BD SENSORS®
pressure measurement

LMP 307i

Stainless Steel Probe Precision

Stainless Steel Sensor

accuracy according to IEC 60770:
0,1 % FSO

Nominal pressure

from 0 ... 4 mH_2O up to 0 ... 200 mH_2O

Output signals

2-wire: 4 ... 20 mA
3-wire: 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 water and dust
- cable protection via corrugated pipe
- drinking water applications according to DVGW a KTW
- different kinds of cables
- different kinds of seal materials

Stainless steel precision probe LMP 307i is designed for continuous measurement of water level and clean or slightly contamined liquids.

The basis is a high-quality stainless steel sensor, which guarantees very accurate measurements with excellent long-term stability.

Preferred areas of use are

Water / filtrated Sewage
ground water level measurement
level measurement in wells and open waters / rain spillway basin
level measurement in container
water treatment plants
water recycling

Pohonné hmoty / Oleje
skladování pohonných hmot
skladování ropy

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Input pressure range [1]							
Nominal pressure gauge	[bar]	0,40	1	2	4	10	20
Level	[mH_2O]	4	10	20	40	100	200
Overpressure	[bar]	2	5	10	20	40	80
Burst pressure	[bar]	3	7,5	15	25	50	120

[1] On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.

Výstupní signál / Napájení	
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC} with RS-232 communication interface
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}
Option 3-wire	3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC}
Option I M1 Ex ia I for doly	2-wire: 4 ... 20 mA
Performance	
Accuracy Performance after turn-down (TD) - TD ≤ 1:5 - TD > 1:5	IEC 60770 [2]: ≤ ± 0.1 % FSO no change of accuracy [3] formula for accuracy calculating (for nominal pressure gauge ≤ 0.40 bar see note 3): ≤ ± [0.1 + 0.015 x turn-down] % FSO with turn-down = nominal pressure range / adjusted range e.g. follwing accuracy can be calculated for turn-down 1:10: ≤ ± (0.1 + 0.015 x 10) % FSO viz. the accuracy is ≤ ± 0.25 % FSO
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$ 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 x turn-down) % FSO / year
Response time	approx. 200 ms
Adjustability	following parameters can be adjusted (interface / software needed [4]) electronic damping: 0 ... 100 sec offset: 0 ... 90 % FSO turn-down of span: max. 1:10

[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)
[3] nominal pressure gauges ≤ 0,40 bar are excluded; for these the calculation of accuracy is as follows:
≤ ± (0.1 + 0.02 x turn-down) % FSO e.g. torn-down 1:3: ≤ ± (0.1 + 0.02 x 3) % FSO viz. the accuracy is ≤ ± 0.16 % FSO
[4] software, interface and cable must separate be ordered (software is compatible with Windows® 95, 98, 2000, NT from version 4.0 or higher and XP)

Thermal effects (Offset and Span)			
Tolerance band	[% FSO]	≤ ± (0.2 x turn-down)	in compensated range -20 ... 70 °C
TC	[% FSO / 10 K]	± (0.2 x turn-down)	in compensated range -20 ... 70 °C
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 [5]	
Short-circuit protection	permanent
Insulation resistance	> 100 MΩ
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

[5] 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 [6]	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 [7] (-25 … 75 °C) black Ø 7,4 mm TPE-U (-25 … 125 °C) blue (with/without DVGW approval) Ø 7,4 mm
Bending radius	static installation: 10-fold cable diameter, dynamic application: 20-fold cable diameter

[6] shielded cable with integrated air tube for atmospheric pressure reference
[7] do not use freely suspended probes with an FEP cable if effects due to highly charging processes are expected

Materials (media wetted)	
Housing	nerezová ocel 1.4404 (316L)
Seals	FKM; EPDM (s certifikátem DVGW); jiné po dohodě
Diaphragm	nerezová ocel 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 307i	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 ... 65 °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

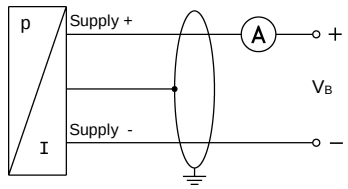
Miscellaneous	
Drinking water approval [6]	According to DVGW W 270 and UBA KTW (With order please indicate if her device must be certificated for drinking water.)
Current consumption	signal output current: max. 25 mA

Weight	approx 200 g (without cable)
Ingress protection	IP 68
CE-conformity	EMC Directive: 2014/30/EU

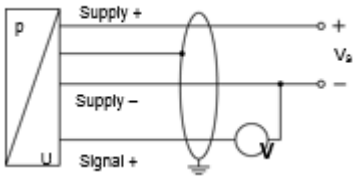
[6]only with EPDM seal in combination with TPE-U cable; not possible in Ex version (intrinsic safety)

Wiring diagram / connector

2-wire system (current)



3-wire-system (voltage)

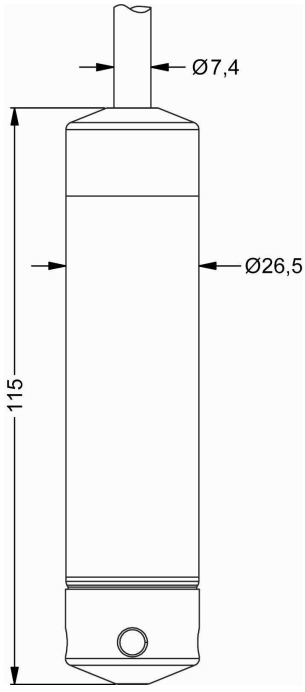


Pin configuration

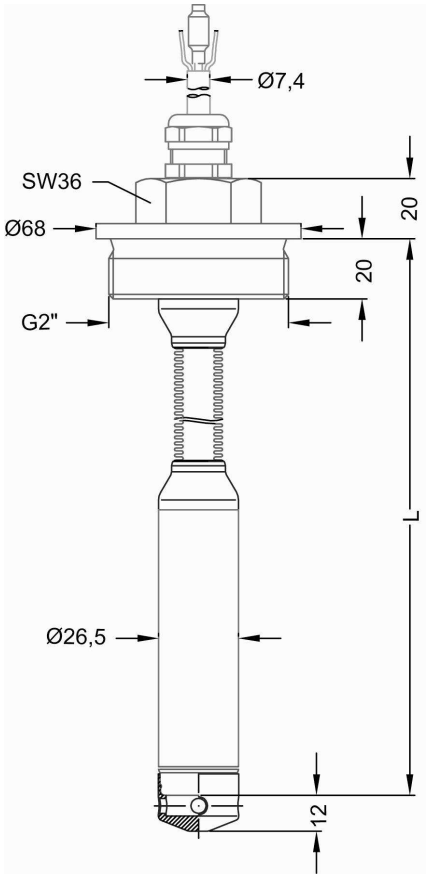
Electrical connection	cable colours (DIN 47100)
Supply + Supply – signal + (only 3-wire)	wh (white) bn (brown) gn (green)
shield	gn/ye (green / yellow)

Dimensions (in mm)

standard



option



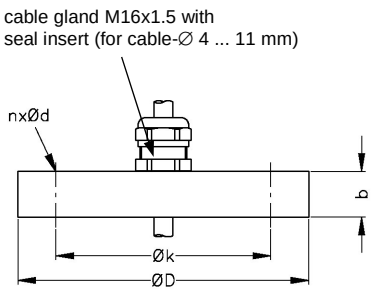
version with corrugated pipe

⇨ For versions with an accuracy of 0.1% FSO according to IEC 60770, the total length is 35 mm longer!

Accessories

Mounting flange with cable gland

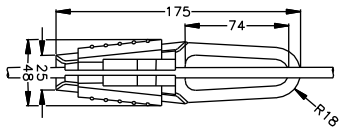
Technical data		
Suitable for	All probes	
Flange material	Stainless steel 1.4404 (316L)	
Material of cable gland	standard: brass, niclek plated on request: stainless steel 1.4305 (303); plastic	
Seal insert	material: TPE (ingress protection IP 68)	
Hole pattern	According to DIN 2507	
Version	**Size (in 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



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	
Vhodné pro	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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BD SENSORS® tlakoměrná technika

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pressure measurement

Ordering code LMP 307i

3.4.2020

LMP 307i □□□ - □□□□ - □ - □ - □ - □ - □ - □ - □□□ - □□□

Pressure																									
in bar			4	5	0																				
in m H_2O			4	5	1																				
Input	**[mH_2O]**	**[bar]**																							
	0 … 4	0 … 0,4				4	0	0	0																
	0 … 10	0 … 1				1	0	0	1																
	0 … 20	0 … 2				2	0	0	1																
	0 … 40	0 … 4				4	0	0	1																
	0 … 100	0 … 10				1	0	0	2																
	0 … 200	0 … 20				2	0	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 … 10 V / 3-wire[1]												3													
Intrinsic safety Ex ia 4 … 20 mA / 2-wire												E													
Intrinsic safety M1 Ex ia 4 … 20 mA / 2-wire (for mines)												F													
Customer												9													
Seals																									
Viton (FKM)													1												
EPDM													3												
Customer													9												
Accuracy																									
0,1 % - standard range														1											
0,1 % - standard range including Calibration Certificate														P											
0,1 % - customer range														I											
0,1 % - customer range including Calibration Certificate														H											
0,2 % (P_N < 0,1 bar)														B											
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																			1	1	1				
Cable protected by SS corrugated hose																			1	1	8				
+ stainless steel hose / 1 m																									
Reduced power supply 9 … 36 V DC																			0	2	8				
Customer																			9	9	9				
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 On request...in accordance with the producer

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

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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