

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
- ▶ 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



Sewage

waste water treatment
water recycling



Fuel and oil

level monitoring in open tanks
with low filling heights
fuel storage
tank farms / biogas plants



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
Output signal / Supply																
Standard	2-wire: 4 ... 20 mA / V _S = 9 ... 32 V _{DC}															
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 ... 32 V _{DC}															
Performance																
Accuracy ¹	standard: ≤ ± 0.35 % FSO option: ≤ ± 0.25 % FSO															
Permissible load	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 at reference conditions															
Turn-on time	700 msec															
Mean response time	< 200 msec measuring rate 5/sec															
Max. response time	380 msec															
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)																
Thermal effects (Offset and Span)																
Thermal error	≤ ± 0.1 % FSO / 10 K in compensated range 0 ... 70 °C															
Permissible temperatures																
Permissible temperatures	medium / electronics / environment / storage: -25 ... 125 °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	PVC (-5 ... 70 °C) grey Ø 7.4 mm 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															
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																
⁴ 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 (316 L)															
Seals	FKM, FFKM, EPDM, others on request															
Diaphragm	standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 %															
Protection cap	POM-C															
Cable sheath	PVC, PUR, FEP, TPE-U															
Explosion protection (only for 4 ... 20 mA / 2-wire)																
Approval DX14-LMK 382	IBExU05ATEX1070 X zone 0 ⁵ : II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da															
Safety technical maximum values	U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i = 27 nF, L _i = 5 μH, C _{gnd} = 27 nF															
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: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m															
⁵ for optional stainless steel pipe following 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; available as compact product (standard: stainless steel pipe with a total length up to 2 m possible; other lengths on request)															
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															

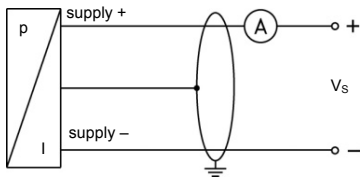
LMK 382

Stainless Steel Probe

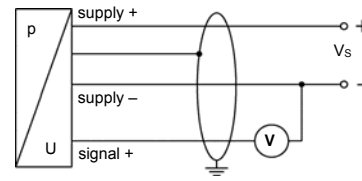
Technical Data

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



Pin configuration

Electrical connection

cable colours (IEC 60757)

Supply +
Supply -
Signal + (only for 3-wire)

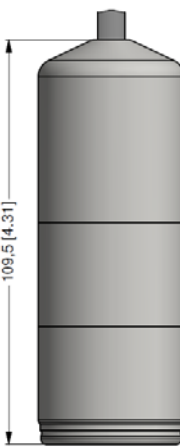
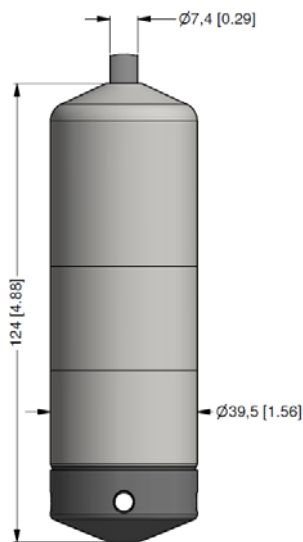
WH (white)
BN (brown)
GN (green)

Shield

GYNE (green-yellow)

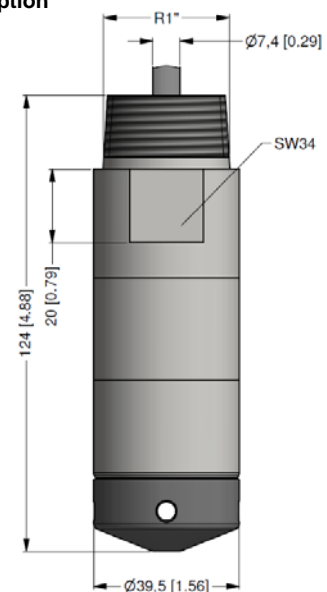
Dimensions (mm / in)

standard



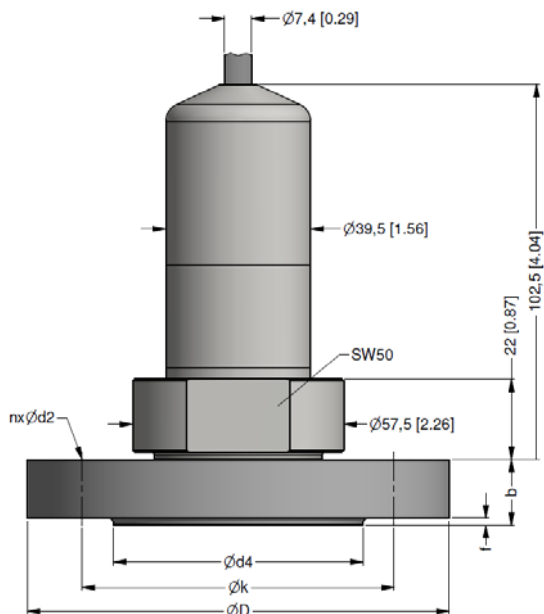
protection cap removable

option



prepared for mounting with stainless steel pipe

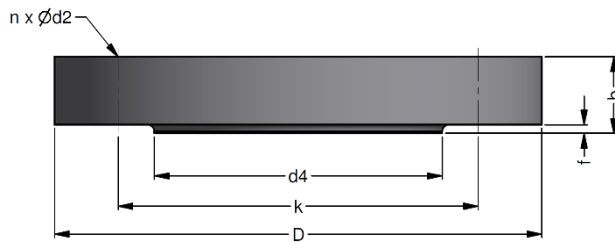
flange version



dimensions in mm

dimensions	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

Transmitter flange for flange version



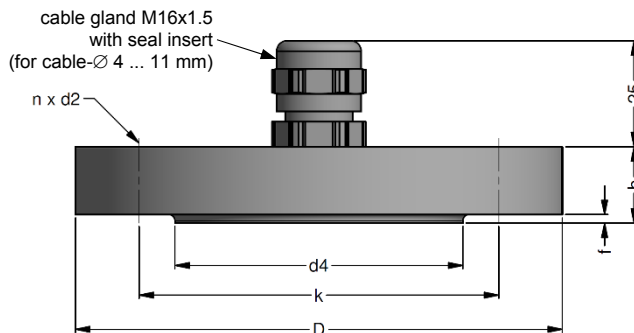
dimensions in mm			
size	DN25 / PN40	DN50 / PN40	DN80 / PN16
b	18	20	20
D	115	165	200
d2	14	18	18
d4	68	102	138
f	2	3	3
k	85	125	160
n	4	4	8

Technical data

Suitable for	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

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	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
Terminal clamp, steel, zinc plated	Z100528	approx. 160 g
Terminal clamp, stainless steel 1.4301 (304)	Z100527	

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Ordering code LMK 382

LMK 382

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Pressure		in bar	5	6	5										
		in mH ₂ O	5	6	6										
Input	[mH ₂ O]	[bar]													
		0.4	0.04	0	4	0	0								
	0.6	0.06	0	6	0	0									
	.0	0.10	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									
	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												
Diaphragm															
	ceramics Al ₂ O ₃ 96%		2												
	ceramics Al ₂ O ₃ 99.9%		C												
	customer		9												
Output															
	4 ... 20 mA / 2-wire		1												
	0 ... 10 V / 3-wire		3												
	intrinsic safety 4 ... 20 mA / 2-wire		E												
	customer		9												
Seals															
	FKM		1												
	EPDM		3												
	FFKM		7												
	customer		9												
Electrical connection															
	PVC-cable (grey, Ø 7.4 mm)	¹	1												
	PUR-cable (black, Ø 7.4 mm)	¹	2												
	FEP-cable (black, Ø 7.4 mm)	¹	3												
	TPE-U-cable (blue, Ø 7.4 mm)	¹	4												
	customer		9												
Accuracy															
	standard	0.35 % FSO	3												
	option	0.25 % FSO	2												
	customer		9												
Cable length															
	in m														
	standard: 3 m	PVC	0	0	3										
	standard: 5 m	PVC	0	0	5										
	standard: 10 m	PVC	0	1	0										
	standard: 15 m	PVC	0	1	5										
	standard: 20 m	PVC	0	2	0										
	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 length	TPE-U	9	9	9										
Special version															
	standard		0	0	0										
	prepared for mounting with stainless steel pipe ²		5	0	2										
	flange version		5	1	0										
	customer		9	9	9										

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¹ shielded cable with integrated ventilation tube for atmospheric pressure reference

² stainless steel pipe is not part of the supply

standard lengths 3 / 5 / 10 / 15 / 20 m are available from stock, special lengths are manufactured order-related