

LMP 307i RS 485



Stainless Steel Probe Precision

Stainless Steel Sensor

accuracy according to IEC 60770: 0.1 % FSO

Nominal pressure

from 0 ... 0,4 mH₂O up to 0 ... 250 mH₂O

Output signals

digital output RS 485
digital output UART/5V

Communication protocol

HART[®]
Modbus RTU

Special characteristics

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

Optional versions

- ▶ cable protection via corrugated pipe
- ▶ mounting accessories as cable gland and terminal clamp in stainless steel
- ▶ different kinds of cables
- ▶ different kinds of seal materials

The precision stainless steel probe LMP 307i RS 485 is designed for continuous fill level and level measurement of water and liquid mediums.

Housing material is 1.4044; the sensor diaphragm is made of 1.4435. Standard sealing material is FKM; other materials are available on request.

The LMP 307i RS 485 features high accuracy of 0.1 % FSO and a very small thermal error. Basic element is a high quality stainless steel sensor with a digital electronics with microprocessor and 16-bit analog/digital converter. Thus it's possible to compensate the sensor specific errors as non-linearity and thermal errors actively resulting in a level transmitter with excellent measuring properties at an unusual competitive price.

Preferred areas of use are

Water / filtrated Sewage

- environmental engineering: water supply, sewage treatment



- depth or level measurement in wells
- ground water level measurement
- level measurement in open tanks



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Technical Data

Input pressure range																
Nominal pressure gauge	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25
Level	[mH ₂ O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250
Permissible overpressure	[bar]	0.2	0.2	0.5	0.5	1	1	3	3	6	6	20	20	20	60	60
Output signal / Supply																
Output signal RS 485	HART® Modbus RTU															
Supply	standard: $V_S = 10 \dots 36 V_{DC}$ options: $V_S = 3,3 \dots 5 V_{DC}$ (stabilized) $V_S = 8 \dots 15 V_{DC}$															
Performance																
Accuracy	IEC 60770 ¹ : $\leq \pm 0.1 \%$ FSO															
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω															
Long term stability	$\leq \pm 0.1 \%$ FSO / year															
Response time	200 msec															
Adjustability	following parameters can be adjusted (interface / software needed ²) electronic damping: 0 ... 100 sec pressure and temperature unit															
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability; temperature range -10 ... 50 °C including thermal effects)																
² 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]	$\leq \pm 0.2$ in compensated range -20 ... 80 °C														
TC	[% FSO / 10 K]	± 0.02 in compensated range -20 ... 80 °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 ³																
Insulation resistance	> 100 M Ω															
Short-circuit protection	permanent															
Reverse polarity protection	no damage, but also no function															
Electromagnetic compatibility	emission and immunity according to EN 61326															
³ 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 ⁵	PVC (-5 ... 70 °C) grey (-25 ... 70 °C in fixed condition) \varnothing 7,4 mm PUR (-25 ... 80 °C) black \varnothing 7,4 mm FEP ⁶ (-25 ... 75 °C) black \varnothing 7,4 mm others on request															
⁵ cable with integrated air tube for atmospheric pressure reference																
⁶ 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)															
Diaphragm	stainless steel 1.4435 (316L)															
Seals	FKM, others on request															
Protection cap	POM															
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																
Current consumption	1.8 mA															
Weight	approx. 200 g (without cable)															
Ingress protection	IP 68															
CE-conformity	EMC Directive: 2004/108/EC															
Measurement mode (only HART®)	continuous on request															
Baud rate	HART® 1200 Bd 2400 Bd ModbusRTU 4800 Bd 19200 Bd 9600 Bd 38400 Bd															

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Technical Data

Map of Input registers (read only, function #4 – Read input registers)					
Address	Register	Description	Data type	Example	
0x0000	SerialNr	Serial Number	UInt32	0x0012	123456
0x0001				0xd687	
0x0002	CalDate	Date of last calibration	Date	0x07de	2014
0x0003				0x051b	27.5.
0x0004	PressUpperRange	Upper range of pressure channel	Float, IEEE754	0x4120	10,0
0x0005				0x0000	
0x0006	PressLowerRange	Lower range of pressure channel	Float, IEEE754	0x0000	0,0
0x0007				0x0000	
0x0008	Pressure	Actual pressure	Float, IEEE754	0x3f9e	1,2345
0x0009				0x0419	
0x000A	MaxPress	Maximal Pressure	Float, IEEE754	0x3f00	1,5
0x000B				0x0000	
0x000C	MinPress	Minimal Pressure	Float, IEEE754	0x3f00	0,5
0x000D				0x0000	
0x000E	TempUpperRange	Upper range of temperature channel	Float, IEEE754	0x42a0	80,0
0x000F				0x0000	
0x0010	TempLowerRange	Lower range of temperature channel	Float, IEEE754	0xc1a0	-20,0
0x0011				0x0000	
0x0012	Temperature	Actual temperature	Float, IEEE754	0x41a0	20,0
0x0013				0x0000	
0x0014	MaxTemp	Maximal temperature	Float, IEEE754	0x4270	60,0
0x0015				0x0000	
0x0016	MinTemp	Minimal temperature	Float, IEEE754	0x4170	15,0
0x0017				0x0000	

Map of Holding registers (read and write, function #3 - Read Holding Registers , fce #6 - Write Single Register)					
Address	Register	Description	Data type	Example	
0x0000	PressUnitsCode	Unit of pressure channel	UInt16	0x0006	bar
0x0001	TempUnitsCode	Unit of temperature channel	UInt16	0x0000	°C
0x0002	DeviceAddress	Device address (1...247)	UInt16	0x0001	1
0x0003	Baudrate	Baud rate	UInt16	0x0005	9600
0x0004	Parity	Parity	UInt16	0x0000	PA_none

Pressure unit enumeration													
Code (Unit16)	0x0003	0x0004	0x0005	0x0006	0x0007	0x0008	0x0009	0x000A	0x000B	0x000C	0x000D	0x000E	0x000F
Unit	mmH2O	mmHG	psi	bar	mbar	g/cm ²	kg/cm ²	Pa	kPa	torr	atm	mH2O	MPa

Temperature unit enumeration			
Code (UInt16)	0x0000	0x0001	0x0002
Unit	°C	°K	°F

Baud rate enumeration				
Code (UInt16)	0x0004	0x0005	0x0006	0x0007
Baud rate [Bd]	4800	9600	19200	38400

Parity enumeration			
Code (UInt16)	0x0000	0x0001	0x0002
Parity	Žádná (None)	Lichá (Odd)	Sudá (Even)

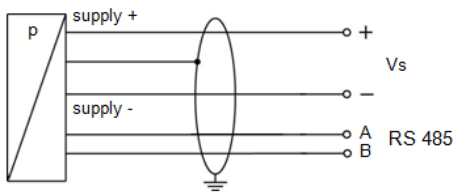
⁷It is necessary to make device reset (Power supply off and on) after changing Address, Baud rate or Parity (command #6). If reset is not performed, device uses old communication parameters.

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Technical Data

Wiring diagram / connector

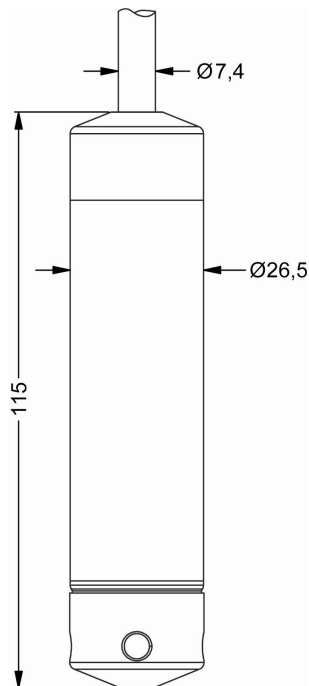


Pin configuration

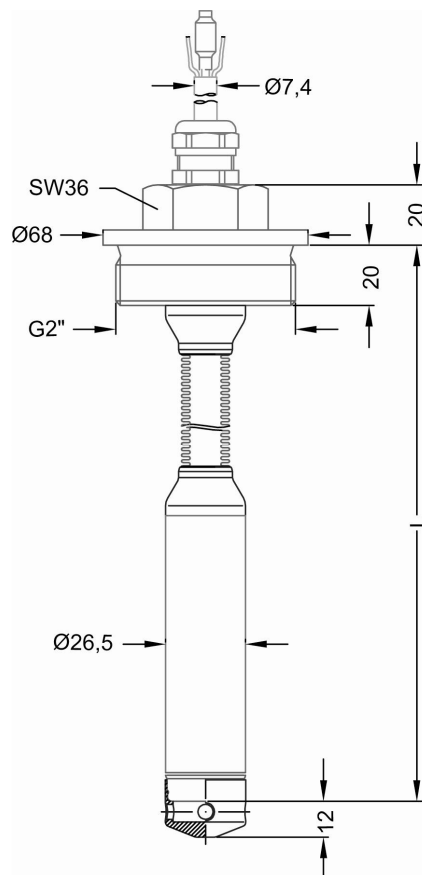
Electrical connection	cable colours (DIN 47100)
Supply +	wh (white)
Supply -	bn (brown)
Shield	gn/ye (green / yellow)
Communication protocol A	ye (yellow)
B	pk (pink)

Dimensions (in mm)

standard



option

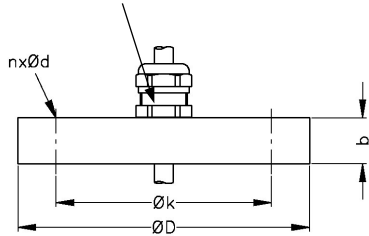
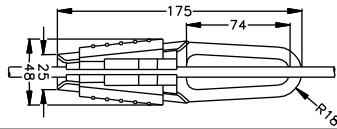



version with
corrugated pipe

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Precision Stainless Steel Probe

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

Ordering code LMP 307i_485

3.4.2020

LMP 307i_485

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Pressure																				
in bar		4	5	0																
in m H ₂ O		4	5	1																
[mH₂O]	[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 signal																				
Digital output (communication RS 485 / HART protocol)											1	D								
Digital output (communication RS 485 / ModBus RTU protocol)												2	D							
Customer													9	9						
Seals																				
Viton (FKM)																				1
Customer																				9
Accuracy																				
0,1 %																				1
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																				
RS 485 interface, supply 8...15 V DC																				1 4 1
RS 485 interface, supply 10...36 V DC																				1 4 2
RS 485 interface, supply 3,3...5 V DC																				1 4 3
Customer																				9 9 9
Additional information for "1D" RS 485 / HART																				
Measurement mode																				
Continuous																				A
Discontinuous																				B
Baud Rate																				
1200 Bd (standard)																				1200
2400 Bd																				2400
Temperature compensation																				
0 ... 70°C (standard)																				1
-20 ... 80°C																				2
Additional information for "2D" RS 485 / ModBus RTU																				
Parity																				
Even																				S
Odd																				L
No Parity																				O
Baud Rate																				
4800 Bd																				4800
9600 Bd																				9600
19200 Bd																				19200
38400 Bd																				38400
Temperature compensation																				
0 ... 70°C (standard)																				1
-20 ... 80°C																				2
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
 Surcharges for calibration are not subject to any discounts. Subject to change.



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

Tel.: +420 572 411 011
 Fax: +420 572 411 497

www.bdsensors.cz
 info@bdsensors.cz

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



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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