

LMK 387

Stainless Steel Probe

Ceramic Sensor

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



Nominal pressure

from 0 ... 1 mH₂O up to 0 ... 100 mH₂O

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 ... 10 V
others on request

Special characteristics

- ▶ diameter 22 mm
- ▶ diaphragm ceramics 96% Al₂O₃
- ▶ good long-term stability
- ▶ especially for waste water,

Optional versions

- ▶ diaphragm ceramics 99,9% Al₂O₃
- ▶ IS-version
Ex ia = intrinsically safe for gases and dust
- ▶ mounting with stainless steel tube
- ▶ different kinds of cable
- ▶ different kinds of elastomer

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

Compared to the level probe LMK 382 the outside-diameter is only 22mm, which allows an easy installation and backfitting in 1" tubes or in cramped fitting conditions. An IS-version is also available.

Preferred areas of use



Water

Groundwater and level monitoring



Sewage

waste water treatment
water recycling



Fuel and oil

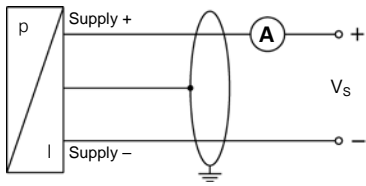
Tank battery
Biogas plants



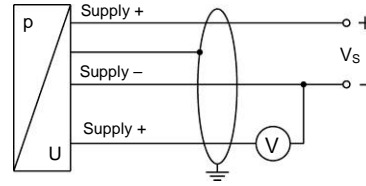
Input pressure range													
Nominal pressure gauge	[bar]	0,1	0,16	0,25	0,4	0,6	1	1,6	2,5	4	6	10	
Level	[mH ₂ O]	1	1,6	2,5	4	6	10	16	25	40	60	100	
Overpressure	[bar]	3	4	5	5	7	7	12	20	20	20	20	
Burst pressure ≥	[bar]	4	6	8	8	9	9	18	25	25	30	30	
Permissible vacuum	[bar]	-0.2	-0.3			-0.5					-1		
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		3-wire: 0 ... 10 V / V _S = 14 ... 36 V _{DC}											
Performance													
Accuracy ¹		standard: ≤ ± 0.35 % FSO option: ≤ ± 0.25 % FSO										others on request	
Permissible load		2-wire: R _{max} = [(V _S - V _{S min}) / 0.02 A] Ω											
Influence effects		supply: 0.05 % FSO / 10 V						load: 0.05 % FSO / kΩ					
Long term stability		≤ ± 0.1 % FSO / year											
Turn-on time		450 msec											
Mean response time		≤ 70 msec											
Measuring rate		80 Hz											
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)													
Thermal effects (Offset and Span)													
Tolerance band	[% FSO]	≤ 1.0% FSO in compensated range -20 ... 80 °C											
Permissible temperatures													
Permissible temperatures		medium: -40 ... 85 °C electronics / environment: -40 ... 85 °C storage: -40 ... 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 outlet		shielded cable with integrated air tube for atmospheric reference (for nominal pressure ranges absolute, the air tube is closed)											
Materials (media wetted)													
Housing		standard: stainless steel 1.4404 (316 L)										others on request	
Cable		PVC (-5 ... 70 °C) gray PUR (-25 ... 70 °C) black FEP ³ (-25 ... 70 °C) black TPE (-25 ... 125 °C) blue										others on request	
Seals (O-rings)		standard: FKM option: EPDM; FFKM (min. permissible temperature from -15 °C)										others on request	
Diaphragm		standard: ceramics Al ₂ O ₃ 96% option: ceramics Al ₂ O ₃ 99,9%											
Protection cap		POM											
³ do not use freely suspended probes with an FEP cable if effects due to highly charging processes are expected													
IS-protection													
Approval DX14B-LMK 387		IBExU 15 ATEX 1066 X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da											
Safety technical maximum values		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											
Permissible temperatures 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 as well as signal line/signal line: 160 pF/m cable inductance: signal line/shield as well as signal line/signal line: 1 μH/m											
Miscellaneous													
Current consumption		max. 22 mA											
Weight		approx. 180 g (without cable)											
Ingress protection		IP 68											
CE-conformity		EMC Directive: 2004/108/EC											
Pin configuration													
Electrical connection		cable colours (IEC 60575)											
	Supply +	wh (white)											
	Supply -	bn (brown)											
	signal + (only 3-wire)	gn (green)											
	Shield	gnye (green-yellow)											

Wiring diagrams

2-wire-system (current)

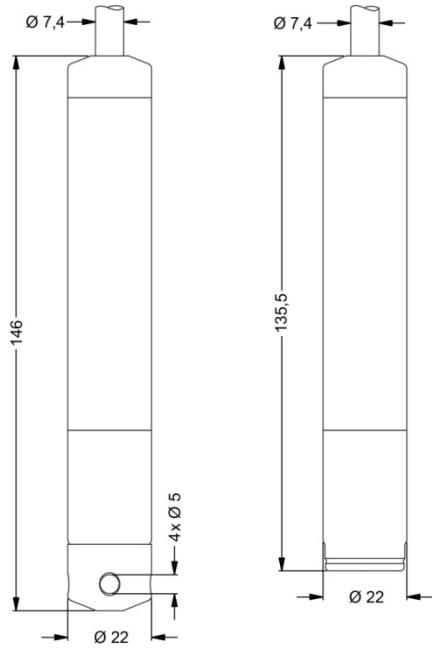


3-wire-system (voltage)



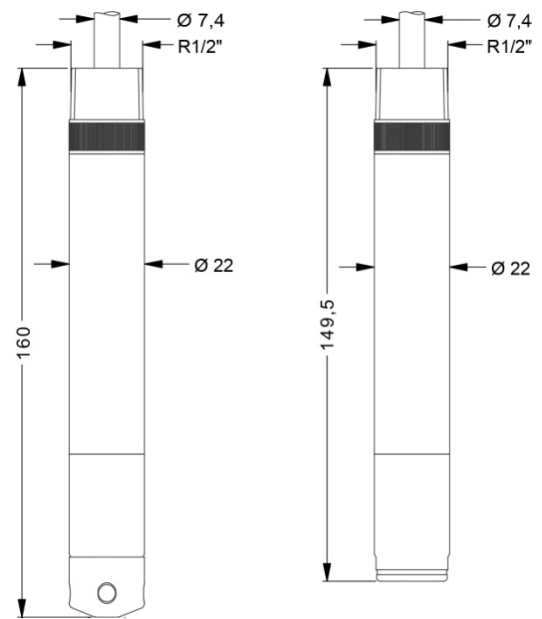
Dimensions (in mm)

standard



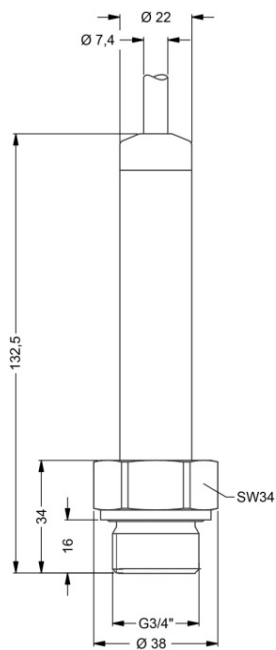
with protection cap

without protection cap

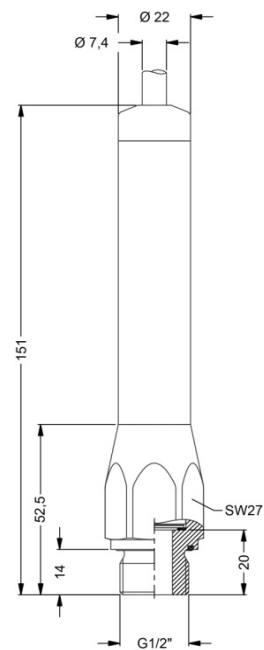


with thread R1/2" for mounting with stainless steel tube

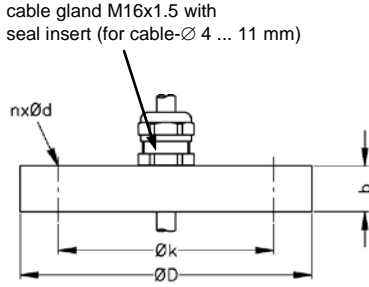
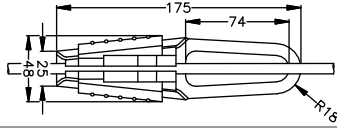

option: screw-in version



G3/4"



G1/2" open

Mounting flange with cable gland	
Technical data	
Suitable for	all probes
Flange material	Stainless steel 1.4404 (316 L)
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
Werkstoff	standard: steel, zinc plated optionally: stainless steel 1.4301 (304)
Weight	approx. 160 g
Ordering type	
Terminal clamp, steel, zinc plated	Z100528
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	
For further information please contact our sales department or visit our homepage: http://www.bdsensors.com	
 <p>cable gland M16x1.5 with seal insert (for cable-\varnothing 4 ... 11 mm)</p>	
	
	

Ordering code LMK 387

LMK 387

□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
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Pressure			
	gauge in bar	3	6 0
	absolute in bar	3	6 3
	gauge in mH ₂ O	3	6 1
consult			
Input			
	[mH ₂ O]	[bar]	
	1	0.1	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
	customer		9 9 9 9
consult			
Housing			
	Stainless steel 1.4404 (316L)		1
	customer		9
consult			
Design			
	probe		1
	screw-in version G1/2" open		A
	screw-in version G3/4" flush		B
Diaphragm			
	Ceramics Al ₂ O ₃ 96%		2
	Ceramics Al ₂ O ₃ 99.9%		C
	customer		9
consult			
Output			
	4 ... 20 mA / 2-wire		1
	0 ... 10 V / 3-wire		3
	Intrinsic safety 4 ... 20 mA / 2-wire		E
	customer		9
consult			
Seals			
	FKM		1
	EPDM		3
	FFKM ¹		7
	customer		9
consult			
Electrical connection			
	PVC-cable ²		1
	PUR-cable ²		2
	FEP-cable ²		3
	TPE-cable ²		4
	customer		9
consult			
Accuracy			
	standard	0.35 % FSO	3
	option	0.25 % FSO	2
	customer		9
consult			
Cable length			
	in m		9 9 9
Special version			
	standard		0 0 0
	prepared for mounting with st. steel pipe ³		5 0 2
	customer		9 9 9
consult			

min. permissible temperature from -15 °C
 cable with integrated air tube for atmospheric pressure reference
 stainless steel pipe is not part of the supply

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