BD SENSORS®
pressure measurement

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 mH_2O up to 0 ... 250 mH_2O

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-version
  Ex ia= intrinsically safe for gas and dust
- SIL 2 (Safety Integrity Level)
- Drinking water certificate acc. to DVGW and KTW
- 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
water treatment plants
water recycling

Fuel / Oil
fuel storage
tank farm

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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_2O]	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

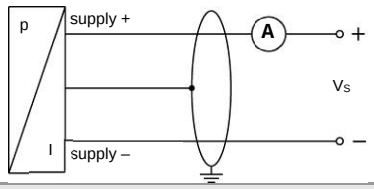
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Option Ex-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Option Accuracy 0.1 % FSO	2-wire: 4 ... 20 mA / V_S = 12 …36 V_{DC}	3-wire: 0 … 10 V / V_S = 14 ... 30 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	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 current 3-wire: R_{max} = 500 Ω voltage 3-wire: R_{min} = 10 kΩ	
Influence effects	supply: 0.05 % FSO / 10 V	load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.1 % FSO / year at reference condition	
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/ electronics/ environment/ storage: -20 … 80 °C *	
**If the cable is intended for use in a smaller temperature range, the use of the probe is limited by this range.*		
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	
Integrated overvoltage protection (ground wire) in accordance with CSN EN 61000-4-5 (1 kV)[3]		
[2] additional external overvoltage protection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request *[3] version with the output signal 4 … 20 mA / 2-wire*		
Electrical connection		
Cable with sheath material [4]	PVC (-5 … 70 °C) grey (-25 … 70 °C in fixed condition) Ø 7,4 mm PUR (-25 … 80 °C) black Ø 7,4 mm FEP [5] (-25 … 75 °C) black Ø 7,4 mm TPE-U (-25 … 125 °C) blue (with drinking water certificate) Ø 7,4 mm	
Cable sheath	static installation: 10-fold cable diameter	dynamic application: 20-fold cable diameter
[4] cable with integrated air tube for atmospheric pressure reference *[5] 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 (with drinking water certificate)	others on request
Diaphragm	stainless steel 1.4435 (316L)	
Protection cap	POM	
Cable sheath	PVC, PUR, FEP, TPE-U	
Explosion protection (only for 4 ... 20 mA / 2-wire)		
Approvals DX9-LMP 307	**IBExU10ATEX1122 X** 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	
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: 1µH/m	
Miscellaneous		
Option SIL[6] 2 application	according to IEC 61508 / IEC 61511	
drinking water certificate [7]	According to DVGW W 270 and UBA KTW (With order please indicate if her device must be certificated for drinking water.)	
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

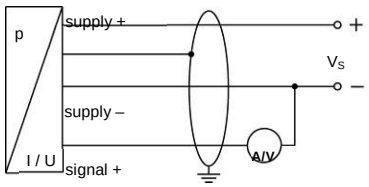
[6] not in combination with the accuracy 0.1%, only for 4...20mA / 2-wire
[7] only possible with EPDM seal in combination with TPE-U cable; not possible with IS-protection (explosion protection

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

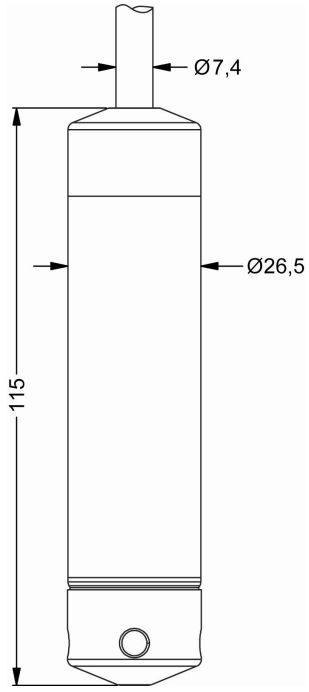


Pin configuration

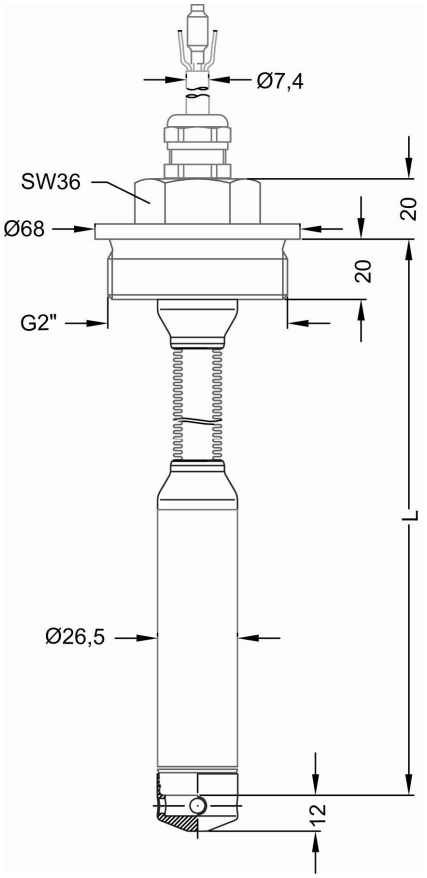
Electrical connection	cable colours (DIN 47100)
Supply + Supply – Signal + (only 3-wire)	wh (white) bn (brown) gn (green)
Shield	ye/gn (yellow / green)

Dimensions (in mm)

standard



option

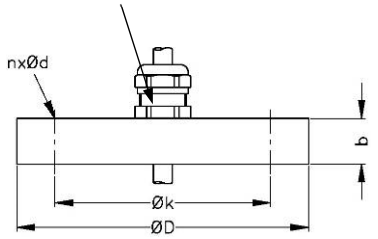


⇨ Total length of devices with accuracy 0.1 %
FSO IEC 60770 increases by 35 mm!

cable protection
with corrugated pipe

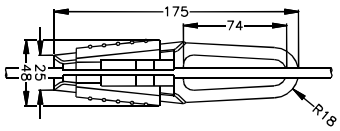
Mounting flange with cable gland		
Technical data		
Suitable for	all probes	
Flange material	stainless steel 1.4404 (316L)	
Material of cable gland	standard: brass, nickel plated on request: stainless steel 1.4305 (303); plastic	
Seal insert	material: TPE (ingress protection IP 68)	
Hole pattern	according to DIN 2507	
Version	**Size (in mm)**	**Weight**
DN25 / PN40	D = 115, k = 85, b = 18, n = 4, d= 14	1.4 kg
DN50 / PN40	D = 165, k = 125, b = 20, n = 4, d= 18	3.2 kg
DN80 / PN16	D = 200, k = 160, b = 20, n = 8, d= 18	4.8 kg

cable gland M16x1.5 with
seal insert (for cable-∅ 4 ... 11 mm)



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 ∅ 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		1003440
Terminal clamp, stainless steel 1.4301 (304)		1000278



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
Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts

PA 440
Field display with 4-digit LC display

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pressure measurement

Ordering code LMP 307

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LMP 307 [ ][ ][ ] - [ ][ ][ ][ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ][ ][ ] - [ ][ ][ ]

Pressure			
in bar			4 5 0
in m H_2O			4 5 1
Input	**[mH_2O]**	**[bar]**	
	0 … 1	0 … 0,1	1 0 0 0
	0 … 1,6	0 … 0,16	1 6 0 0
	0 … 2,5	0 … 0,25	2 5 0 0
	0 … 4	0 … 0,4	4 0 0 0
	0 … 6	0 … 0,6	6 0 0 0
	0 … 10	0 … 1	1 0 0 1
	0 … 16	0 … 1,6	1 6 0 1
	0 … 25	0 … 2,5	2 5 0 1
	0 … 40	0 … 4	4 0 0 1
	0 … 60	0 … 6	6 0 0 1
	0 … 100	0 … 10	1 0 0 2
	0 … 160	0 … 16	1 6 0 2
	0 … 250	0 … 25	2 5 0 2
Customer			9 9 9 9
Housing material			
Stainless steel 1.4404 (316L)			1
Diaphragm material			
Stainless steel 1.4435 (316 L)			1
Output			
4 … 20 mA / 2-wire			1
0 … 20 mA / 3-wire			2
0 … 10 V / 3-wire[1]			3
0 … 5 V / 3-wire[1]			4
Intrinsic safety Ex ia 4 … 20 mA / 2-wire			E
SIL2, 4 … 20 mA / 2-wire			1S
SIL2, Intrinsic safety 4 … 20 mA / 2-wire			ES
Customer			9
Seals			
Viton (FKM)			1
EPDM (drinking water)			3
Customer			9
Accuracy			
0,5 % (P_N ≤ 0,4 bar)			5
0,35 % (P_N > 0,4 bar)			3
0,25 % (P_N > 0,4 bar)			2
0,1 % (only 4…20 mA / 2-wire)			1
0,5 % including Calibration Certificate (P_N ≤ 0,4 bar)			T
0,35 % including Calibration Certificate (P_N > 0,4 bar)			S
Customer			9
Electrical connection			
PVC - cable (grey, Ø 7,4 mm, price for 1 m)			1
PUR - cable (black, Ø 7,4 mm, price for 1 m)			2
FEP - cable with PTFE sheath (black, Ø 7,4 mm, price for 1 m)			3
TPE-U - cable, up to 125°C (blue, Ø 7.4 mm, price for 1 m)			4
Customer			9
Cable length			
in m			9 9 9
Special version			
Standard			0 0 0
Cable protected by SS corrugated hose			1 0 3
+ stainless steel hose / 1 m			
Version with temperature sensor PT100			0 1 3
Reduced power supply 10 … 30 VDC (only for output 0 … 5 V / 3-wire)			0 2 Z
R 1/2" thread - Prepared for mounting with stainless steel pipe			5 0 3
Customer			9 9 9

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Accessories for submersible transmitter	
Terminal clamp - zinc plated	1003440
Terminal clamp - Stainless Steel 1.4301	1000278
Mounting screw PG16 - plastic	5002200

0,- .. . without additional charge

1 - maximum length of PVC cable – 25 m, PUR, FEP, TPE – 40 m

On request … in accordance with the producer

Surcharges for calibration are not subject to any discounts. Subject to change.

This document contains the specification for ordering the product; detailed technical parameters of the product and its possible variants are given in the data sheet.
BD SENSORS reserves the right to change sensor specifications without further notice.

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