

# LMP 307i

## Stainless Steel Probe Precision

Stainless Steel Sensor

accuracy according to EN IEC 62828-2:  
0,1 % span



### Nominal pressure

from 0 ... 4 mH<sub>2</sub>O up to 0 ... 200 mH<sub>2</sub>O

### 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 contaminated 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



#### Fuels / Oil

fuel storage  
tank farm



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Precision stainless steel probe

Accessories

Input pressure range <sup>1</sup>							
Nominal pressure gauge	[bar]	0,40	1	2	4	10	20
Level	[mH <sub>2</sub> O]	4	10	20	40	100	200
Overpressure	[bar]	2	5	10	20	40	80
Burst pressure	[bar]	3	7,5	15	25	50	120
max. ambient pressure (housing)		40 bar					
<sup>1</sup> On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.							
Output signal / Supply							
Standard	2-wire: 4 ... 20 mA / V <sub>S</sub> = 12 ... 36 V <sub>DC</sub> with RS-232 communication interface						
Option Exi, MINES – M1	2-wire: 4 ... 20 mA / V <sub>S</sub> = 14 ... 28 V <sub>DC</sub>						
Option 3-wire	3-wire: 0 ... 10 V / V <sub>S</sub> = 14 ... 36 V <sub>DC</sub>						
Performance							
Accuracy <sup>2</sup>	≤ ± 0.1 % span						
Performance after turn-down (TD)	no change of accuracy <sup>3</sup>						
- TD ≤ 5:1	formula for accuracy calculating (for nominal pressure gauge ≤ 0.40 bar see note 3):						
- TD > 5:1	≤ ± [0.1 + 0.015 x turn-down] % span						
	with turn-down = nominal pressure range / adjusted range						
	e.g. following accuracy can be calculated for turn-down 10:1:						
	≤ ± (0.1 + 0.015 x 10) % span viz. the accuracy is ≤ ± 0.25 % span						
Permissible load	current 2-wire: R <sub>max</sub> = [(V <sub>S</sub> - V <sub>S min</sub> ) / 0.02 A] Ω						
	voltage 3-wire: R <sub>min</sub> = 10 kΩ						
Influence effects	supply: 0.05 % span / 10 V load: 0.05 % span / kΩ						
Long term stability	≤ ± (0.1 x turn-down) % span / year						
Response time	current output 4...20 mA (2-wire)			5ms			
	voltage output 0 ... 10 V			25 ms			
Adjustability	following parameters can be adjusted (interface / software needed <sup>4</sup> )						
	electronic damping: 0 ... 100 sec						
	offset: 0 ... 90 % span			turn-down of span: max. 10:1			
<sup>2</sup> accuracy according to EN IEC 62828-2– limit point adjustment (non-linearity, hysteresis, repeatability)							
<sup>3</sup> nominal pressure gauges ≤ 0,40 bar are excluded; for these the calculation of accuracy is as follows:							
≤ ± (0.1 + 0.02 x turn-down) % span e.g. turn-down 3:1: ≤ ± (0.1 + 0.02 x 3) % span viz. the accuracy is ≤ ± 0.16 % span							
<sup>4</sup> 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	[% span]	≤ ± (0.2 x turn-down)		in compensated range -20 ... 70 °C			
TC	[% span / 10 K]	± (0.2 x turn-down)		in compensated range -20 ... 70 °C			
Permissible temperatures	Standard product: Medium/ electronics/ environment/ storage: -20 ... 80 °C *						
	Exi: in zone 0: -20 ... 60 °C with p <sub>atm</sub> 0,8 bar up to 1,1 bar in zone 1 or higher: -20 ... 65 °C						
	Ex (MINES - M1): Medium: -20...70 °C / transmitter: -20...65 °C / storage: -25...70 °C						
<sup>*</sup> if the cable is intended for use in a smaller temperature range, the use of the probe is limited by this range.							
Electrical protection <sup>5</sup>							
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						
<sup>5</sup> 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 <sup>6</sup>	PVC (-5 ... 70 °C) grey (-25 ... 70 °C in fixed condition)				Ø 7,4 mm		
	PUR (-25 ... 80 °C) black (with drinking water certificate)				Ø 7,4 mm		
	FEP <sup>7</sup> (-25 ... 75 °C) black				Ø 7,4 mm		
	TPE-U (-25 ... 125 °C) blue				Ø 7,4 mm		
Bending radius	static installation: 10-fold cable diameter, dynamic application: 20-fold cable diameter						
<sup>6</sup> shielded cable with integrated air tube for atmospheric pressure reference							
<sup>7</sup> 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 approval DVGW); 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 307i	IBExU10ATEX1122 X						
	zone 0: II 1G Ex ia IIC T4 Ga			zone 20: II 1D Ex ia IIIC T135°C Da			
Approvals IBExU13ATEX1043X	I M1 Ex ia I Ma (MINES - M1)						
Safety technical maximum values	U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 mA, P <sub>i</sub> = 660 mW, C <sub>i</sub> ≈ 0 nF, L <sub>i</sub> ≈ 0 μH						
	the supply connections have an inner capacity of max. 27 nF to the housing						
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							

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Precision stainless steel probe

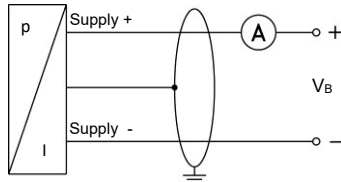
Technical data

Drinking water approval <sup>6</sup>	According to DVGW W 270 and UBA KTW (With order please indicate if her device must be certified 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

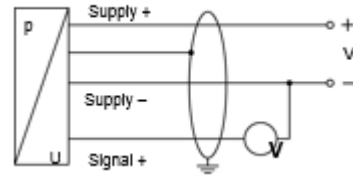
<sup>6</sup>only with EPDM seal in combination with TPE-U cable; not possible in Ex version (intrinsic safety)

## Wiring diagram / connector

2-wire system (current)



3-wire-system (voltage)



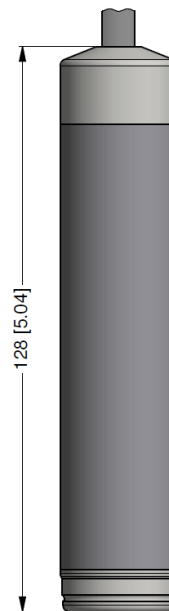
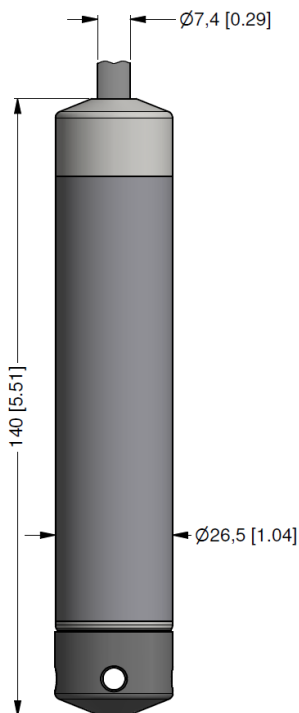
## Pin configuration

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

## Dimensions (in mm)

standard

option

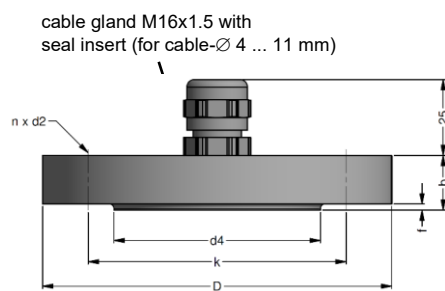


protection cap removable

⇒ For versions with an accuracy of 0.1% span 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, 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
Ordering type		Ordering code
DN25 / PN40 with cable gland brass, nickel plated		5000275
DN50 / PN40 with cable gland brass, nickel plated		5000278
DN80 / PN16 with cable gland brass, nickel plated		5000279



Terminal clamp		
Technical data		
Vhodné pro	all probes with cable Ø 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	
<b>CIT 200</b> Process display with LED display	
<b>CIT 250</b> Process display with LED display and contacts	
<b>CIT 300</b> Process display with LED display, contacts and analogue output	
<b>CIT 350</b> Process display with LED display, bargraph, contacts and analogue output	
<b>CIT 400</b> Process display with LED display, contacts, analogue output and Ex-approval	
<b>CIT 600</b> Multichannel process display with graphics-capable LC display	
<b>CIT 650</b> Multichannel process display with graphics-capable LC display and datalogger	
<b>CIT 700</b> Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts	
<b>PA 440</b> Field display with 4-digit LC display	
For further information please contact our sales department or visit our homepage: <a href="http://www.bdsensors.com">http://www.bdsensors.com</a>	

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Technical data

Programming kits for i-devices: CIS 510-RS232 and CIS 510-USB	
CIS 510-RS232	CIS 510-USB
	
Supply $V_s$	<b>for CIS 510-RS232:</b> 24V <sub>DC</sub> <b>for CIS 510-USB:</b> 24V <sub>DC</sub>
Package contents	Programming software "Config 3.0" on CD operating manual  <b>CIS 510-RS232:</b> Adapt 1 RS-232 connecting cable (for PC) 7-pin connecting cable (for measuring device)  <b>CIS 510-USB:</b> Adapt 5 USB connecting cable (for PC) 7-pin connecting cable (for measuring device)
System requirement	For the installation of the software, a Windows® PC (95, 98, ME, 2000, NT, XP) with serial interface (RS 232) or USB-interface is required
<b>Please read the operating manual carefully before installing and starting up the programming kit.</b>	
<b>Wiring diagrams</b>	
<b>CIS 510-RS232:</b>  	<b>CIS 510-USB interface:</b>  
<b>Ordering codes</b>	
<b>Version:</b>  <b>Adapt 1 with RS232 connecting cable for PC</b>  <b>Adapt 5 with USB connecting cable for PC</b>	<b>Ordering code:</b>  <b>CIS 510-RS232</b>  <b>CIS 510-USB</b>
<i>Windows® is a registered trade mark of Microsoft Corporation</i>	

**Ordering code LMP 307i**

23.08.2024

**LMP 307i**

<b>Pressure</b>																												
in bar		4	5	0																								
in m H <sub>2</sub> O		4	5	1																								
<b>Input</b>																												
[mH <sub>2</sub> O]	[bar]																											
0 ... 4	0 ... 0,4			4		0		0																				
0 ... 10	0 ... 1			1		0		0																				
0 ... 20	0 ... 2			2		0		0																				
0 ... 40	0 ... 4			4		0		0																				
0 ... 100	0 ... 10			1		0		0																				
0 ... 200	0 ... 20			2		0		0																				
<b>Customer</b>				9		9		9																				
<b>Housing material</b>																												
Stainless steel 1.4404 (316L)					1																							
<b>Diaphragm material</b>																												
Stainless steel 1.4435 (316 L)					1																							
<b>Output</b>																												
4 ... 20 mA / 2-wire											1																	
0 ... 10 V / 3-wire <sup>3</sup>											3																	
Intrinsic safety Ex ia 4 ... 20 mA / 2-wire											E																	
Intrinsic safety I M1 Ex ia 4 ... 20 mA / 2-wire only with FEP cable											F																	
<b>Customer</b>				9																								
<b>Seals</b>																												
Viton (FKM)					1																							
EPDM <sup>1</sup>					3																							
<b>Customer</b>				9																								
<b>Accuracy</b>																												
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 <sub>N</sub> < 0,1 bar)											B																	
<b>Customer</b>				9																								
<b>Electrical connection</b>																												
PVC - cable (grey, Ø 7,4 mm, price for 1 m) <sup>2</sup>											1																	
PUR - cable (black, Ø 7,4 mm, price for 1 m) <sup>2</sup>											2																	
FEP - cable with PTFE sheath (black, Ø 7,4 mm, price for 1 m) <sup>2</sup>											3																	
TPE-U - cable, up to 125 °C (blue, Ø 7.4 mm, price for 1 m) <sup>2</sup>											4																	
<b>Customer</b>				9																								
<b>Cable length</b>																												
in m											9			9			9											
<b>Special version</b>																												
Standard														1			1			1								
Cable protected by SS corrugated hose (max 20 m)														1			1			8								
+ stainless steel hose / 1 m																												
Reduced power supply 9 ... 36 V DC														0			2			8								
<b>Customer</b>				9		9		9																				
<b>Accessories for submersible transmitter</b>																												
Terminal clamp - zinc plated																												
Terminal clamp - Stainless Steel 1.4301																												
Mounting screw PG16 - plastic																												
<b>Accessories</b>																												
Adapt 1 with RS232 connecting cable for PC (CIS 510-RS232)																												
Adapt 5 with USB connecting cable for PC (CIS 510-USB)																												

0,...without additional charge          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 BD SENSORS reserves the right to change sensor specifications without further notice.



BD SENSORS s.r.o.  
Hradištská 817  
CZ – 687 08 Buchlovice

Tel.: +420 572 411 011

www.bdsensors.cz  
info@bdsensors.cz



The company BD SENSORS s.r.o. is certified by Bureau Veritas Czech according to the standard ISO 9001.

- 1 drinking water certification only possible with EPDM seal (code 3) in combination with PUR cable
- 2 shielded cable with integrated ventilation tube for atmospheric pressure reference
- 3 maximum length of PVC cable – 25 m, PUR, FEP, TPE – 40 m



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[www.bdsensors.cz](http://www.bdsensors.cz)  
[info@bdsensors.cz](mailto:info@bdsensors.cz)

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