

LMK 307T

Level and Temperature Transmitter

Ceramic Sensor

accuracy according to IEC 60770:
0.5 % FSO



Nominal pressure / nominal temperature

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

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
- ▶ good long term stability
- ▶ easy handling
- ▶ low maintenance and wiring costs

Optional versions

- ▶ different kinds of cables
- ▶ different kinds of seal materials
- ▶ customer specific versions

BD|SENSORS has developed the stainless steel submersible probe LMK 307T with flush mounted ceramic sensor for continuous level and temperature measurement in water or waste water applications.

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.

Preferred areas of use are

Water



e.g. drinking water system, RÜBs
ground water monitoring
storm water systems

Sewage



waste water treatment, water recycling,
dumpsite, waste water tanks

Fuel / Oil



fuel storage
tank farm, biogas plants



Input pressure range											
Nominal pressure gauge	[bar]	0,4	0,6	1	1,6	2,5	4	6	10	16	25
Level	[mH ₂ O]	4	6	10	16	25	40	60	100	160	250
Overpressure	[bar]	1	2	2	4	4	10	10	20	40	40
Burst pressure \geq	[bar]	2	4	4	5	5	12	12	25	50	50

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	$\leq \pm 0.5$ % FSO
Accuracy (temperature) ⁴	$\leq \pm 1$ °C
Permissible load	$R_{max} = [(V_S - V_S \text{ min}) / 0.02 \text{ A}] \Omega$
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω
Long term stability	$\leq \pm 0.3$ % FSO / year at reference conditions
Response time	< 10 ms (for output signal 2-wire (pressure))
³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) ⁴ Pt 100 class B; compensation time up to 1h depending on constant temperature and environmental respectively mass conditions	

Thermal effects (Offset and Span)	
Thermal error	$\leq \pm 0.2$ % FSO / 10 K in compensated range -25 ... 70 °C

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	

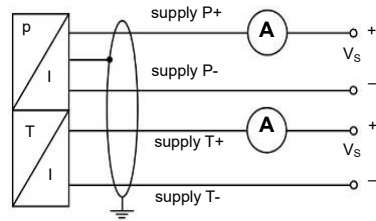
Electrical connection		
Cable with sheath material ⁶	PVC (-5 ... 70 °C)	grey
	PUR (-10 ... 70 °C)	black
	FEP ⁷ (-10 ... 70 °C)	black
	others on request	
⁶ cable with integrated air tube for atmospheric pressure reference ⁷ do not use freely suspended probes with an FEP cable if effects due to highly charging processes are expected		

Materials (media wetted)	
Housing	stainless steel 1.4404 (316L)
Seals	FKM EPDM others on request
Diaphragm	ceramics Al ₂ O ₃ 96%
Protection cap	POM
Cable sheath	PVC, PUR, FEP

Miscellaneous	
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
Current consumption	max. 25 mA
Weight	approx. 250 g (without cable)
Ingress protection	IP 68
CE-conformity	EMC Directive: 2014/30/EU

Wiring diagram

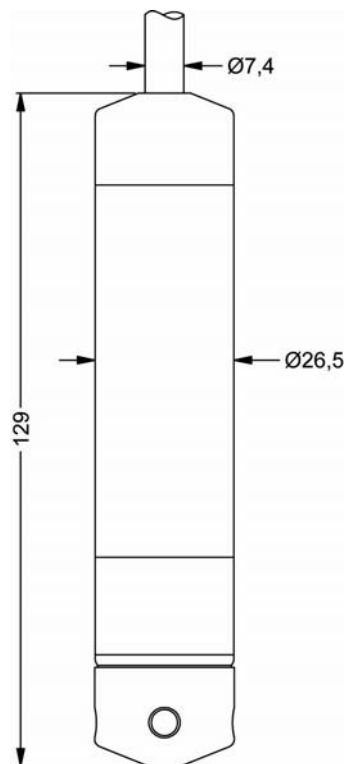
2x2-wire-system (current)

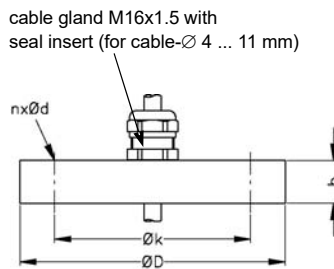
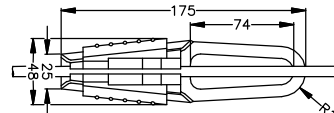



Pin configuration

Electrical connection	cable colours (IEC 60757)
Supply P+	wh (white)
Supply P-	bn (brown)
Supply T+	gy (gray)
Supply T-	pk (pink)
Shield	gnye (green-yellow)

Dimensions (in mm)



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		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 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		Z100528
Terminal clamp, stainless steel 1.4301 (304)		Z100527
		
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>		
		

The specifications given in this document represent the state of engineering at the time of publishing. We reserve the right to make modifications to the specifications and materials.

Ordering code LMK 307T

LMK 307T																		
Pressure																		
	in bar				38A													
	in mbar				38B													
Input																		
	[mbar]				4 0 0 0													
	[bar]				6 0 0 0													
					1 0 0 1													
					1 6 0 1													
					2 5 0 1													
					4 0 0 1													
					6 0 0 1													
					1 0 0 2													
					1 6 0 2													
					2 5 0 2													
	customer				9 9 9 9													
<i>consult</i>																		
Input temperature																		
	°C				0 0 0 x 3 0													
					0 0 0 x 5 0													
					0 0 0 x 7 0													
	customer				9 9 9 9 9 9 9													
<i>consult</i>																		
Housing																		
	Stainless steel 1.4404 (316L)				1													
	customer				9													
<i>consult</i>																		
Diaphragm																		
	Ceramic Al ₂ O ₃ 96 %				2													
	customer				9													
<i>consult</i>																		
Output pressure																		
	4 ... 20 mA / 2-wire				1													
Output temperature																		
	4 ... 20 mA / 2-wire				1													
Seals																		
	FKM				1													
	EPDM				3													
	customer				9													
<i>consult</i>																		
Accuracy																		
	0.5 %				5													
	customer				9													
<i>consult</i>																		
Electrical connection																		
	PVC-cable				1													
	PUR-cable				2													
	FEP-cable				3													
	customer				9													
<i>consult</i>																		
Cable length																		
	in m				0 0 3													
	standard: 3 m PVC				0 0 5													
	standard: 5 m PVC				0 1 0													
	standard: 10 m PVC				0 1 5													
	standard: 15 m PVC				0 2 0													
	standard: 20 m PVC				9 9 9													
	special length PVC				9 9 9													
	standard: 3 m PUR				0 0 3													
	standard: 5 m PUR				0 0 5													
	standard: 10 m PUR				0 1 0													
	standard: 15 m PUR				0 1 5													
	standard: 20 m PUR				0 2 0													
	special length PUR				9 9 9													
	standard: 5 m FEP				0 0 5													
	standard: 10 m FEP				0 1 0													
	special length FEP				9 9 9													
Special version																		
	standard				0 0 0													
	customer				9 9 9													
<i>consult</i>																		

¹ cable with integrated air tube for atmospheric pressure reference

Standard lengths 3 / 5 / 10 / 15 / 20 m are available from stock, special lengths are manufactured order-related, price per meter (see above).

This document contains product specification; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.