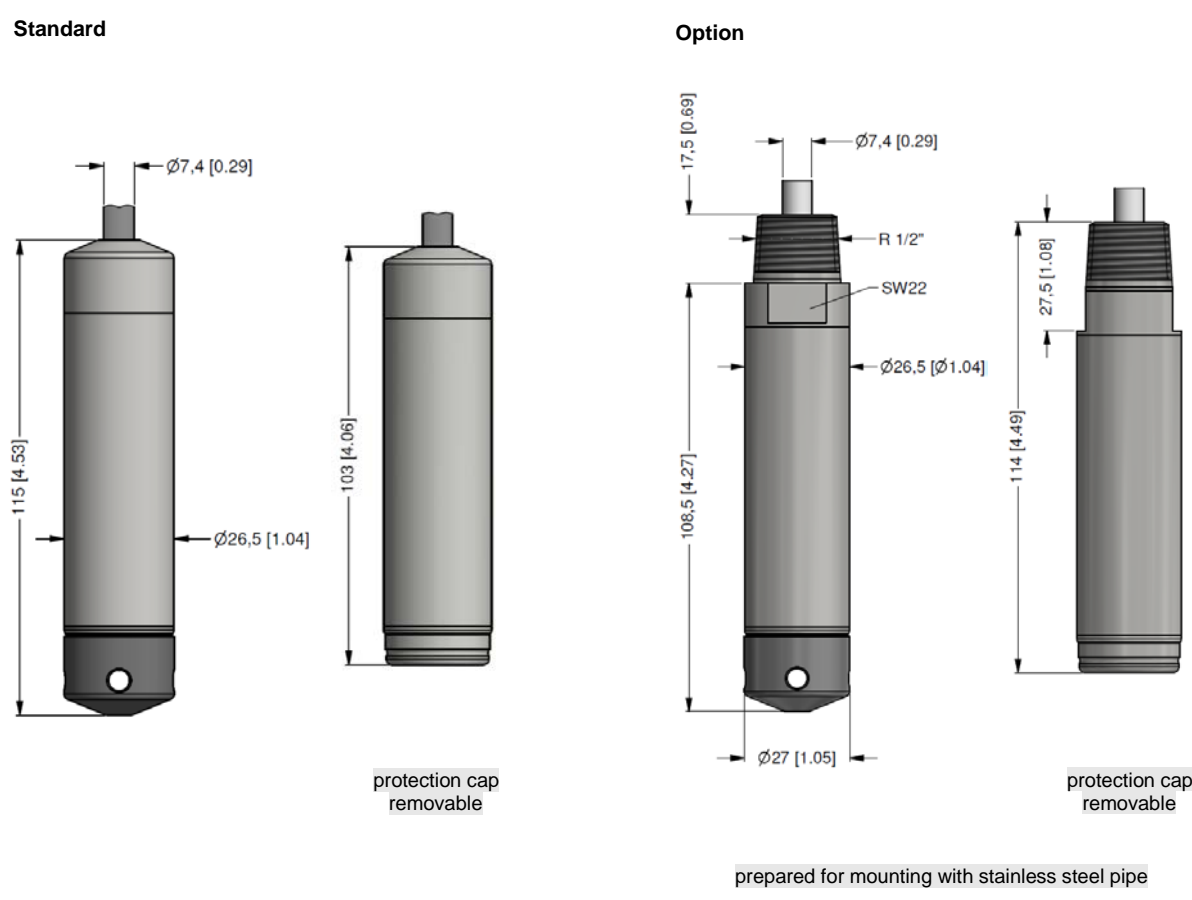
Wiring diagrams



Pin configuration

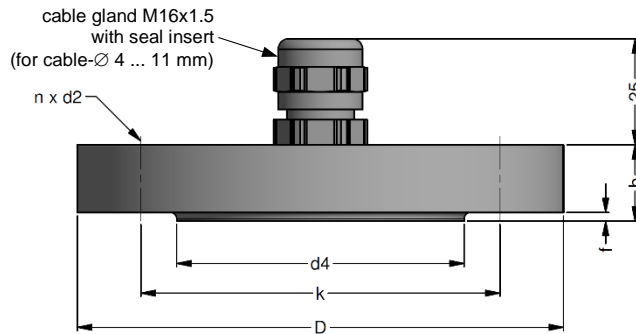
Electrical connection	cable colours (IEC 60757)
Supply +	WH (white)
Supply -	BN (brown)
Signal + (only 3-wire)	GN (green)
Shield	GNYE (green-yellow)

Dimensions (mm / in)



⇒ 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

For further information please contact our sales department or visit our homepage:
<http://www.bdsensors.de>



Ordering code LMP 307

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											9				
Seal												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 / cable length												consult				
PVC-cable (grey, Ø 7.4 mm)³																
	3 m											1				
	5 m											1				
	10 m											1				
	15 m											1				
	special length in m											1				
PUR-cable (black, Ø 7.4 mm)³																
	3 m											2				
	5 m											2				
	10 m											2				
	15 m											2				
	special length in m											2				
FEP-cable (black, Ø 7.4 mm)³																
	5 m											3				
	10 m											3				
	special length in m											3				
TPE-U-cable (blue, Ø 7.4 mm)³																
	special length in m											4				
DVGW/KTW:												F				
	special length in m											9				
Special version												consult				
	standard											0				
	prepared for mounting with stainless steel											5				
	customer											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