



## LMK 387

### Stainless Steel Probe 22 mm

Ceramic Sensor

accuracy according to IEC 60770:  
0.35 % FSO

#### Nominal pressure

from 0 ... 4 mH<sub>2</sub>O up to 0 ... 200 mH<sub>2</sub>O

#### Ausgangssignale

2-wire: 4 ... 20 mA

3-wire: 0 ... 10 V

others on request

#### Special characteristics

- ▶ diameter 22 mm
- ▶ diaphragm ceramics 96% Al<sub>2</sub>O<sub>3</sub>
- ▶ high long-term stability
- ▶ highly appropriated for wastewater, sludge and viscous media




#### Optional versions

- ▶ diaphragm ceramics 99,9% Al<sub>2</sub>O<sub>3</sub> (on request)
- ▶ IS-version (**in preparation**)  
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

-  Wastewater  
Sewage works  
Water preparation
-  Water  
Groundwater and level monitoring
-  Fuel and oil  
Tank battery  
Biogas plants



Input pressure range												
Nominal pressure gauge	[bar]	0,4	0,6	1	1,6	2,5	4	6	10	16	20	
Level	[mH <sub>2</sub> O]	4	6	10	16	25	40	60	100	160	200	
Overpressure	[bar]	5	7	7	12	20	20	20	20	40	40	
Burst pressure ≥	[bar]	8	9	9	18	25	25	30	30	45	45	
Permissible vacuum	[bar]	-0.5					-1					
Output signal / Supply												
Standard	2-wire: 4 ... 20 mA / V <sub>S</sub> = 12 ... 36 V <sub>DC</sub>											
Option IS-version	2-wire: 4 ... 20 mA / V <sub>S</sub> = 14 ... 28 V <sub>DC</sub>											
Option	3-wire: 0 ... 10 V / V <sub>S</sub> = 14 ... 36 V <sub>DC</sub>											
Performance												
Accuracy <sup>1</sup>	≤ ± 0.35 % FSO										others on request	
Permissible load	2-wire: R <sub>max</sub> = [(V <sub>S</sub> - V <sub>S min</sub> ) / 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											
<sup>1</sup> 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:	standard: -40 ... 85 °C			option: -40 ... 125 °C (on request)							
	electronics / environment:	standard: -40 ... 85 °C			option: -40 ... 125 °C (on request)							
	storage:	-40 ... 85 °C										
Electrical protection <sup>2</sup>												
Short-circuit protection	permanent											
Reverse polarity protection	no damage, but also no function											
Electromagnetic compatibility	emission and immunity according to EN 61326											
<sup>2</sup> 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 <sup>3</sup>	(-25 ... 70 °C) black (seawater resistant)										
	TPE	(-25 ... 125 °C) blue (flame-resistant, halogen free, increased resistance against oil and gasoline, resistant against salt, sea water, heavy oil)										
Seals (O-rings)	standard: FKM										option: EPDM; FFKM (min. permissible temperature from -15 °C) others on request	
Diaphragm	standard: ceramics Al <sub>2</sub> O <sub>3</sub> 96%										option: ceramics Al <sub>2</sub> O <sub>3</sub> 99,9% (on request)	
Protection cap	POM											
<sup>3</sup> do not use freely suspended probes with an FEP cable if effects due to highly charging processes are expected												
IS-protection												
Approval DX14B-LMK 487 (in preparation)	IBExU13ATEX xxxx X		zone 0: II 1G Ex ia IIB T4 Ga				zone 20: II 1D Ex iaD 20 T 85°C					
Safety technical maximum values	U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 mA, P <sub>i</sub> = 660 mW, C <sub>i</sub> = 105 nF; L <sub>i</sub> = 5 μH; the supply connections have an inner capacity of max. 140 nF opposite the enclosure											
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p <sub>atm</sub> 0.8 bar up to 1.1 bar zone 1 and higher: -25 ... 70 °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 (DIN 47100)											
Supply +	wh (white)											
Supply -	bn (brown)											
signal + (only 3-wire)	gn (green)											
Shield	ye/gn (yellow / green)											

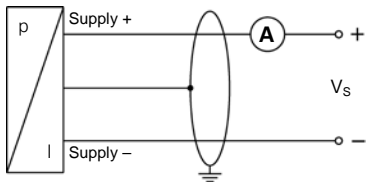
# LMK 387

Hydrostatic probe

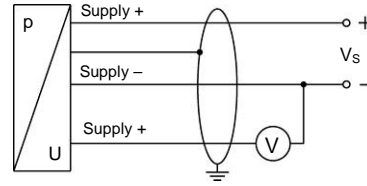
Technical data

## Wiring diagrams

2-wire-system (current)

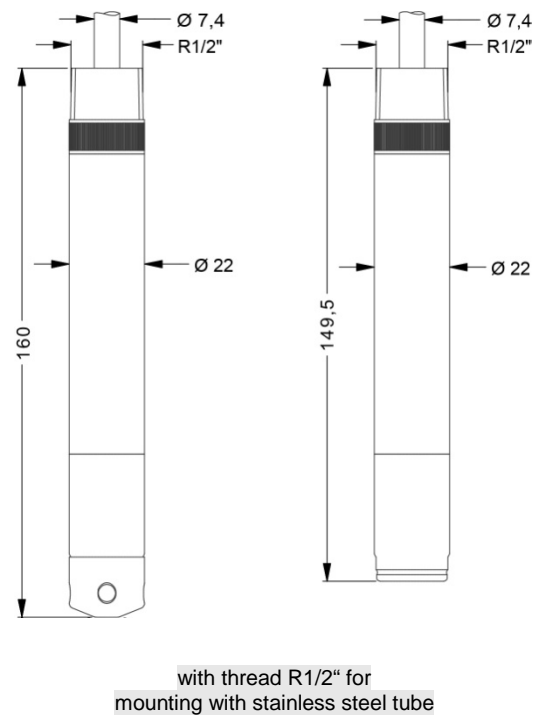
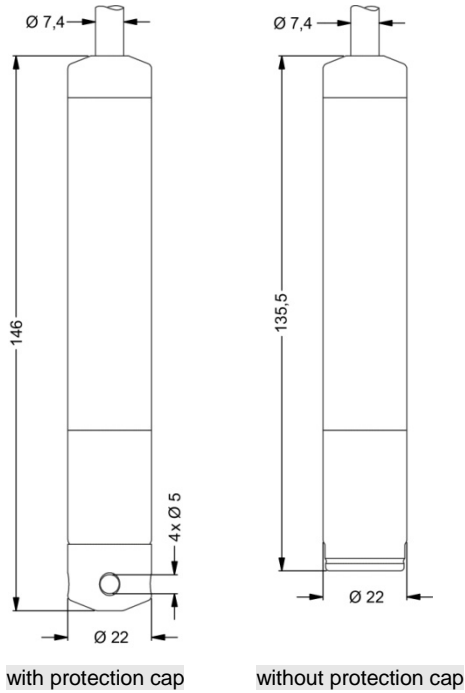


3-wire-system (voltage)

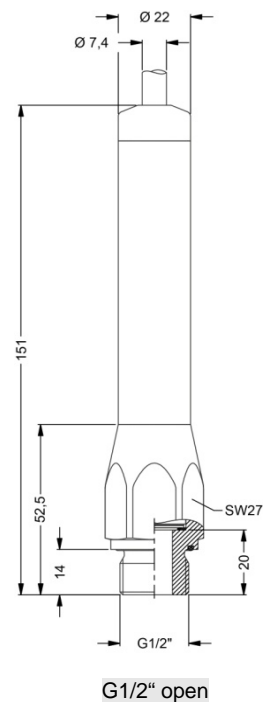
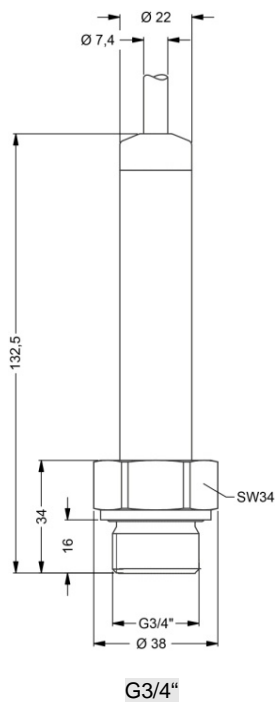


## Dimensions (in mm)

standard



option: screw-in version



This document contains product specification, properties are not guaranteed. Subject to change without notice.

Mounting flange with cable gland	
<b>Technical data</b>	
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
<b>Version</b>	<b>Size (in mm)</b>
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
<b>Weight</b>	
DN25 / PN40	1.4 kg
DN50 / PN40	3.2 kg
DN80 / PN16	4.8 kg
<b>Ordering type</b>	
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
<b>Terminal clamp</b>	
<b>Technical data</b>	
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
<b>Ordering type</b>	
Terminal clamp, steel, zinc plated	Z100528
Terminal clamp, stainless steel 1.4301 (304)	Z100527
<b>Display program</b>	
<b>CIT 200</b> Process display with LED display	
<b>CIT 250</b> Process display with LED display and contacts	
<b>CIT 300</b> Process display with LED display, contacts and analogue output	
<b>CIT 350</b> Process display with LED display, bargraph, contacts and analogue output	
<b>CIT 400</b> Process display with LED display, contacts, analogue output and Ex-approval	
<b>CIT 600</b> Multichannel process display with graphics-capable LC display	
<b>CIT 650</b> Multichannel process display with graphics-capable LC display and datalogger	
<b>CIT 700 / CIT 750</b> Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts	
<b>PA 440</b> Field display with 4-digit LC display	
For further information please contact our sales department or visit our homepage: <a href="http://www.bdsensors.com">http://www.bdsensors.com</a>	

## 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 <sub>2</sub> O	3	6	1																		
Input		[mH <sub>2</sub> O]		[bar]																		
	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																
	200	20	2	0	0	2																
	customer		9	9	9	9																
Housing																						
	Stainless steel 1.4404 (316L)					1																
	customer					9																
Design																						
	probe																			1		
	screw-in version G1/2" open																			A		
	screw-in version G3/4" flush																			B		
Diaphragm																						
	Ceramics Al <sub>2</sub> O <sub>3</sub> 96%																			2		
	Ceramics Al <sub>2</sub> O <sub>3</sub> 99.9%																			C	consult	
	customer																			9	consult	
Output																						
	4 ... 20 mA / 2-wire																			1		
	Intrinsic safety 4 ... 20 mA / 2-wire (in preparation)																			E		
	customer																			9	consult	
Seals																						
	FKM																			1		
	EPDM																			3		
	FFKM <sup>1</sup>																			7		
	customer																			9	consult	
Electrical connection																						
	PVC-cable <sup>2</sup>																			1		
	PUR-cable <sup>2</sup>																			2		
	FEP-cable <sup>2</sup>																			3		
	TPE-cable <sup>2</sup>																			D		
	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 <sup>3</sup>																			5	0	2
	customer																			9	9	9

<sup>1</sup> min. permissible temperature from -15 °C

<sup>2</sup> cable with integrated air tube for atmospheric pressure reference

<sup>3</sup> stainless steel pipe is not part of the supply



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