



LMK 382

Stainless Steel Probe

Ceramic Sensor

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

Nominal pressure

from 0 ... 40 cmH₂O up to 0 ... 200 mH₂O

Output signals

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

Special characteristics

- diameter 39.5 mm
- especially for sewage, viscous and pasty media

Optional versions

- IS-version Ex ia = intrinsically safe for gas and dust
- temperature element Pt 100
- mounting with stainless steel pipe
- flange version
- diaphragm 99.9 % Al₂O₃
- different kinds of cables and elastomers

The stainless steel probe LMK 382 has been designed for continuous level measurement in waste water, polluted and higher viscosity media.

Basic element is a robust and high overpressure capable capacitive ceramic sensor which is suitable e. g. for low levels.

Preferred areas of use are



Water

drinking water abstraction



<u>Sewage</u>

waste water treatment water recycling





level monitoring in open tanks with low filling heights

fuel storage

tank farms / biogas plants



Tel.: +49 (0) 92 35 / 98 11- 0

Fax: +49 (0) 92 35 / 98 11- 11











Stainless Steel Probe

Input pressure range																
Nominal pressure gauge	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Level	[mH ₂ O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Max. ambient pressure (h	ousing): 4	0 bar														

Output signal / Supply							
Standard	2-wire: 4 20 mA / V _S = 9 32	Vpc					
Option IS-version		2-wire: 4 20 mA / V _S = 14 28 V _{DC}					
Option 3-wire	3-wire: 0 10 V / V _S = 12.5						
Option temperature element Pt		32 1 1 1 1 1 1 1 1 1 1					
Temperature range	-25 125 °C						
Connectivity technology	3-wire	may valtage 40 V					
Resistance	100 Ω at 0 °C	max. voltage 10 V _{DC} , in intrinsically safe circuit 30 V _{DC} max. current 2 mA, in intrinsically safe circuit 54 mA					
Temperature coefficient	3850 ppm/K	max. power 10 mW, in intrinsically safe circuit 405 mW					
<u> </u>	• • • • • • • • • • • • • • • • • • • •	max. power 10 mvv, in intrinsically safe circuit 400 mvv					
Supply I _S ¹ only in combination with 4 20 mA	0.3 1.0 mA _{DC}						
Performance	7 2-wire (standard and 13-version)						
	-1 dd - 1 0 05 0/ 500						
Accuracy ²	standard: ≤ ± 0.35 % FSO option: ≤ ± 0.25 % FSO						
Permissible load	$R_{\text{max}} = [(V_{\text{S}} - V_{\text{S min}}) / 0.02 \text{ A}] \Omega$						
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ						
Long term stability	≤ ± 0.1 % FSO / year at reference	e conditions					
Turn-on time	700 msec	-					
Mean response time	< 200 msec	measuring rate 5/sec					
Max. response time	380 msec						
	limit point adjustment (non-linearity, hyster	resis, repeatability)					
Thermal effects (offset and spa							
Tolerance band	≤±1%FSO						
in compensated range	-20 80 °C						
Permissible temperatures	1 2 20						
Permissible temperatures	medium / electronics / environme	ent / storage: -25 125 °C					
Electrical protection ³							
Short-circuit protection	permanent						
Reverse polarity protection	no damage, but also no function						
Electromagnetic compatibility	emission and immunity according	to EN 61326					
		n atmospheric pressure reference available on request					
Electrical connection							
Cable with sheath material ⁴	PVC (-570 °C) grey PUR (-2570 °C) black FEP ⁵ (-2570 °C) black TPE-U (-25125 °C) blue TPE-U ⁶ (-25125 °C) red	Ø 7.4 mm Ø 7.4 mm Ø 7.4 mm Ø 7.4 mm Ø 9.0 mm					
Bending radius	static installation: 10-fol	d cable diameter d cable diameter					
⁵ do not use freely suspended probes ⁶ only in combination with IS version (ation tube for atmospheric pressure referer with an FEP cable if effects due to highly of explosion protection) and temperature eler	nce charging processes are expected					
Materials (media wetted)							
Housing	stainless steel 1.4404 (316 L)						
Seals	FKM, FFKM, EPDM others on request						
Diaphragm	standard: ceramics Al ₂ O ₃ 96 %	standard: ceramics Al ₂ O ₃ 96 %					
Protection cap	POM-C						
Cable sheath	PVC, PUR, FEP, TPE-U						

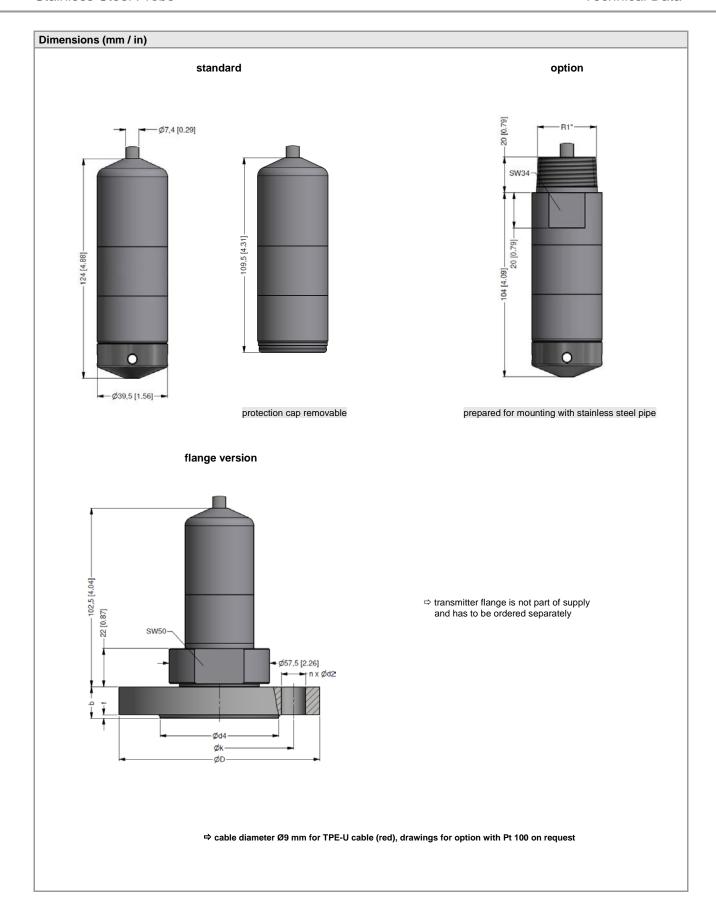


Stainless Steel Probe

Explosion protection (only for 4 20 mA / 2-wire)					
Approval DX14-LMK 382	IBExU05ATEX1070 X zone 0 ⁷ : II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T110 °C Da				
Safety technical maximum values (pressure)	$U_i = 28 \text{ V}, \ I_i = 93 \text{ mA}, \ P_i = 660 \text{ mW}, \ C_i = 14 \text{ nF}, \ L_i \approx 0 \mu\text{H}, \ C_{gnd} = 27 \text{ nF}$				
Safety technical maximum values (temperature)	U_i = 30 V, I_i = 54 mA, P_i = 405 mW, C_i = 0 nF, L_i = 0 μ H (temperature element Pt 100)				
Permissible media temperature	in zone 0: -10 60 °C with p _{atm} 0.8 bar up to 1.1 bar zone 1 and higher: -10 70 °C				
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 220 pF/m cable inductance: signal line/shield also signal line/signal line: 1.5 µH/m				
	g designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0)				
Miscellaneous					
Option cable protection for probes	prepared for mounting with stainless steel pipe				
Current consumption	max. 21 mA				
Weight	approx. 400 g (without cable)				
Ingress protection	IP 68				
CE-conformity	EMC Directive: 2014/30/EU				
ATEX Directive	2014/34/EU				
Wiring diagrams					
2-wire-system (current)	3-wire-system (voltage)				
p supply + A supply -	o + Vs o - supply + vs vs supply - signal + vis				
2-wire-system current (pressure) / 3-wire-system (temperature Pt 100)					
P Vs supply Vs+ A O + Vs supply Vs - O - supply T+ O option Pt 100- temperature element supply T- O temperature element					

Pin configuration

Electrical connec	ction	cable colours (IEC 60757)
	Supply V _S +	WH (white)
	Supply V _S -	BN (brown)
for Pt 100:	Supply T+	YE (yellow)
	Supply T-	GY (grey)
	Supply T-	PK (pink)
for 3-wire:	Signal +	GN (green)
	Shield	GNYE (green-yellow)

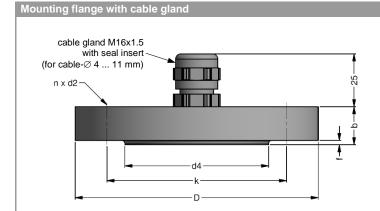


Transmitter flange for flange version

dimensions in mm						
size	DN25 /	DN50 /	DN80 /			
Size	PN40	PN40	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	LMK 382, LMK 382H, LMK 458, LMK 458H
Flange material	stainless steel 1.4404 (316L)
Hole pattern	according to DIN 2507

Ordering type	Ordering code	Weight
Transmitter flange DN25 / PN40	ZSF2540	1.2 kg
Transmitter flange DN50 / PN40	ZSF5040	2.6 kg
Transmitter flange DN80 / PN16	ZSF8016	4.1 kg



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 Ø 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

Ordering code	Weight
Z100528	annray 160 a
Z100527	approx. 160 g
	Z100528

BD SENSORS
pressure measurement

LMK382_E_120123

Tel.: +49 (0) 92 35 / 98 11- 0 Fax: +49 (0) 92 35 / 98 11- 11 www.bdsensors.com info@bdsensors.de



Ordering code LMK 382 LMK 382 Pressure 5 6 5 5 6 6 in mH₂O Input [bar] 0.04 0 4 0 0 0.4 0.6 0.06 0 6 0 0 0 0 0 6 0 0 1.0 0.10 1.6 0.16 6 0 0 5 0 0 0 0 0 0 0 0 0 0 1 6 0 1 5 0 1 0 0 1 2.5 0.25 0.40 4 4.0 0.60 6.0 10 1.0 1 1 2 4 16 1.6 25 2.5 0 0 0 40 4.0 6 0 0 1 1 0 0 2 1 6 0 2 2 0 0 2 9 9 9 9 60 6.0 100 10 160 16 represent the state of engineering at the time of publishing. We reserve the right to make modifications to the specifications and 200 20 customer consult stainless steel 1.4404 (316L) 1 Diaphragm ceramics Al₂O₃ 96 % ceramics Al₂O₃ 99.9 % С Output 4 ... 20 mA / 2-wire 1 0 ... 10 V / 3-wire 3 intrinsic safety 4 ... 20 mA / 2-wire Ε EPDM 3 **FFKM** Electrical connection / cable lengtl PVC-cable (grey, Ø 7.4 mm) 0 3 0 3 m 5 m 0 0 5 10 m 1 0 1 0 5 9 15 m 0 1 special length in m 9 9 PUR-cable (black, Ø 7.4 mm) 2 0 0 3 3 m 0 5 1 0 5 m 2 0 5 2 0 special length in m 2 9 9 FEP-cable (black, Ø 7.4 mm) 1 0 5 1 0 9 9 3 0 5 m 10 m 3 0 special length in m 3 TPE-U-cable (blue, Ø 7.4 mm) 1 special length in m 4 9 9 TPE-U-cable (red, Ø 9.0 mm) ^{1,2} specifications given in this document special length in m 42 9 9 9 standard 0.35 % FSO 3 option 0.25 % FSO Special version standard 0 0 0 with temperature sensor Pt 100 $\,^{3}$ 0 1 3 prepared for mounting 5 0 2 with stainless steel pipe flange version 5 5 0 The customer 9 9 9 consult BDISENSORS GmbH -¹ shielded cable with integrated ventilation tube for atmospheric pressure reference ² only in combination with IS version (explosion protection) and temperature element Pt 100 ³ only in combination with 4 ... 20 mA / 2-wire (standard or IS-version) 4 stainless steel pipe is not part of the supply ⁵ mounting accessories are not part of supply and have to be ordered separately © 2022 01.04.2022