BD SENSORS®
pressure measurement

LMK 387

Stainless Steel Probe

Ceramic Sensor

accuracy according to EN IEC 62828-2:
standard: 0.35 % span
option: 0.25 % span

Nominal pressure

from 0 ... 1 mH_2O up to 0 ... 100 mH_2O

Output signal

2-wire: 4 ... 20 mA
others on request

Special characteristics

- diameter 22 mm
- diaphragm ceramics 99.9% Al_2O_3
- good long-term stability
- especially for waste water

Optional versions

- housing material titanium
- IS-version
  Ex ia = intrinsically safe for gas and dust
- drinking water certificate according to DVGW and KTW
- temperature element Pt 100
- mounting with stainless steel tube
- different kinds of cables
  and elastomers

The stainless steel probe LMK 387 was developed for level and gauge measurement in waste water, sludge or water courses. The mechanical robustness of the flush ceramic diaphragm facilitates an easy disassembly and cleaning of the probe in case of service.

Compared to the level probe LMK 382 the outer diameter is only 22 mm, whereby the installation or retrofitting can be easily carried out in 1 "pipes or in confined installation conditions. An IS-version (zone 0) is also available.

Preferred areas of use

Water
groundwater and level monitoring

Sewage
waste water treatment
water recycling

Fuel and oil
tank battery
biogas plants

BD SENSORS s.r.o.
Hradišťská 817
CZ – 687 08 Buchlovice
Tel.: +420 572 411 011
www.bdsensors.cz
info@bdsensors.cz

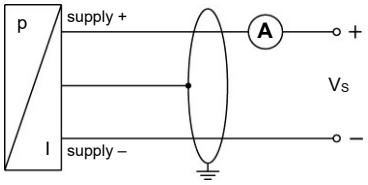
Input pressure range												
Nominal pressure gauge	[bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10
Level	[mH_2O]	1	1.6	2.5	4	6	10	16	25	40	60	100
Overpressure	[bar]	3	4	5	5	7	7	12	20	20	20	20
Burst pressure ≥	[bar]	4	6	8	8	9	9	18	25	25	30	30
Permissible vacuum	[bar]	-0.2	-0.3	-0.5				-1				
Max. ambient pressure (housing): 40 bar												

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC}	
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}	
Option temperature element Pt 100		
Temperature range	-25 … 125 °C	max. voltage 10 V_{DC}, in intrinsically safe circuit 30 V_{DC} max. current 2 mA, in intrinsically safe circuit 54 mA max. power 10 mW, in intrinsically safe circuit 405 mW
Connectivity technology	3-wire	
Resistance	100 Ω at 0 °C	
Temperature coefficient	3850 ppm/K	
Supply I_S	0.3 … 1.0 mA $_{DC}$	
Performance		
Accuracy [1]	standard: ≤ ± 0.35 % span	option: ≤ ± 0.25 % span
Permissible load	R_{max} = [(V_S – $V_{S\,min}$) / 0.02 A] Ω	
Influence effects	supply: 0.05 % span / 10 V	load: 0.05 % span / kΩ
Long term stability	≤ ± 0.1 % span / year	
Turn-on time	450 msec	
Mean response time	≤ 70 msec	
Measuring rate	80 Hz	
[1] accuracy according to EN IEC 62828-2– limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
Tolerance band	≤ ± 1 % span	
in compensated range	-20 … 80 °C	
Permissible temperatures		
Permissible temperatures	medium / storage: -25 ... 85 °C	
Electrical protection [2]		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
[2] 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 [3]	PUR (-25 … 70 °C) black Ø 7.4 mm FEP [4] (-25 … 70 °C) black Ø 7.4 mm TPE-U (-25 … 125 °C) blue Ø 7.4 mm (without / with drinking water certificate) TPE-U [5] (-25 … 125 °C) red Ø 9.0 mm others on request	
Bending radius	static installation: 10-fold cable diameter	dynamic application: 20-fold cable diameter
[3] shielded cable with integrated ventilation tube for atmospheric pressure reference (for nominal pressure ranges absolute, the ventilation tube is closed) *[4] do not use freely suspended probes with an FEP cable if effects due to highly charging processes are expected* *[5] only in combination with IS-version (explosion protection) and temperature element Pt 100*		
Materials (media wetted)		
Housing	standard: stainless steel 1.4404 (316 L) option: titanium others on request	
Seals (O-rings)	standard: FKM option: EPDM (without / with drinking water certificate) FFKM (min. permissible temperature from -15 °C) others on request	
Diaphragm	ceramics Al_2O_3 99.9%	
Protection cap	POM-C	
Cable sheath	PUR, FEP, TPE-U	
Explosion protection		
Approval DX14B-LMK 387	IBExU 15 ATEX 1066 X / IECEx IBE 18.0019X zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da	
Safety technical maximum values (pressure)	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 49.2 nF, L_i = 0 µH; the supply connections have an inner capacity of max. 100 nF opposite the enclosure	
Safety technical maximum values (temperature)	U_i = 30 V, I_i = 54 mA, P_i = 405 mW, C_i = 0 nF, L_i = 0 µH (temperature element Pt 100)	
Permissible temp. for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar zone 1 and higher: -25 ... 65 °C	
Connecting cables (by factory)	cable capacity: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m	
Miscellaneous		
Drinking water certificate [6]	according to DVGW W 270 and UBA KTW (with order the indication "with drinking water certificate" is necessary)	
Option cable protection	prepared for mounting with stainless steel pipe	
Current consumption	max. 22 mA	
Weight	approx. 180 g (without cable)	
Ingress protection	IP 68	
CE-conformity	EMC Directive: 2014/30/EU	
ATEX Directive	2014/34/EU	
[6] only possible with EPDM seal in combination with TPE-U cable; not possible with IS-version (explosion protection) or housing material titanium		

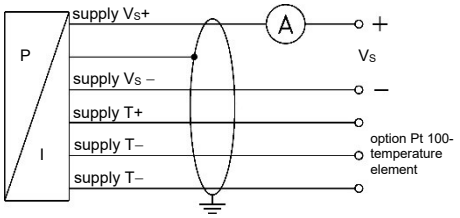
Pin configuration	
Electrical connection	cable colours (IEC 60757)
Supply +	WH (white)
Supply –	BN (brown)
Supply T+ (with Pt 100)	YE (yellow)
Supply T– (with Pt 100)	GY (grey)
Supply T– (with Pt 100)	PK (pink)
Shield	GNYE (green-yellow)

Wiring diagrams

2-wire-system (current)

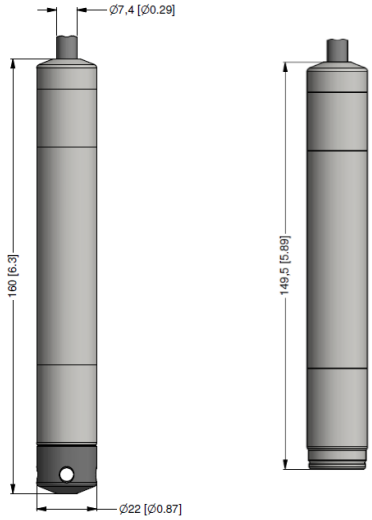


2-wire-system current (pressure) / 3-wire-system (temperature Pt 100)



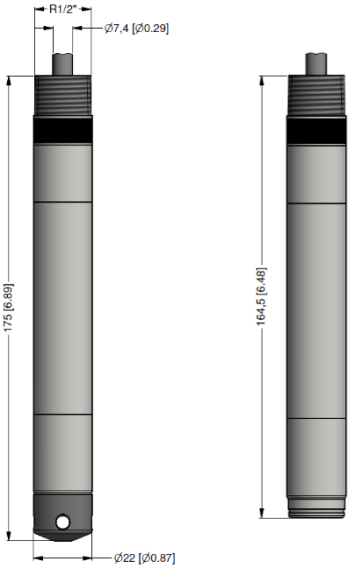
Dimensions (mm/in)

probes



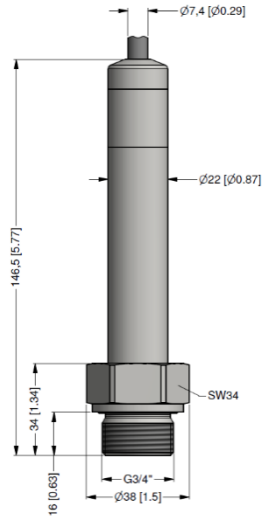
protection cap removable

option:

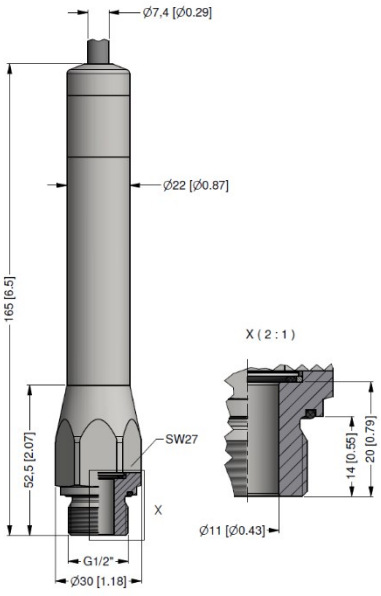


with thread R1/2" for mounting with stainless steel tube

option: screw-in version in stainless steel 1.4404 (316 L)



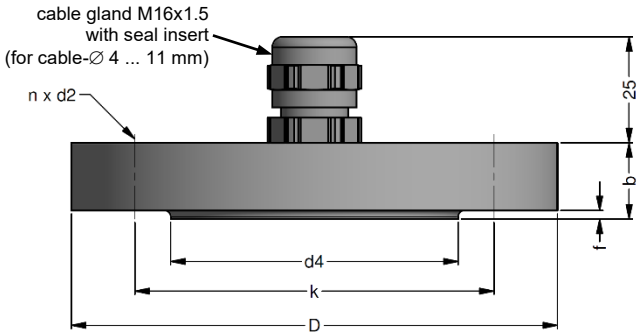
G3/4"



G1/2" open

⇨ **cable diameter Ø9 mm for TPE-U cable (red), drawings for option with Pt 100 on request**

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	5000275	1.4 kg
DN50 / PN40 with cable gland brass, nickel plated	5000278	3.2 kg
DN80 / PN16 with cable gland brass, nickel plated	5000279	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	5000275	approx. 160 g
Terminal clamp, stainless steel 1.4301 (304)	5000278	

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

For further information please contact our sales department or visit our homepage: http://www.bdsensors.cz

Tel.: +420 572 411 011

www.bdsensors.cz
info@bdsensors.cz

Ordering code LMK 387

23.08.2024

LMK 387 ☐☐☐-☐☐☐☐-☐-☐-☐-☐-☐-☐-☐-☐☐☐-☐☐☐

Pressure			
in bar (gauge)			3 6 0
in mH_2O (gauge)			3 6 1
Input	**[mH_2O]**	**[bar]**	
	0 … 1.0	0 … 0,10	1 0 0 0
	0 … 1.6	0 … 0,16	1 6 0 0
	0 … 2.5	0 … 0,25	2 5 0 0
	0 … 4.0	0 … 0,40	4 0 0 0
	0 … 6.0	0 … 0,60	6 0 0 0
	0 … 10	0 … 1,0	1 0 0 1
	0 … 16	0 … 1,6	1 6 0 1
	0 … 25	0 … 2,5	2 5 0 1
	0 … 40	0 … 4,0	4 0 0 1
	0 … 60	0 … 6,0	6 0 0 1
	0 … 100	0 … 10	1 0 0 2
Customer			9 9 9 9
Housing material			
Stainless steel 1.4404 (316 L)			1
Titanium			T
Customer			9
Design			
Submersible probe			1
Screw-in version (with G 1/2" open)[4]			A
Screw-in version (with G 3/4" flush)[4]			B
Diaphragm material			
Ceramic Al_2O_3 99,9 %			C
Customer			9
Output			
4 … 20 mA / 2-wire			1
Intrinsic safety Ex ia 4 … 20 mA / 2-wire			E
Customer			9
Seals			
Viton (FKM)			1
EPDM			3
FFKM[1]			7
Customer			9
Electrical connection			
PUR-cable (black, Ø 7.4 mm)[2]			2
FEP-cable (black, Ø 7.4 mm)[2]			3
Customer			9
Accuracy			
0,35 %			3
0,25 %			2
Customer			9
Cable length			
in m			9 9 9
Special version			
Standard			0 0 0
Temperature sensor PT100			0 1 3
R 1/2" thread - Prepared for mounting v with stainless steel pipe[3]			5 0 2
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

St. steel flange, clamp and pipe are not parts of the supply !!!

BD SENSORS s.r.o.
Hradišťská 817
CZ – 687 08 Buchlovice
Tel.: +420 572 411 011
www.bdsensors.cz
info@bdsensors.cz

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.

1 min. permissible temperature from -15 °C
2 shielded cable with integrated ventilation tube for atmospheric reference
3 possible for probes in stainless steel; stainless steel pipe is not part of the supply
4 only in combination with housing in stainless steel 1.4404 (316L)