LMP 307T

Level and Temperature Transmitter

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 % FSO

Nominal pressure / nominal temperature

from 0 ... 1 mH_2O up to 0 ... 250 mH_2O

from 0 ... 30 °C up to 0 ... 70 °C

others on request

Output signals

2-wire: 4 ... 20 mA (pressure)

2-wire: 4 ... 20 mA (temperature)

Special characteristics

- diameter 26.5 mm
- separate output signals
  for pressure and temperature ranges
- easy handling
- low maintenance and wiring costs

Optional versions

- drinking water certificate
  according to DVGW and KTW
- different kinds of cables
  and elastomers
- customer specific versions

BD|SENSORS has developed the stainless steel submersible probe LMP 307T for continuous level and temperature measurement in water and in clean or lightly polluted fluids. The advantage: simultaneous recording of level and temperature with separate independent signal amplification. The maintenance and wiring costs are considerably reduced.

In addition to classical signal processing of the level, an additional signal circuit independent of the level which converts the temperature signal into a 4 … 20 mA analogue signal in 2-wire technology is provided.

Typical application areas are, for example, drinking water purification, monitoring of rain spillway basins or river courses and level measurement in containers or tank batteries.

Preferred areas of use are

Water / filtrated sewage
drinking water system
rain spillway basins
water recycling

Fuel and oil
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
Max. ambient pressure (housing): 40 bar														

Input temperature range				
Temperature measuring range standard:	0 … 30 °C	0 … 50 °C	0 … 70 °C	others on request [1]
[1] *min. temperature range: 30°C; max. temperature range: 80°C; min. temperature: -10°C; max. temperature: 70 °C*				

Output signal / Supply	
2-wire (pressure) [2]	4 ... 20 mA / V_S = 10 ... 30 V_{DC}
2-wire (temperature) [2]	4 ... 20 mA / V_S = 10 ... 30 V_{DC}
[2] *the circuits are galvanically isolated from each other*	

Performance	
Accuracy (pressure) [3]	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
Accuracy (temperature) [4]	≤ ± 1 °C
Permissible load	$R_{max} = [(V_S – V_{S\,min}) / 0.02\ A]\ \Omega$
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	< 10 msec (for output signal 2-wire (pressure))
[3] *accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)* [4] *Pt100 class B; compensation time up to 1 h depending on constant temperature and environmental respectively mass conditions*	

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 [5]	
Short-circuit protection	permanent
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*	

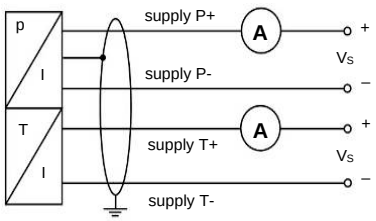
Electrical connection	
Cable with sheath material [6]	PVC (-5 … 70 °C) grey Ø 7.4 mm PUR (-10 … 70 °C) black Ø 7.4 mm FEP [7] (-10 … 70 °C) black Ø 7.4 mm TPE-U (-10 … 70 °C) blue Ø 7.4 mm (without/with drinking water certificate)
Cable capacitance	signal line/shield also signal line/signal line: 160 pF/m
Cable inductance	signal line/shield also signal line/signal line: 1 µH/m
Bending radius	static installation: 10-fold cable diameter dynamic application: 20-fold cable diameter
[6] *shielded cable with integrated ventilation 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	stainless steel 1.4404 (316L)
Seals	FKM EPDM (without/with drinking water certificate) others on request
Diaphragm	stainless steel 1.4435 (316L)
Protection cap	POM-C
Cable sheath	PVC, PUR, FEP, TPE-U, others on request

Miscellaneous	
Drinking water certificate [8]	according to DVGW W 270 and UBA KTW (with order the indication "with drinking water certificate" is necessary)
Current consumption	max. 25 mA
Weight	approx. 200 g (without cable)
Ingress protection	IP 68
CE-conformity	EMC Directive: 2014/30/EU
[8] *only possible with EPDM seal in combination with TPE-U cable*	

Wiring diagram

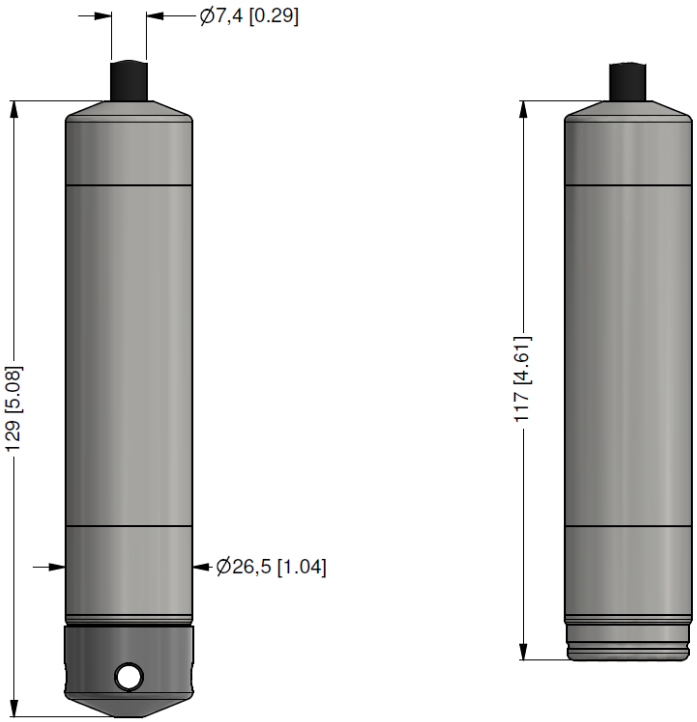
2x2-wire-system (current)



Pin configuration

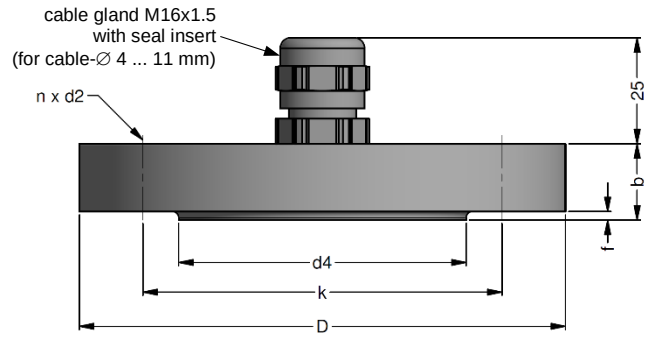
Electrical connection	cable colours (IEC 60757)
Supply P+	WH (white)
Supply P–	BN (brown)
Supply T+	GY (grey)
Supply T–	PK (pink)
Shield	GNYE (green-yellow)

Dimensions (mm / in)



protection cap removable

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 ∅ 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

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Ordering code LMP 307T

LMP 307T ☐☐☐-☐☐☐☐-☐☐☐☐☐☐-☐-☐-☐-☐-☐-☐-☐-☐☐☐-☐☐☐

Option		Code	Remark
Pressure			
	in bar	4 5 5	
	in mH_2O	4 5 6	
Input [mH_2O]	**[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	consult
Input temperature	**°C**		
	0 … 30	0 0 0 x 3 0	
	0 … 50	0 0 0 x 5 0	
	0 … 70	0 0 0 x 7 0	
	customer	9 9 9 9 9 9	consult
Housing			
stainless steel 1.4404 (316L)		1	
	customer	9	consult
Diaphragm			
stainless steel 1.4435 (316L)		1	
	customer	9	consult
Output pressure			
4 … 20 mA / 2-wire		1	
Output temperature			
4 … 20 mA / 2-wire		1	
Seal			
	FKM	1	
	EPDM	3	
DVGW/KTW:	EPDM [1]	3T	
	customer	9	consult
Accuracy			
standard for $p_N \geq 0.4$ bar	0.35 % FSO	3	
standard for $p_N < 0.4$ bar	0.5 % FSO	5	
option 1 for $p_N \geq 0.4$ bar	0.25 % FSO	2	
	customer	9	consult
Electrical connection / cable length			
PVC-cable (grey, Ø 7.4 mm) [2]			
	3 m	1 - 0 0 3	
	5 m	1 - 0 0 5	
	10 m	1 - 0 1 0	
	15 m	1 - 0 1 5	
	special length in m	1 - 9 9 9	
PUR-cable (black, Ø 7.4 mm) [2]			
	3 m	2 - 0 0 3	
	5 m	2 - 0 0 5	
	10 m	2 - 0 1 0	
	15 m	2 - 0 1 5	
	special length in m	2 - 9 9 9	
FEP-cable (black, Ø 7.4 mm) [2]			
	5 m	3 - 0 0 5	
	10 m	3 - 0 1 0	
	special length in m	3 - 9 9 9	
TPE-U-cable (blue, Ø 7.4 mm) [2]			
	special length in m	4 - 9 9 9	
DVGW/KTW: [1]			
	special length in m	F - 9 9 9	
Special version			
	standard	0 0 0	
	customer	9 9 9	consult

[1] drinking water certification only possible with EPDM seal (code 3T) in combination with TPE-U cable (code F)
[2] shielded cable with integrated ventilation tube for atmospheric pressure reference

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