PRODUCT CATALOGUE HYDROSTATIC PROBES SCREW-IN TRANSMITTERS





# PRESSURE AT THE HIGHEST LEVEL

"Successful medium-sized companies are not successful because they are active in many areas, but rather because they concentrate on one area and do it better than anyone else"

This is our philosophy. That's why BDISENSORS has concentrated on electronic pressure measurement technology from the beginning.

With our unremitting product and and quality strategy we have been successful in becoming a major player on the world market for electronic pressure sensing devices within a few years.

This document the many product specification is properties are not guaranteed. Detailed information about options are defined in the datasheets. Sub, so, to change without notice.



With 260 employees at 4 locations in Germany, the Czech Republic, Russia and China BDISENSORS has solutions from 0.1 mbar to 6000 bar:

- pressure sensors, pressure transducers
   pressure transmitters
- electronic pressure switches
- pressure measuring devices with display and switching outputs
- hydrostatic level probes

Two pressure transmitters and a submersible probe, based on a stainless steel silicon sensor were the beginning. Today the range extends to more than 70 standard products, from economical OEM devices to high-end products with HART<sup>\*</sup> communication or field bus interface.

In addition we have developed hundreds of customer-specific applications, underlining the competence and flexibility of BDISENSORS. The excellent price/performance ratio of our products is proof of the fact that we are able to meet the toughest demand: Being a problem-solver for our customers.

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For large production batches as well as for small production numbers, no matter for what medium or external factors, with almost any mechanical or electrical connection - we solve your problem

flexibly, quickly and cost-efficiently.

product	Ømm		des	ign			cable	mate	ərial	l sensor		pressure range / filling level (mH <sub>2</sub> O)	accuracy (% FS0)		media tem- perature(°C)		
		submersible probe	screw-in transmitter	detachable	not detachable	PVIC	PUR	FEP	TPE	TPE-U	piezoresistive stain less steel sensor	piezoresistive coramic sen sor	capacitive ceramic sen sor		stan dard	option	
precision																	
LMP 308i	35	•		٠		٠	٠	٠			•			0 4 up to 0 200	0,1		-20 70
LMP 307i	26,5	٠			٠	٠	٠	٠		٠	•			0 4 up to 0 200	0,1		-10 70
LMK 382H	39,5	٠			٠	٠	٠	٠		٠			•	0 0,6 up to 0 200	0,1		-25 85
LMK 458H	39,5	•			٠					٠			•	0 0,6 up to 0 200	0,1		-25 85
LMK 358H	39,5	•		•		•	•	•	•				•	0 0,6 up to 0 100	0,1		-25 85
lindustry												_					
DCL 531	26,5	•			٠		٠	٠		٠	•			0 1 up to 0 250	0,35	0,25	-10 70
DCL 571	22	٠			٠					٠		•		0 1 up to 0 100	0,35	0,25	-25 85
LMP 305	19	•			٠	٠	٠	٠			•			0 1 up to 0 250	0,35	0,25	-10 70
LMP 307	26,5	٠			٠	•	٠	٠		٠	•			0 1 up to 0 250	0,35	0,25/0,1	-10 70
LMP 307T	26,5	٠			٠	٠	٠	٠		٠	•			0 1 up to 0 250	0,35	0,25	-10 70
LMP 308	35	٠		٠		٠	٠	٠			•			0 1 up to 0 250	0,35	0,25/0,1	-20 70
LMK 306	17	٠			٠	٠	٠	٠				•		0 6 up to 0 200	0,Б		-10 70
LMK 307	27	٠			٠	٠	٠	٠				•		0 4 up to 0 250	0,5		-10 70
LMK 307T	26,5	•			٠	٠	٠	٠				•		0 4 up to 0 250	0,5		-10 70
LMK 382	39,5	٠			٠	٠	٠	٠		٠			•	0 0,4 up to 0 200	0,35	0,25	-25 125
LMK 387	22	•	•	٠			٠	٠		٠		•		0 1 up to 0 100	0,35	0,25	-25 85
LMK 487	22	•			٠					٠		•		0 1 up to 0 100	0,25		-25 85
LMK 458	39,5	•	٠		٠					٠			•	0 0,4 up to 0 200	0,25	0,1	-25 125
LMK 358	39,5	•		٠		٠	٠	٠	٠				•	0 0,4 up to 0 100	0,35	0,25	-25 125
LMP 808	35	•		•		•	٠	•			•			0 1 up to 0 100	0,35	0,25	050
LMK 806	21	•			•	•	٠	•				•		0 6 up to 0 200	0,5		-25 80
LMK 807	35	•			•	•	٠	•						0 4 up to 0 100	0,5		-25 80
LMK 808	35	•		•						٠			•	0 1 up to 0 100	0,35	0,25	-25 80
LMK 809	45				•		٠	•		٠			•	0 0,4 up to 0 100	0,35	0,25	-25 90
LMK 858	45						٠							0 0,4 up to 0 100	0,35	0,25	-10 50
screw-in tr	ansmitte	er.															
LMP 331	34,5		٠								•			0 1 up to 0 400	0,35	0,25/0,1	-40 125
LMK 331	34,5													0 4 up to 0 600	0,5		-40 125
LMK 351	34,5		•										•	0 0,4 up to 0 200	0,35	0,25	-40 125
special ver	sions																
EP 500													•	0 0,6 up to 0 20	0,2		-40 125

	outp	ut sig	jnals			hou	sing	mate	rial			I	medi	a seals		;	certificates	page		
4 20 mA	0 20 mA	010V	digital interface	HART	stainless steel	CuNiFe	titanium	PVC	PP-HT	PVDF	water	waste water	fuels and oils	aggressive media	shipping/ offshore	FKM	EPDM	FFKM		
											•					•			EX, IEC, IECEx	6-10
											•		•						EX, IEC, IECEx, DVGW	11-15
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						·									·			·	EX	26-30
•	_			•	•						•	•	•	_		•	•		EX	26-30
																			DVCW	21.25
			•		•						•		•			•	•		DVGW	31-35
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•					•						•		•			٠	•		DVGW	51-55
•					•						•					•	•		EX, IEC, IECEx, SIL	56-60
•					•						٠					•				61-64
•	•	•			•						•	•	•			•	•		EX, IEC, IECEx, SIL	65-68
•					•						•	•	•			•	•			69-73
•		•			•						•	•	•			٠	•	•	EX	74-78
•					•						•	•	•			٠	•	•	EX, DVGW	79-83
•					•		•				•				•	•	•	•	EX, DNV GL, LR	84-88
•					•	•					•				•	•	•	•	LR, DNV GL, CCS, ABS	89-93
•		•			•						•	•	•			٠	•		EX	94-98
•	•	•							•		•		•			•	•		SIL	99-102
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•									•			•		•		٠	•	•	SIL	107-110
•									•		•	•				•				111-114
•		•							•	•		•				•		•		115-118
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## LMP 308i

### Separable Stainless Steel Probe Precision

Stainless Steel Sensor

accuracy according to IEC 60770: 0.1 % FSO

#### **Nominal pressure**

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

#### **Output signals**

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

#### **Special characteristics**

- diameter 35 mm
- cable assembly and probe head separable
- excellent accuracy
- communication interface
- thermal error in compensated range
   -20 ... 70 °C: 0.2 % FSO
   TC 0.02 % FSO / 10K
- Turn-Down 1:10

#### **Optional versions**

- IS-version
   Ex ia = intrinsically safe for gas and dust
- cable protection via corrugated pipe
- mounting accessories
   e.g. mounting flange and terminal clamp in stainless steel
- different kinds of cables and elastomers

The separable precision stainless steel probe LMP 308i is designed for continuous level measurement in water and low-viscosity fluids. The signal processing of sensor signal is done by digital electronics with 16-bit analogue digital converter. Consequently, it is possible to conduct an active compensation of sensor intrinsic deviations from normal conditions like nonlinearity and thermal error.

In order to facilitate stock-keeping and maintenance the probe head is plugged to the cable assembly with a connector and can be changed easily.

#### Preferred areas of use are

#### Water / filtrated sewage

ground water level measurement level measurement in wells and open waters



rain spillway basins level measurement in containers water treatment plants water recycling



### LMP 308i Technical Data

Input pressure range <sup>1</sup>						
Nominal pressure gauge [bar]	0.40	1	2	4	10	20
Level [mH <sub>2</sub> O]	4	10	20	40	100	200
Overpressure [bar]	2	5	10	20	40	80
	3	7.5	15	25		
Burst pressure [bar]			-	-	50	120
<sup>1</sup> On customer request we adjust the devic	e within the turn-dow	n-possibility by soft	ware on the requi	red pressure range		
Output signal / Supply						
Standard	2-wire: 4 2	$0 \text{ mA} / V_{\text{S}} = 12$	2 36 Vpc			
Option IS-version		$0 \text{ mA} / \text{V}_{\text{S}} = 14$				
Options		$\frac{0 \text{ mA}}{0 \text{ mA}}$ / V <sub>S</sub> = 12		vith communicati	on interface	
Options		$0V / V_s = 14$		vitir communicati	Uninternace	
		$0V / V_s = 14$		vith communicati	on interface	
Performance	• … ·	••••				
Accuracy	IEC 60770 <sup>2</sup> : ≤ ±	0.1 % ESO				
-		0.1 /0100				
Performance after turn-down (TD) - TD $\leq$ 1:5	no change of ac	ouroov <sup>3</sup>				
- TD > 1:5		racy calculating (	for nominal nre		40 har see note	3).
		x turn-down] % F		boule gauge = 0.		0).
		nominal pressu		ted range		
		curacy can be ca				
		x 10) % FSO i.e.			)	
Permissible load	· · ·	$R_{max} = [(V_S - V_{Smi})]$	-		B-wire: R <sub>min</sub> = 10	kΩ
Influence effects	supply: 0.05 %				05 % FSO / kΩ	
Long term stability		own) % FSO / ye	ar at reference		0 /01 00 / 1132	
<u> </u>		owii) /01 007 yc		contaitions		
Response time	ca. 200 msec	atara aan ha adii	ated (interface	/ a offeriora na odo	a 4)	
Adjustability (with option communication interface)		eters can be adju	•	. 90 % FSO	,	non: mox 1.10
<sup>2</sup> accuracy according to IEC 60770 – limit p		ing: 0 100 sec		90 % F30	turn-down or s	pan: max. 1:10
<sup>3</sup> nominal pressure gauges $\leq 0,40$ bar are	excluded: for these th	ne calculation of ac	s, repeatability) curacy is as follow	s.		
≤ ± (0.1 + 0.02 x turn-down) % FSO e.g. t					50	
<sup>4</sup> software, interface and cable must separa	ate be ordered (softw	are is compatible w	ith Windows® 95,	98, 2000, NT from	version 4.0 or high	er and XP)
Thermal effects (Offset and Span)						
Tolerance band [% FSO]	≤ ± (0.2 x turn-d	own) in co	ompensated rar	ge -20 70 °C		
TC [% FSO / 10 K]	± (0.2 x turn-dov	vn) in co	ompensated rar	ge -20 70 °C		
Permissible temperatures	medium: -20 7	70 °C stor	age: -25 70 °	C electron	ics / environmen	t: -25 65 °C
Electrical protection <sup>5</sup>			<u> </u>			
Short-circuit protection	permanent					
Reverse polarity protection	no damage, but	also no function				
· · · ·			to EN 61226			
Electromagnetic compatibility <sup>5</sup> additional external overvoltage protection		munity according		ura rafaranaa ayaila	ble on request	
Electrical connection		RE TOTRE 2 WILLT A	mospheric pressu	ile relefence availa	ble on request	
Cable with sheath material <sup>6</sup>		$)^{\circ}()$ area $(0,7)$	4 mm			
Cable with sheath material *		)°C) grey Ø7 )°C) black Ø7	.4 mm			
		)°C) black Ø7				
Bending radius	· · · · · · · · · · · · · · · · · · ·	10-fold cable d		dunamia an	liantion: 20 fold	achla diamatar
<sup>6</sup> shielded cable with integrated ventilation				uynamic ap	blication: 20-fold	
<sup>7</sup> do not use freely suspended probes with				are expected		
· · · ·		te ade te mgmy ene	inging proceeded a	a e enpeetea		
Materials (media wetted)						
Materials (media wetted)	stainless steel 1	4404 (3161)				
Housing	stainless steel 1	. ,				
Housing Seals	FKM, EPDM, oth	ners on request				
Housing Seals Diaphragm	FKM, EPDM, oth stainless steel 1	ners on request				
Housing Seals Diaphragm Protection cap	FKM, EPDM, oth stainless steel 1 POM-C	ners on request .4435 (316L)				
Housing Seals Diaphragm Protection cap Cable sheath	FKM, EPDM, oth stainless steel 1 POM-C PVC, PUR, FEP	ners on request	est			
Housing Seals Diaphragm Protection cap	FKM, EPDM, oth stainless steel 1 POM-C PVC, PUR, FEP 20 mA / 2-wire)	ners on request .4435 (316L) , others on reque				
Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (only for 4 Approvals	FKM, EPDM, ott stainless steel 1 POM-C PVC, PUR, FEP 20 mA / 2-wire) IBExU 10 ATEX	ners on request .4435 (316L) , others on reque 1068 X / IECI				
Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (only for 4 Approvals DX19-LMP 308 i	FKM, EPDM, ott stainless steel 1 POM-C PVC, PUR, FEP 20 mA / 2-wire) IBExU 10 ATEX zone 0: II 1G Ex	ners on request 4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga	Ex IBE 12.00272	zone	20: II 1D Ex ia II	IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (only for 4 Approvals	FKM, EPDM, ott stainless steel 1 POM-C PVC, PUR, FEP 20 mA / 2-wire) IBExU 10 ATEX zone 0: II 1G Ex	ers on request .4435 (316L) , others on reque 1068 X / IECI	Ex IBE 12.00272	zone	20: II 1D Ex ia II	IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (only for 4</b> Approvals DX19-LMP 308 i Safety technical maximum values	FKM, EPDM, ott stainless steel 1 POM-C PVC, PUR, FEP 20 mA / 2-wire) IBExU 10 ATEX zone 0: II 1G Ex U <sub>i</sub> = 28 V, I <sub>i</sub> = 93	iners on request 4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga mA, P <sub>i</sub> = 660 m ections have an i	Ex IBE 12.00272 N, C <sub>i</sub> ≈ 0 nF, L <sub>i</sub> nner capacity o	zone ≈ 0 μH, f max. 27 nF to tl		IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (only for 4</b> Approvals DX19-LMP 308 i	FKM, EPDM, ott stainless steel 1 POM-C PVC, PUR, FEP 20 mA / 2-wire) IBExU 10 ATEX zone 0: II 1G Ex U <sub>i</sub> = 28 V, I <sub>i</sub> = 93	iners on request 4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga mA, P <sub>i</sub> = 660 m ections have an i	Ex IBE 12.00272 N, C <sub>i</sub> ≈ 0 nF, L <sub>i</sub> :	zone ≈ 0 μH, f max. 27 nF to tl		IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (only for 4</b> Approvals DX19-LMP 308 i Safety technical maximum values	FKM, EPDM, ott stainless steel 1 POM-C PVC, PUR, FEP <b>20 mA / 2-wire)</b> IBExU 10 ATEX zone 0: II 1G Ex U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 the supply conne in zone 0: in zone 1 or high	ners on request .4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga mA, P <sub>i</sub> = 660 m ections have an i -20 60 °C ner: -20 65 °C	Ex IBE 12.00272 $W, C_i \approx 0 \text{ nF, L}_i$ nner capacity of with p <sub>atm</sub> 0.8 bar	zone ≈ 0 μH, f max. 27 nF to th up to 1.1 bar	ne housing	IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (only for 4</b> Approvals DX19-LMP 308 i Safety technical maximum values Permissible temperatures for environment Connecting cables	FKM, EPDM, ott stainless steel 1 POM-C PVC, PUR, FEP <b>20 mA / 2-wire)</b> IBExU 10 ATEX zone 0: II 1G Ex U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 the supply conne in zone 0: in zone 1 or high cable capacitance	ners on request .4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga mA, P <sub>i</sub> = 660 m ections have an i -20 60 °C ner: -20 65 °C ce: signal line/sh	Ex IBE 12.00272 $W, C_i \approx 0 \text{ nF}, L_i$ nner capacity of with p <sub>atm</sub> 0.8 bar ield also signal	zone ≈ 0 μH, f max. 27 nF to th r up to 1.1 bar line/signal line: 1	ne housing 60 pF/m	IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (only for 4</b> Approvals DX19-LMP 308 i Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory)	FKM, EPDM, ott stainless steel 1 POM-C PVC, PUR, FEP <b>20 mA / 2-wire)</b> IBExU 10 ATEX zone 0: II 1G Ex U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 the supply conne in zone 0: in zone 1 or high	ners on request .4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga mA, P <sub>i</sub> = 660 m ections have an i -20 60 °C ner: -20 65 °C ce: signal line/sh	Ex IBE 12.00272 $W, C_i \approx 0 \text{ nF}, L_i$ nner capacity of with p <sub>atm</sub> 0.8 bar ield also signal	zone ≈ 0 μH, f max. 27 nF to th up to 1.1 bar	ne housing 60 pF/m	IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (only for 4</b> Approvals DX19-LMP 308 i Safety technical maximum values Permissible temperatures for environment Connecting cables	FKM, EPDM, ott stainless steel 1 POM-C PVC, PUR, FEP <b>20 mA / 2-wire)</b> IBExU 10 ATEX zone 0: II 1G Ex U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 the supply conne in zone 0: in zone 1 or high cable capacitance	ners on request .4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga mA, P <sub>i</sub> = 660 m ections have an i -20 60 °C ner: -20 65 °C ce: signal line/sh	Ex IBE 12.00272 $W, C_i \approx 0 \text{ nF}, L_i$ nner capacity of with p <sub>atm</sub> 0.8 bar ield also signal	zone ≈ 0 μH, f max. 27 nF to th r up to 1.1 bar line/signal line: 1	ne housing 60 pF/m	IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (only for 4</b> Approvals DX19-LMP 308 i Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory)	FKM, EPDM, ott stainless steel 1 POM-C PVC, PUR, FEP <b>20 mA / 2-wire)</b> IBExU 10 ATEX zone 0: II 1G Ex U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 the supply conne in zone 0: in zone 1 or high cable capacitance	ners on request .4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga mA, P <sub>i</sub> = 660 m ections have an i -20 60 °C ner: -20 65 °C ce: signal line/sh	Ex IBE 12.00272 $W, C_i \approx 0 \text{ nF}, L_i$ nner capacity of with p <sub>atm</sub> 0.8 bar ield also signal	zone ≈ 0 μH, f max. 27 nF to th r up to 1.1 bar line/signal line: 1	ne housing 60 pF/m	IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (only for 4</b> Approvals DX19-LMP 308 i Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) <b>Miscellaneous</b>	FKM, EPDM, ott stainless steel 1 POM-C PVC, PUR, FEP <b>20 mA / 2-wire)</b> IBExU 10 ATEX zone 0: II 1G Ex U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 the supply conne in zone 0: in zone 1 or high cable capacitance	ners on request .4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga mA, P <sub>i</sub> = 660 m ections have an i -20 60 °C her: -20 65 °C ce: signal line/sh e: signal line/sh	Ex IBE 12.00272 $W, C_i \approx 0 \text{ nF}, L_i$ nner capacity of with p <sub>atm</sub> 0.8 bar ield also signal	zone ≈ 0 μH, f max. 27 nF to th r up to 1.1 bar line/signal line: 1	ne housing 60 pF/m	IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (only for 4</b> Approvals DX19-LMP 308 i Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) <b>Miscellaneous</b> Current consumption Weight	FKM, EPDM, ott         stainless steel 1         POM-C         PVC, PUR, FEP         20 mA / 2-wire)         IBExU 10 ATEX         zone 0: II 1G Ex         U <sub>i</sub> = 28 V, I <sub>i</sub> = 93         the supply conner         in zone 0:         in zone 1 or high         cable capacitance         max. 25 mA         approx. 250 g (w	ners on request .4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga mA, P <sub>i</sub> = 660 m ections have an i -20 60 °C her: -20 65 °C ce: signal line/sh e: signal line/sh	Ex IBE 12.00272 $W, C_i \approx 0 \text{ nF}, L_i$ nner capacity of with p <sub>atm</sub> 0.8 bar ield also signal	zone ≈ 0 μH, f max. 27 nF to th r up to 1.1 bar line/signal line: 1	ne housing 60 pF/m	IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (only for 4</b> Approvals DX19-LMP 308 i Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) <b>Miscellaneous</b> Current consumption Weight Ingress protection	FKM, EPDM, ott         stainless steel 1         POM-C         PVC, PUR, FEP         20 mA / 2-wire)         IBExU 10 ATEX         zone 0: II 1G Ex         U <sub>i</sub> = 28 V, I <sub>i</sub> = 93         the supply connel         in zone 0:         in zone 1 or high         cable capacitance         max. 25 mA         approx. 250 g (w         IP 68	ners on request .4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga mA, P <sub>i</sub> = 660 m ections have an i -20 60 °C her: -20 65 °C ce: signal line/sh e: signal line/sh without cable)	Ex IBE 12.00272 $W, C_i \approx 0 \text{ nF}, L_i$ nner capacity of with p <sub>atm</sub> 0.8 bar ield also signal	zone ≈ 0 μH, f max. 27 nF to th r up to 1.1 bar line/signal line: 1	ne housing 60 pF/m	IC T 85°C Da
Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (only for 4</b> Approvals DX19-LMP 308 i Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) <b>Miscellaneous</b> Current consumption Weight	FKM, EPDM, ott         stainless steel 1         POM-C         PVC, PUR, FEP         20 mA / 2-wire)         IBExU 10 ATEX         zone 0: II 1G Ex         U <sub>i</sub> = 28 V, I <sub>i</sub> = 93         the supply conner         in zone 0:         in zone 1 or high         cable capacitance         max. 25 mA         approx. 250 g (w	ners on request .4435 (316L) , others on reque 1068 X / IECI ia IIC T4 Ga mA, P <sub>i</sub> = 660 m ections have an i -20 60 °C her: -20 65 °C ce: signal line/sh e: signal line/sh without cable)	Ex IBE 12.00272 $W, C_i \approx 0 \text{ nF}, L_i$ nner capacity of with p <sub>atm</sub> 0.8 bar ield also signal	zone ≈ 0 μH, f max. 27 nF to th r up to 1.1 bar line/signal line: 1	ne housing 60 pF/m	IC T 85°C Da

LMP 308i Technical Data



8

cable gland M16x1.5 with seal insert (for cable-∅ 4 11 mm)		Ŧ		dimensio	ons in mm	
n x d2-	ш	2	size	DN25 /	DN50 /	DN80 /
11 × 02		Ĩ		PN40	PN40	PN16
		1 -	b	18	20	20
		+	D	115	165	200
		ف	d2	14	18	18
	1	+	d4	68	102	138
		-	f	2	3	3
	·		k	85	125	160
•	4		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: s	stainless ste	el 1.4305 (3	03); plastic
Seal insert	material: TPE (ingress protection	ion IP 68)				
Hole pattern	according to DIN 2507					
Ordering type		Ore	dering co	de		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	1		4.8 kg

Terminal clamp	



#### Technical data

all probes with cable $\varnothing$ 5.5	10.5 mm				
standard: steel, zinc plated optionally: stainless steel 1.4301 (304)					
PA (fibre-glass reinforced)					
174 x 45 x 32					
20 mm					
	Ordering code	Weight			
	Z100528	opprov. 160 g			
301 (304)	Z100527	approx. 160 g			
	standard: steel, zinc plated PA (fibre-glass reinforced) 174 x 45 x 32	PA (fibre-glass reinforced) 174 x 45 x 32 20 mm Ordering code Z100528			

#### 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	10
CIT 600	Multicha	nnel process display with graphics-capable LC display	S
CIT 650	Multicha	nnel process display with graphics-capable LC display and datalogger	100b
CIT 700 /	CIT 750	Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts	
PA 440	Field dis	play with 4-digit LC display	100
			10

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



	Ordering code LM	IP 308i	
LMP 308i			
Pressure in bar	4 4 0 4 4 1		
in mH <sub>2</sub> O Input [mH <sub>2</sub> O] [bar]	4 4 1		
4.0 0.4	4 0 0 0		
10 1.0	1 0 0 1		
20 2.0	2 0 0 1		
40 4.0	4 0 0 1		
100 10 200 20	1 0 0 2		
200 20 customer	1 0 0 2 2 0 0 2 9 9 9 9	consu	ılt
Housing	3 3 3 3		an
stainless steel 1.4404 (316L)	1		
customer	9	consu	ult
Diaphragm			
stainless steel 1.4435 (316L) customer	1 9		.14
Output	9	consu	JIL
4 20 mA / 2-wire	1		
intrinsic safety 4 20 mA / 2-wire			
0 10 V / 3-wire	E 3 9		
customer	9	consu	ult
Seals FKM			
EPDM		1 3	
customer		9 Consu	ılt
Electrical connection			
PVC-cable (grey, Ø 7.4 mm) <sup>1</sup>		1	
PUR-cable (black, Ø 7.4 mm) <sup>1</sup>		2	
FEP-cable (black, Ø 7.4 mm) <sup>1</sup>		2 3	
customer		9 consu	ult
Accuracy 0.1 % FSO <sup>2</sup>		1	
customer		9 consu	ılt
Cable length			
in m		9 9 9 consu	ult
Version			
standard			
with communicaton interface <sup>3</sup> prepared for mounting		1 2 1	
with stainless steel pipe <sup>4</sup>		1 2 6 consu	ult
cable protection with			
stainless steel corrugated pipe		1 2 3 9 9 9 consu	ult
with pipe length in m			
customer		9 9 9 consu	ult

<sup>1</sup> cable with integrated ventilation tube for atmospheric pressure reference

 $^{\rm 2}$  available on request: calibration of individual pressure range higher than 400 mbar with accuracy 0.1 %

<sup>3</sup> software, interface and cable have to be order separately (ordering code: CIS-G; software appropriate for Windows<sup>®</sup> 95, 98, 2000, NT Version 4.0 or newer and XP)

<sup>4</sup> stainless steel pipe is not part of the supply

Windows<sup>®</sup> is a registrated trademark of Microsoft Corporation



## LMP 307i

### **Stainless Steel Probe**

Stainless Steel Sensor

accuracy according to IEC 60770: 0.1 % FSO

#### Nominal pressure

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

#### **Output signals**

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

#### **Special characteristics**

- ▶ diameter 26.5 mm
- small thermal effect
- excellent accuracy
- excellent long term stability

#### **Optional versions**

- IS-version
   Ex ia = intrinsically safe for gas and dust
- cable protection via corrugated pipe
   drinking water certificate
- according to DVGW and KTWdifferent kinds of cables

The stainless steel probe LMP 307i is designed for continuous level measurement in water and clean or lightly polluted fluids.

Basic element is a high quality stainless steel sensor with high requirements for exact measurement with good long term stability.

#### Preferred areas of use are

drinking water systems ground water level measurement rain spillway basins pump and booster stations level measurement in containers water treatment plants water recycling

Water / filtrated sewage



*Fuel and oil* fuel storage tank farms



and elastomers

Nominal pressure gauge	[bar] 0.40	1	2	4	10	20			
Level	[mH <sub>2</sub> O] 4	10	20	40	100	200			
Overpressure	[bar] 2	5	10	20	40	80			
Burst pressure ≥	[bar] 3	7.5	15	25	50	120			
<sup>1</sup> On customer request we adju	st the device within the tu	rn-down-possibility by	software on the re	quired pressure range.					
Output signal / Supply									
Standard	2-wire: 4	$1\ldots 20 \text{ mA}$ / $V_{S}$	= 12 36 V <sub>DC</sub>						
Option IS-version	2-wire: 4	$1\ldots 20 \text{ mA}$ / $V_{S}$	= 14 28 V <sub>DC</sub>						
Options 3-wire	3-wire: 0	0 10 V / V <sub>s</sub>	= 14 36 V <sub>DC</sub>						
Performance									
Accuracy <sup>2</sup>		nominal pressure ≥ 0.1 bar: ≤ ± 0.1 % FSO nominal pressure < 0.1 bar: ≤ ± 0.2 % FSO							
Permissible load		current 2-wire: $R_{max} = [(V_s - V_{s min}) / 0.02 \text{ A}] \Omega$ voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$							
Influence effects	supply: 0.05	% FSO / 10 V	ļ	oad: 0.05 % FSO / k	KΩ				
Long term stability		SO / year at reference	ce conditions						
Response time	ca. 200 mse	C							
<sup>2</sup> accuracy according to IEC 60	770 – limit point adjustme	ent (non-linearity, hyste	resis, repeatability	)					
Thermal effects (Offset a									
Tolerance band	≤ ± 0.2 % FS	50	i	n compensated rang	ae -20 80°C				
TC	± 0.02 % FS			n compensated rang	<i>,</i>				
Permissible temperatures				,	,				
Permissible temperatures	medium: -10	70 °C		storage: -25 70 °C	, ,				
Electrical protection <sup>3</sup>	medium 10	10 0	5	noraye20 70 C	,				
Insulation resistance	> 100 MΩ	h. 1							
Reverse polarity protection		no damage, but also no function emission and immunity according to EN 61326							
Electromagnetic compatibil					,, ,				
<sup>3</sup> additional external overvoltag	e protection unit in termin	nai box KL 1 or KL 2 Wi	th atmospheric pre	essure reference availa	ble on request				
Electrical connection	4								
Cable with sheath material	PUR (-10 . FEP ⁵ (-10 .	70 °C) black Ø 70 °C) black Ø	ð 7.4 mm	without/with drinking	g water certificate	e)			
Bending radius		ation: 10-fold cable of	liameter c	dynamic application:	20-fold cable dia	ameter			
Denuing radius	Static Installa								
<sup>4</sup> shielded cable with integrated	l ventilation tube for atmos	spheric pressure refere	ence						
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p	l ventilation tube for atmos	spheric pressure refere	ence	es are expected					
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p Materials (media wetted)	l ventilation tube for atmos probes with an FEP cable	spheric pressure refere if effects due to highly	ence	es are expected					
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p <b>Materials (media wetted)</b> Housing	d ventilation tube for atmos probes with an FEP cable stainless ste	spheric pressure refere	ence	es are expected					
<sup>₄</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended µ <b>Materials (media wetted)</b> Housing Seals	d ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho	spheric pressure refere if effects due to highly el 1.4404 (316L) put/with drinking wat	ence charging processe	es are expected	others on requ				
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p <b>Materials (media wetted)</b> Housing Seals Diaphragm	d ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho stainless ste	spheric pressure refere if effects due to highly el 1.4404 (316L)	ence charging processe	es are expected					
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended ; <b>Materials (media wetted)</b> Housing Seals Diaphragm Protection cap	d ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho stainless ste POM-C	spheric pressure refere if effects due to highly el 1.4404 (316L) put/with drinking wat el 1.4435 (316L)	ence charging processe	es are expected					
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended f <b>Materials (media wetted)</b> Housing Seals Diaphragm Protection cap Cable sheath	stainless ste FKM EPDM (with stainless ste FKM EPDM (with stainless ste POM-C PVC, PUR, F	spheric pressure refere if effects due to highly el 1.4404 (316L) put/with drinking wat el 1.4435 (316L) FEP, TPE-U	ence charging processe	es are expected					
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (onlight)	stainless ste FKM EPDM (with stainless ste POM-C PVC, PUR, F Iy for 4 20 mA / 2-w	spheric pressure refere if effects due to highly el 1.4404 (316L) but/with drinking wat el 1.4435 (316L) FEP, TPE-U <b>rire)</b>	ence charging processe ter certificate)						
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (onlight)	A ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho stainless ste POM-C PVC, PUR, F PVC, PUR, F Ig for 4 20 mA / 2-w IBExU 10 AT zone 0:	spheric pressure refere if effects due to highly el 1.4404 (316L) out/with drinking wat el 1.4435 (316L) FEP, TPE-U <b>rire)</b> FEX 1068 X / IEC I 1G Ex ia IIC T4 Ga	ence charging processe ter certificate) Ex IBE 12.0027						
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (on Approvals DX19-LMP 307i	A ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho stainless ste POM-C PVC, PUR, F PVC, PUR, F IBExU 10 AT zone 0: II zone 20: II values U <sub>i</sub> = 28 V, I <sub>i</sub> =	spheric pressure refere if effects due to highly el 1.4404 (316L) out/with drinking wat el 1.4435 (316L) FEP, TPE-U rire) I EX 1068 X / IEC I 1G Ex ia IIC T4 Ga I 1D Ex ia IIIC T 85° = 93 mA, P <sub>i</sub> = 660 m	ence charging processe ter certificate) Ex IBE 12.0027 a C Da W, Ci ≈ 0 nF, Li	X	others on requ				
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended j <b>Materials (media wetted)</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (on</b> Approvals DX19-LMP 307i Safety technical maximum Permissible temperatures f	A ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho stainless ste POM-C PVC, PUR, F PVC, PUR, F IV for 4 20 mA / 2-w IBExU 10 AT zone 0: III values U <sub>i</sub> = 28 V, I <sub>i</sub> the supply co or in zone 0: in zone 1 or	spheric pressure refere if effects due to highly el 1.4404 (316L) but/with drinking wat el 1.4435 (316L) EEP, TPE-U <b>/ire)</b> TEX 1068 X / IEC I 1G Ex ia IIC T4 Ga I 1D Ex ia IIIC T4 S5° = 93 mA, P <sub>i</sub> = 660 m onnections have an -20 60 °C higher: -20 65 °C	ence charging processe ter certificate) Ex IBE 12.0027 a C Da IW, $C_i \approx 0 \text{ nF, } L_i$ inner capacity o C with patm 0.8 bits C	X ≈ 0 μH, f max. 27 nF to the ar up to 1.1 bar	others on requ				
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended ( <b>Materials (media wetted)</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection (oni</b> Approvals DX19-LMP 307i Safety technical maximum Permissible temperatures f environment Connecting cables	A ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho stainless ste POM-C PVC, PUR, F PVC, PUR, F IV for 4 20 mA / 2-w IBExU 10 AT zone 0: II values U <sub>i</sub> = 28 V, I <sub>i</sub> the supply co or in zone 0:	spheric pressure refere if effects due to highly el 1.4404 (316L) but/with drinking wat el 1.4435 (316L) EEP, TPE-U <b>/ire)</b> TEX 1068 X / IEC I 1G Ex ia IIC T4 Ga I 1D Ex ia IIIC T4 Ga = 93 mA, P <sub>i</sub> = 660 m onnections have an -20 60 °C higher: -20 65 °C tance: signal line/s	ter certificate) Ex IBE 12.0027 C Da W, $C_i \approx 0 \text{ nF, } L_i$ inner capacity o C with patm 0.8 bi C shield also signa	X ≈ 0 μH, f max. 27 nF to the	others on requ				
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (on Approvals DX19-LMP 307i Safety technical maximum Permissible temperatures f environment Connecting cables (by factory) Miscellaneous	A ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (without stainless ste POM-C PVC, PUR, F PVC, PUR, F IV for 4 20 mA / 2-w IBExU 10 AT zone 0: III values U <sub>i</sub> = 28 V, I <sub>i</sub> the supply co or in zone 0: in zone 1 or cable capaci	spheric pressure refere if effects due to highly el 1.4404 (316L) but/with drinking wat el 1.4435 (316L) EEP, TPE-U <b>/ire)</b> TEX 1068 X / IEC I 1G Ex ia IIC T4 Ga I 1D Ex ia IIIC T4 Ga = 93 mA, P <sub>i</sub> = 660 m onnections have an -20 60 °C higher: -20 65 °C tance: signal line/s	ter certificate) Ex IBE 12.0027 C Da W, $C_i \approx 0 \text{ nF, } L_i$ inner capacity o C with patm 0.8 bi C shield also signa	× 0 μH, f max. 27 nF to the ar up to 1.1 bar Il line/signal line: 160	others on requ				
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (on Approvals DX19-LMP 307i Safety technical maximum Permissible temperatures f environment Connecting cables (by factory) Miscellaneous	A ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho stainless ste POM-C PVC, PUR, F PVC, PUR, F IBExU 10 AT zone 0: II zone 20: II zone 20: II values U <sub>i</sub> = 28 V, I <sub>i</sub> the supply c or in zone 1 or cable capaci cable inducta	spheric pressure refere if effects due to highly el 1.4404 (316L) but/with drinking wat el 1.4435 (316L) FEP, TPE-U rire) FEX 1068 X / IEC I 1G Ex ia IIIC T4 Ga I 1D Ex ia IIIC T4 Ga I 1D Ex ia IIIC T 85° = 93 mA, P <sub>i</sub> = 660 m connections have an -20 60 ° higher: -20 65 ° tance: signal line/s ance: signal line/s ance: signal line/s	ter certificate) Ex IBE 12.0027 C Da $W, C_i \approx 0 \text{ nF, } L_i$ inner capacity oc C with patm 0.8 bic C with	× 0 μH, f max. 27 nF to the ar up to 1.1 bar Il line/signal line: 160	others on requ housing 0 pF/m iH/m				
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (onl Approvals DX19-LMP 307i Safety technical maximum Permissible temperatures f environment Connecting cables (by factory) Miscellaneous Drinking water certificate <sup>6</sup> Current consumption	A ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho stainless ste POM-C PVC, PUR, F PVC, PUR, F PVC, PUR, F IBExU 10 AT zone 0: II zone 20: II zone 20: II zone 20: II cone 20: II cone 1 or in zone 1 or cable capaci cable inducta	spheric pressure refere if effects due to highly el 1.4404 (316L) but/with drinking wat el 1.4435 (316L) FEP, TPE-U <b>rire)</b> TEX 1068 X / IEC I 1G Ex ia IIC T4 Ga I 1D Ex ia IIIC T4 Ga I 1D Ex ia IIIC T 85° = 93 mA, P <sub>i</sub> = 660 m onnections have an -20 60 °C higher: -20 65 °C tance: signal line/s ance: signal line/s ance: signal line/s ance: signal line/s ance: signal line/s ance: signal line/s	ter certificate) Ex IBE 12.0027 C Da C Da C x in patron 0.8 bic C with patron 0.8 bic C man and the patron	X ≈ 0 µH, f max. 27 nF to the ar up to 1.1 bar Il line/signal line: 16 Il line/signal line: 1 µ	others on requ housing 0 pF/m iH/m				
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (onl Approvals DX19-LMP 307i Safety technical maximum Permissible temperatures f environment Connecting cables (by factory) Miscellaneous Drinking water certificate <sup>6</sup> Current consumption	A ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho stainless ste POM-C PVC, PUR, F PVC, PUR, F PVC, PUR, F IBExU 10 AT zone 0: II zone 20: II zone 20: II zone 20: II cone 20: II cone 1 or in zone 1 or cable capaci cable inducta	spheric pressure refere if effects due to highly el 1.4404 (316L) but/with drinking wat el 1.4435 (316L) FEP, TPE-U <b>rire)</b> TEX 1068 X / IEC I 1G Ex ia IIC T4 Ga I 1D Ex ia IIIC T4 Ga I 1D Ex ia IIIC T 85° = 93 mA, P <sub>i</sub> = 660 m onnections have an -20 60 °C higher: -20 65 °C tance: signal line/s ance: signal line/s ance: signal line/s	ter certificate) Ex IBE 12.0027 C Da C Da $C i \approx 0 nF, L_i$ inner capacity of C with patrn 0.8 bit C shield also signar shield also signar UBA KTW rinking water ce inner capacity	X ≈ 0 µH, f max. 27 nF to the ar up to 1.1 bar Il line/signal line: 16 Il line/signal line: 1 µ	others on requ housing 0 pF/m iH/m				
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (onl Approvals DX19-LMP 307i Safety technical maximum Permissible temperatures f environment Connecting cables (by factory) Miscellaneous Drinking water certificate <sup>6</sup> Current consumption Weight Ingress protection	A ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho stainless ste POM-C PVC, PUR, F PVC, PUR, F PVC, PUR, F IBExU 10 AT zone 0: II zone 20: II zone 20: II zone 20: II cone 20: II cone 1 or in zone 1 or cable capaci cable inducta	spheric pressure refere if effects due to highly el 1.4404 (316L) but/with drinking wat el 1.4435 (316L) FEP, TPE-U <b>rire)</b> TEX 1068 X / IEC I 1G Ex ia IIC T4 Ga I 1D Ex ia IIIC T4 Ga I 1D Ex ia IIIC T 85° = 93 mA, P <sub>i</sub> = 660 m onnections have an -20 60 °C higher: -20 65 °C tance: signal line/s ance: signal line/s ance: signal line/s ance: signal line/s ance: signal line/s ance: signal line/s	ter certificate) Ex IBE 12.0027 C Da C Da $C i \approx 0 nF, L_i$ inner capacity of C with patrn 0.8 bit C shield also signar shield also signar UBA KTW rinking water ce inner capacity	X ≈ 0 µH, f max. 27 nF to the ar up to 1.1 bar Il line/signal line: 16 Il line/signal line: 1 µ	others on requ housing 0 pF/m iH/m				
<sup>4</sup> shielded cable with integrated <sup>5</sup> do not use freely suspended p Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (onl Approvals DX19-LMP 307i Safety technical maximum Permissible temperatures f environment Connecting cables (by factory) Miscellaneous Drinking water certificate <sup>6</sup> Current consumption Weight	A ventilation tube for atmos probes with an FEP cable stainless ste FKM EPDM (witho stainless ste POM-C PVC, PUR, F PVC, PUR, F IBExU 10 AT zone 0: II zone 20: II zone 20: II values U <sub>i</sub> = 28 V, I <sub>i</sub> the supply ca or in zone 1 or cable capaci cable inducta according to (with order th signal output signal output approx. 200 IP 68	spheric pressure refere if effects due to highly el 1.4404 (316L) but/with drinking wat el 1.4435 (316L) FEP, TPE-U <b>rire)</b> TEX 1068 X / IEC I 1G Ex ia IIC T4 Ga I 1D Ex ia IIIC T4 Ga I 1D Ex ia IIIC T 85° = 93 mA, P <sub>i</sub> = 660 m onnections have an -20 60 °C higher: -20 65 °C tance: signal line/s ance: signal line/s ance: signal line/s ance: signal line/s ance: signal line/s ance: signal line/s	ter certificate) Ex IBE 12.0027 C Da C Da $C i \approx 0 nF, L_i$ inner capacity of C with patrn 0.8 bit C shield also signar shield also signar UBA KTW rinking water ce inner capacity	X ≈ 0 µH, f max. 27 nF to the ar up to 1.1 bar Il line/signal line: 16 Il line/signal line: 1 µ	others on requ housing 0 pF/m iH/m				



Mounting flange with cable gland

#### cable gland M16x1.5 with seal insert (for cable-Ø 4 ... 11 mm) n x d2 b 182 D 111 d2 14 d4 682 f 22 k 852 n 4

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	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	s, nickel plated	ZMF2540	1.4 kg					
DN50 / PN40 with cable gland brass	s, nickel plated	ZMF5040	3.2 kg					
DN80 / PN16 with cable gland brass	s, nickel plated	ZMF8016	4.8 kg					

#### Terminal clamp



Technical data								
Suitable for	all probes with cable $\varnothing$ 5.5 10	all probes with cable $arnothing$ 5.5 10.5 mm						
Material of housing	standard: steel, zinc plated	standard: steel, zinc plated optionally: stainless steel 1.4301 (304)						
Material of clamping jaws and positioning clips	PA (fibre-glass reinforced)	PA (fibre-glass reinforced)						
Dimensions (mm)	174 x 45 x 32	174 x 45 x 32						
Hook diameter	20 mm							
Ordering type		Ordering code	Weight					
Terminal clamp, steel, zinc plated Z100528								
Terminal clamp, stainless steel 1.4301 (304) Z100527 approx. 160 g								

#### 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	1
PA 440	Field display with 4-digit LC display	
Far furth		
	er information please contact our sales department or visit our homepage: w.bdsensors.de	

35.65 299.9 14.58

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	Orde	ering code	ELMP 30	7i			
LMP 307i			- 🗌 - 🗌 -	□-□-□		-	
Pressure							
in bar							
in mH <sub>2</sub> O Input [mH <sub>2</sub> O] [bar]	4 5 1						
4.0 0.4	4 0	0 0					
10 1.0	1 0	0 1					
25 2.0	2 0	0 1					
40 4.0 100 10	4 0 1 0	0 1 0 2					
200 20	2 0	02					
customer	9 9	0299				CC	onsult
Housing							
stainless steel 1.4404 (316L)		1					
Diaphragm		9				CC	onsult
stainless steel 1.4435 (316L)		1					
customer		9				cc	onsult
Output							
4 20 mA / 2-wire			1				
intrinsic safety 4 20 mA / 2 wire 0 10 V / 3-wire			E 3				
customer			9			CC	onsult
Seals			Ū				onoun
FKM			1				
EPDM			3				
DVGW/KTW: EPDM customer			3T 9				onsult
Accuracy			9				onsuit
standard for $P_N \ge 0.1$ bar 0.1 % FSO				1			
standard for $P_N < 0.1$ bar 0.2 % FSO				В			
customer				9		CC	onsult
Electrical connection PVC-cable (grey, Ø 7.4 mm)	2			1			
PUR-cable (black, Ø 7.4 mm)	2			1 2			
FEP-cable (black, Ø 7.4 mm)	2			3			
TPE-U-cable (blue, Ø 7.4 mm)	2			4			
DVGW/KTW:				F			
TPE-U-cable (blue, Ø 7.4 mm) customer	1,2			9			onoult
Cable length				9			onsult
in m				9	9 9		
Special version							
standard					1 1 1		
cable protection with					1 0 3		
stainless steel corrugated pipe with pipe length in m					1 0 3	9 9 9 co	onsult
customer					999	CC	onsult

<sup>1</sup> drinking water certification only possible with EPDM seal (code 3T) in combination with TPE-U cable (code F); not possible with IS version (explosion protection)

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



## LMK 382H

### Stainless Steel Probe with HART<sup>®</sup>-communication

Ceramic Sensor

accuracy according to IEC 60770: 0.1 % FSO

#### Nominal pressure

from 0 ... 60 cmH\_2O up to 0 ... 200 mH\_2O

#### **Output signals**

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

#### **Special characteristics**

- diameter 39.5 mm
- HART<sup>®</sup> communication (setting of offset, span and damping)
- permissible temperatures up to 85 °C
- high overpressure resistance
- high long-term stability

#### **Optional versions**

- ► IS-version
- Ex ia = intrinsically safe for gas and dust
- mounting with stainless steel pipe
- flange version
- ► diaphragm 99.9 % Al<sub>2</sub>O<sub>3</sub>
- accessories e.g. transmitter and mounting flanges and terminal clamp

The stainless steel probe LMK 382H has been designed for continuous level measurement in sewage, polluted and higher viscosity fluids.

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

#### Preferred areas of use are



#### <u>Water</u>

Sewage



ground water level measurement rain spillway basins



waste water treatment water recycling

#### Fuel and oil



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



Pressure ranges <sup>1</sup>

Nominal pressure [bar]	0.06	0.16	0.4	1	2	5	10	20	
Level [mH <sub>2</sub> O]	0.6	1.6	4	10	20	50	100	200	
Overpressure [bar]	2	4	6	8	15	25	35	45	
<sup>1</sup> On customer request we adjust the dev	ices by softwar	e on the requ	iired pressure r	anges, within the	e turn-down po	ssibility (startir	ng at 0.02 bar).		
Output signal / Supply									
Standard	2-wire: 4	20 mA / V <sub>s</sub>	= 12 36	$V_{\text{DC}}$ with HAR	T <sup>®</sup> communic	ation	V <sub>S rated</sub> =	$24 V_{DC}$	
Option IS-version	2-wire: 4	20 mA / V <sub>S</sub>	= 14 28	$V_{\text{DC}}$ with HAR	T <sup>®</sup> communic	ation	V <sub>S rated</sub> =	$24 V_{DC}$	
Performance									
Accuracy <sup>2</sup>	P <sub>N</sub> ≥ 160 mb	bar	TD ≤ 1:5 TD > 1:5	$\leq \pm 0.2 \% H$	-SO ).03 x TD] %	FSO	TD <sub>max</sub> =	1:10	
	$P_{N} < 160 \text{ m}$	bar	10 / 1.0		).1 x TD] % F		TD <sub>max</sub> =	1.3	
	$P_N \ge 1$ bar		TD ≤ 1:5	< ± 0.1 % I		00	TD <sub>max</sub> =		
	IN E I Dai		TD ≥ 1.5 TD > 1:5		0.02 x TD] %	FSO	1 D max -	1.10	
Permissible load	R <sub>max</sub> = [(V <sub>S</sub>	· Vomin) / 0 0					ion: R <sub>min</sub> = 25	0.0	
Long term stability				at reference co		communicat	1011.14mm 20	011	
Influence effects	supply: 0.05				rmissible loa	d: 0.05 % ES	SO / kO		
Turn-on time	850 msec	///////////////////////////////////////	0 1	pc			07132		
Mean response time		ithout consi	ideration of el	lectronic damp	oina	mean	measuring ra	ite 7/sec	
Max. response time	380 msec					Incall			
Adjustability	-	n of followir	na parameter	s possible (inte	erface / softw	are necessa	rv <sup>3</sup> ):		
	- electroni - offset:	c damping: /n of span:	0 100 0 80 %	sec 6 FSO			., ,.		
<sup>2</sup> accuracy according to IEC 60770 – limit <sup>3</sup> software, interface, and cable have to b	t point adjustme	ent (non-linea		repeatability)	5, 98, 2000, NT	Version 4.0 o	r higher, and X	P)	
Thermal effects (Offset and Span)									
Tolerance band	≤ ± (0.2 x tu	ırn-down) %	FSO						
TC, average	± (0.02 x tu	m-down) %	FSO / 10 K						
in compensated range	-20 80 °C								
Permissible temperatures	medium / e	ectronics / e	environment /	/ storage:	-25 85 °C				
Electrical protection <sup>4</sup>	1			0					
Short-circuit protection	permanent								
•	+ ·	but also no	function						
Reverse polarity protection	no damage			EN 61326					
Reverse polarity protection Electromagnetic compatibility	no damage emission ar	nd immunity	according to		re reference av	vailable on req	west		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection	no damage emission ar	nd immunity	according to		re reference a	/ailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection Mechanical stability	no damage emission ar	id immunity al box KL 1 o	according to or KL 2 with atm	nospheric pressu	re reference a	vailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>₄</sup> additional external overvoltage protection Mechanical stability Vibration	no damage emission ar	id immunity al box KL 1 o	according to	nospheric pressu	re reference a	/ailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b>	no damage emission ar on unit in termin 4 g (accord	id immunity <i>al box KL 1 o</i> ng to: DIN E	according to or KL 2 with atm EN 60068-2-6	nospheric pressu	re reference a	vailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>₄</sup> additional external overvoltage protection Mechanical stability Vibration	no damage emission ar nunit in termin 4 g (accord PVC ( - PUR (-2 FEP <sup>6</sup> (-2	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 70 °C)	according to r <i>KL 2 with atm</i> EN 60068-2-6 grey Ø black Ø black Ø	7.4 mm 7.4 mm 7.4 mm 7.4 mm	re reference a	/ailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup>	no damage emission ar nunit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2	d immunity al box KL 1 o ng to: DIN F 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C)	according to or <i>KL 2 with atm</i> EN 60068-2-6 grey Ø black Ø black Ø black Ø blue Ø	7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm	re reference a	vailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b>	no damage emission ar nunit in termin 4 g (accord PVC ( - PUR (-2 FEP <sup>6</sup> (-2	d immunity al box KL 1 o 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C) ation:	according to r KL 2 with atm N 60068-2-6 grey Ø black Ø black Ø black Ø blue Ø	7.4 mm 7.4 mm 7.4 mm 7.4 mm	re reference a	vailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation	no damage emission ar on unit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: spheric press	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab	7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm le diameter le diameter		vailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes with	no damage emission ar on unit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: spheric press	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab	7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm le diameter le diameter		vailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes with <b>Materials</b>	no damage emission ar on unit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap n tube for atmo h an FEP cable	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: spheric press if effects due	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab ure reference to highly charg	7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm le diameter le diameter		vailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes with <b>Materials</b> Housing	no damage emission ar on unit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap n tube for atmo h an FEP cable	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 70 °C) 5 70 °C) ation: plication: spheric press if effects due eel 1.4404 (	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab ure reference to highly charg 316 L)	5) 7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm le diameter le diameter ging processes a		vailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius	no damage emission ar on unit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap tube for atmo h an FEP cable stainless ste FKM, FFKM	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: spheric press if effects due eel 1.4404 ( I, EPDM, ot	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab ure reference to highly charg 316 L) hers on reque	5) 7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm le diameter le diameter ging processes a		vailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes witt <b>Materials</b> Housing	no damage emission ar on unit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap tube for atmo h an FEP cable stainless ste FKM, FFKM standard:	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: spheric press if effects due eel 1.4404 ( I, EPDM, ot	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab ure reference to highly charg 316 L) hers on reque 20 <sub>3</sub> 96 %	5) 7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm le diameter le diameter ging processes a		vailable on req			
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes with <b>Materials</b> Housing Seals	no damage emission ar on unit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap tube for atmo h an FEP cable stainless ste FKM, FFKM standard:	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 70 °C) 5 70 °C) ation: plication: spheric press if effects due eel 1.4404 ( I, EPDM, otl ceramics Al	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab ure reference to highly charg 316 L) hers on reque 20 <sub>3</sub> 96 %	5) 7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm le diameter le diameter ging processes a		vailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes with <b>Materials</b> Housing Seals Diaphragm Protection cap	no damage emission ar on unit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap tube for atmo h an FEP cable stainless ste FKM, FFKM standard: option: POM-C	d immunity al box KL 1 o ng to: DIN F 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: spheric press if effects due eel 1.4404 ( I, EPDM, ott ceramics Al ceramics Al	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab ure reference to highly charg 316 L) hers on reque 20 <sub>3</sub> 96 %	7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm 1e diameter le diameter ging processes a est		vailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes with <b>Materials</b> Housing Seals Diaphragm Protection cap Cable sheath	no damage emission ar on unit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap tube for atmo h an FEP cable stainless ste FKM, FFKM standard: option: POM-C	d immunity al box KL 1 o ng to: DIN F 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: spheric press if effects due eel 1.4404 ( I, EPDM, ott ceramics Al ceramics Al	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab ure reference to highly charg 316 L) hers on reque 20 <sub>3</sub> 96 % 20 <sub>3</sub> 99.9 %	7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm 1e diameter le diameter ging processes a est		/ailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes with <b>Materials</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection</b>	no damage emission ar on unit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap tube for atmo h an FEP cable stainless ste FKM, FFKM standard: option: POM-C	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: spheric press if effects due cel 1.4404 ( I, EPDM, oth ceramics Al ceramics Al ceramics Al	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab ure reference to highly charg 316 L) hers on reque 20 <sub>3</sub> 96 % 20 <sub>3</sub> 99.9 %	7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm 1e diameter le diameter ging processes a est		/ailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes with <b>Materials</b> Housing Seals Diaphragm	no damage emission ar on unit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap in tube for atmo in an FEP cable stainless ste FKM, FFKM standard: option: POM-C PVC, PUR,	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: spheric press if effects due cel 1.4404 ( I, EPDM, ot ceramics Al ceramics Al ceramics Al fEP, TPE-I TEX 1186 > II 1G Ex ia	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab 20-fold cab ure reference to highly charg 316 L) hers on reque 20 <sub>3</sub> 96 % 20 <sub>3</sub> 99.9 %	7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm 1e diameter le diameter le diameter ging processes a est		/ailable on req	uest		
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes with <b>Materials</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection</b>	no damage emission ar nunit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap nube for atmo han FEP cable stainless stu FKM, FFKM standard ption: POM-C PVC, PUR, IBExU 10 A zone 0 <sup>7</sup> : zone 20: U <sub>i</sub> = 28 V, I <sub>i</sub>	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: pl	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab ure reference to highly charg 316 L) hers on reque 20_3 96 % 20_3 99.9 % U, others on r ( IIB T4 Ga IIIC T85 °C E i = 660 mW, 0	7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm 1e diameter 1e diameter 1e diameter 1e diameter 2ging processes a est est cat the set cat t	are expected				
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes with <b>Materials</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection</b> Approval DX15A-LMK 382H	no damage emission ar nunit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap nube for atmo han FEP cable stainless ste FKM, FFKM standard: option: POM-C PVC, PUR, IBExU 10 A zone 0 <sup>7</sup> : zone 20: U <sub>i</sub> = 28 V, I <sub>i</sub> the supply o in zone 0:	d immunity al box KL 1 o ng to: DIN E 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: spheric press if effects due ceel 1.4404 ( I, EPDM, ot ceramics Al ceramics Al FEP, TPE-I TEX 1186 > II 1G Ex ia II 1D Ex ia = 93 mA, P connections -10	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab ure reference to highly charg 316 L) hers on reque 20_3 96 % 20_3 99.9 % U, others on r ( IIB T4 Ga IIIC T85 °C E i = 660 mW, ( have an innee) 60 °C witt	7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm 1e diameter le diameter le diameter ging processes a est request	are expected i = 0 μH, nax. 27 nF op				
Reverse polarity protection Electromagnetic compatibility <sup>4</sup> additional external overvoltage protection <b>Mechanical stability</b> Vibration <b>Electrical connection</b> Cable outlet with sheath material <sup>5</sup> Bending radius <sup>5</sup> shielded cable with integrated ventilation <sup>6</sup> do not use freely suspended probes with <b>Materials</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Explosion protection</b> Approval DX15A-LMK 382H Safety technical maximum values	no damage emission ar nunit in termin 4 g (accordi PVC ( - PUR (-2 FEP <sup>6</sup> (-2 TPE-U (-2 static install dynamic ap nube for atmo han FEP cable stainless ste FKM, FFKM standard: option: POM-C PVC, PUR, IBExU 10 A zone 0 <sup>7</sup> : zone 20: U <sub>i</sub> = 28 V, I <sub>i</sub> the supply o in zone 0: zone 1 or h	d immunity al box KL 1 o 5 70 °C) 5 70 °C) 5 70 °C) 5 70 °C) 5 85 °C) ation: plication: spheric press if effects due eel 1.4404 ( I, EPDM, ot ceramics Al ceramics Al EEP, TPE-I TEX 1186 > II 1G Ex ia II 1D Ex ia II 1D Ex ia = 93 mA, P connections -10 gher: -25	according to r KL 2 with atm EN 60068-2-6 grey Ø black Ø black Ø black Ø black Ø blue Ø 10-fold cab 20-fold cab ure reference to highly charg 316 L) hers on reque $_{2}O_{3} 96 \%$ $_{2}O_{3} 99.9 \%$ U, others on r ( IIB T4 Ga IIIC T85 °C E $_{1} = 660$ mW, ( have an innee) 60 °C witt 5 70 °C	7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm 9.4 diameter 9.14 diameter 9.14 diameter 1.24 diameter 9.15 diameter 1.25 diameter 9.25 diame	ire expected i = 0 μH, nax. 27 nF op ip to 1.1 bar	pposite the e			



Transmitter flange for flange version

n x Ød2 —			dimens	ions in mm	
IIX JOUR		size	DN25 / PN40	DN50 / PN40	DN80 / PN16
		b	18	20	20
		D D	115	165	200
		d2	14	18	18
<b> </b>	— d4 — — —	← <u>d4</u>	68	102	138
	k	t k	2 85	3 125	3 160
-	D	R n	4	4	8
			•	•	•
Technical data					
Suitable for	LMK 382, LMK 382H, LMK 4	58, LMK 458H			
Flange material	stainless steel 1.4404 (316L)				
Hole pattern	according to DIN 2507				
Ordering type		Ordering co	ode		Weight
Transmitter flange DN25 / PN40		ZSF2540			1.2 kg
Transmitter flange DN50 / PN40		ZSF5040			2.6 kg
Transmitter flange DN80 / PN16		ZSF8016	i		4.1 kg
<b>č</b>		1	1		ŭ
Mounting flange with cable gla	Ind				
cable gland M16x1.5 with seal insert —					
(for cable-Ø 4 11 mm)				ions in mm	



	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

rechnical uata										
Suitable for	all probes	all probes								
Flange material	stainless steel 1.4404 (316L)	stainless steel 1.4404 (316L)								
Material of cable gland	standard: brass, nickel plated	standard: brass, nickel plated on request: stainless steel 1.4305 (303); plastic								
Seal insert	material: TPE (ingress protection	material: TPE (ingress protection IP 68)								
Hole pattern	according to DIN 2507	according to DIN 2507								
Ordering type		Ordering code	Weight							
DN25 / PN40 with cable gland b	orass, nickel plated	ZMF2540	1.4 kg							
DN50 / PN40 with cable gland b	orass, nickel plated	s, nickel plated ZMF5040 3.2 kg								
DN80 / PN16 with cable gland b	orass, nickel plated	ZMF8016	4.8 kg							

#### Terminal clamp



Technical data							
Suitable for	all probes with cable $arnothing$ 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							
Terminal clamp, stainless steel 1.4301 (304) Z100527 approx. 160 g							

				Orc	ler	in	g	cod	de l	_M	K 3	82	Н						
	LMK 382H		Π	П-			П	-Г	-	-	1-Г	1-Г	1-Г	1-[		1-Г	Τ		
Dressure								_											
Pressure		in bar	56	5				-											
		in mH <sub>2</sub> O	56	6															
Input	[mH <sub>2</sub> O]	[bar]			0														
	0.6 1.6	0.06 0.16				6 0 6 0													
	4.0	0.10			4 0		0												
	4.0 10	1.0			1 0	0													
	20	2.0			2 0	0	1												
	50	5.0			5 0	0	1												
	100	10			1 0	0	2												
	200	20			2 0 9 9	0	2												
		customer	_	_	9 9	9	9	_											consult
Housing	stainless steel 1.440	04 (3161.)						1											
		customer						1 9											consult
Diaphragm		customer						9											consult
Diapinagin	ceramics A	1 <sub>2</sub> O <sub>3</sub> 96%		_	_	_	_	_	2										
	ceramics Al <sub>2</sub>	O <sub>3</sub> 99.9%							С										
		customer							9										consult
Output	(P)																		
	HART <sup>®</sup> -comm									н									
	4 … 20 m. HART <sup>®</sup> -comm																		
intri	insic safety 4 20 m									1									
		customer								9									consult
Seals										-									
		FKM									1								
		EPDM									3								
		FFKM									7								
		customer				_	_				g	1							consult
Electrical of	connection PVC-cable (grey, Ø	174 mm 1										4							
	PUR-cable (black, Ø											1							
	FEP-cable (black, @											3							
	TPE-U-cable (blue, Ø											4							
		customer										9							consult
Accuracy																			
$P_N \ge 1$ bar:		.1 % FSO											1						
P <sub>N</sub> < 1 bar:		.2 % FSO											B						
Oshis Is		customer											9						consult
Cable leng	tn –	in m												0	99				
Special ver	rsion	in m												9	19 9	1			
opecial ver		standard														0	0	0	
	prepared for	mounting																	
	with stainless	steel pipe <sup>2</sup>														5		2	
	flang	e version														5		0	
		customer														9	9	9	consult

 $^1$  shielded cable with integrated ventilation tube for atmospheric pressure reference  $^2$  stainless steel pipe is not part of the supply

HART<sup>®</sup> is a registered trade mark of HART Communication Foundation



# LMK 458H

Probe with HART<sup>®</sup>-communication for Marine and Offshore

Ceramic Sensor

accuracy according to IEC 60770: 0.1 % FSO

#### Nominal pressure

from 0 ... 60 cmH<sub>2</sub>O up to 0 ... 200 mH<sub>2</sub>O

#### **Output signals**

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

#### **Special characteristics**

- shipping approvals acc. to: Lloyd's Register (LR), Det Norske Veritas
   Germanischer Lloyd (DNV•GL) China Classification Society (CCS), American Bureau of Shipping (ABS)
- diameter 39.5 mm
- HART<sup>®</sup> communication (setting of offset, span and damping)
- high overpressure resistance
- high long-term stability

#### **Optional versions**

- IS-version
   Ex ia = intrinsically safe for gas and dust
- diaphragm Al<sub>2</sub>O<sub>3</sub> 99.9 %
- different housing materials (stainless steel, CuNiFe)
- screw-in and flange version
- accessories e. g. assembling and probe flange, mounting clamp

The hydrostatic probe LMK 458H has been developed for measuring level in service and storage tanks and is certificated for shipbuilding and offshore applications.

A permissible operating temperature up to 85°C and the possibility to use the device in intrinsic safe areas enable to measure the pressure of various fluids under extreme conditions. The basis for the LMK 458H is a self-developed capacitive ceramic sensor element, which offers a high overload resistance and medium compatibility.

#### Preferred areas of use are

#### <u>Water</u>

drinking water abstraction desalinization plant

#### Shipbuilding / Offshore



ballast tanks draught monitoring level measurement in ballast and storage tanks



Pressure ranges										
Nominal pressure <sup>1</sup> [bar]	0.06	0.16	0.4	1	2	5	10	20		
Level [mH <sub>2</sub> O]	0.6	1.6	4	10	20	50	100	200		
Overpressure [bar]	2	4	6	8	15	25	35	45		
<sup>1</sup> on customer request we adjust the device	ces by software o	n the required	pressure ranges,	within the turn-do	wn possibility	starting at 0.02	? bar)			
Output signal / Supply										
Standard	2-wire: 4 2	20 mA / Vs =	12 36 V <sub>DC</sub>	with HART®	communicat	ion	V <sub>S rated</sub> = 2	24 V <sub>DC</sub>		
Option IS-version	2-wire: 4 2	2-wire: 4 20 mA / V <sub>S</sub> = 14 28 V <sub>DC</sub> with HART <sup>®</sup> communication V <sub>S rated</sub> = 24 V <sub>DC</sub>								
Performance										
Accuracy <sup>2</sup>	P <sub>N</sub> ≥ 160 mb	ar	TD ≤ 1:5	≤ ± 0.2 % FS	:0					
			TD > 1:5	≤ ± [0.2 + 0.0		SO	TD <sub>max</sub> = 1	:10		
	P <sub>N</sub> < 160 mb	ar	10 1.0	≤ ± [0.2 + 0.1			TD <sub>max</sub> = 1	·3		
	$P_N \ge 1$ bar		TD ≤ 1:5	≤ ± 0.1 % FS	-	.0	T Dinax = 1	.0		
	INE IDai		TD > 1:5	$\leq \pm [0.1 + 0.0]$		SO	TD <sub>max</sub> = 1	: 10		
Permissible load	D = I(1/2)	V <sub>S min</sub> ) / 0.02	1	load at HAR			250.0			
Long term stability				ence conditions			250 12			
Influence effects		% FSO / 10 \		permissible I						
Turn-on time	850 msec	% FSU/ 10	/	permissible i	0au. 0.05 %	F507K12				
		4 h h 4 h h h h h h i d h	antion of electro	ania denomina				1. 7/2.2.2		
Mean response time		thout conside	ration of electr	onic damping		mean	measuring ra	ite //sec		
Max. response time	380 msec					2)				
Adjustability				ssible (interface				1.10		
2		mping: 0 1		offset: 0 8	0 % FSO	turn d	own of span:	max. 1:10		
<sup>2</sup> accuracy according to IEC 60770 – limit <sup>3</sup> software, interface, and cable have to be					00 NT Versio	n 1 0 or higher	and VP)			
Thermal effects (Offset and Span)					55, IVI VEISIO	, or nigner,				
	1	•								
Tolerance band		n-down] % F								
TC, average		irn-down] % F	-SO / 10 K							
In compensated range	-20 80 °C									
Permissible temperatures	medium / ele	ctronics / env	rironment / stor	rage: -25 8	S5 ℃					
Electrical protection <sup>4</sup>										
Short-circuit protection	permanent									
Reverse polarity protection		but also no fu								
Electromagnetic compatibility	emission and	emission and immunity according to								
	- EN 613			GL (Det Norske )		manischer Ll	oyd)			
<sup>4</sup> additional external overvoltage protection	n unit in terminal	box KL 1 or KL	2 with atmosphe	eric pressure refere	ence available					
Mechanical stability										
Vibration	4 g (accordir	ng to DNV•GL	.: class B, curv	e 2 / basis: DIN	EN 60068-2	2-6)				
Electrical connection	, <b>e</b> ,	•				,				
Cable with sheath material <sup>5</sup>	TPE-U blu	ue Ø 7.4 m	ım							
Bending radius			cable diameter	dvnami	c application	: 20-fold cab	le diameter			
<sup>5</sup> shielded cable with integrated ventilation								ion tube is		
closed)		,		· /· · · · · ·	3	<b>3</b>	3-,			
Materials (media wetted)										
Housing	standard: sta	inless steel 1	.4404 (316L)	option:	CuNi10Fe1N	/In (resistant	against sea v	vater)		
Seals	standard: FK			· · · ·				,		
	options: EF	DM, FFKM (I	min. permissibl	le temperature f	rom -15 °C)		others or	n request		
Diaphragm		ramics Al <sub>2</sub> O <sub>3</sub>			ceramics Al	O <sub>3</sub> 99.9 %				
Protection cap	POM-C			· · · ·						
Cable sheath		ame-resistant	, halogen free.	increased resis	tance agains	st oil and das	oline.			
	res	sistant agains	t salt, sea wate	er, heavy oil)		Je se	,			
Miscellaneous		<u> </u>								
Option cable protection	I					t product				
	I prepared for	mounting wit	h stainless ste	el pipe: availabl	e as compac					
IUL DIODES IN STAIMESS STEEL				el pipe; available al length up to 2			on request)			
•	(standard: st			el pipe; availabl al length up to 2			s on request)			
Ingress protection	(standard: st IP 68						s on request)			
Ingress protection Current consumption	(standard: st IP 68 max. 21 mA	ainless steel	pipe with a tota				s on request)			
Ingress protection Current consumption Weight	(standard: st IP 68 max. 21 mA min. 650 g (v	ainless steel vithout cable)	pipe with a tota				s on request)			
Ingress protection Current consumption Weight CE-conformity	(standard: st IP 68 max. 21 mA min. 650 g (v EMC Directiv	ainless steel	pipe with a tota				s on request)			
Ingress protection Current consumption Weight CE-conformity ATEX Directive	(standard: st IP 68 max. 21 mA min. 650 g (v	ainless steel vithout cable)	pipe with a tota				s on request)			
Ingress protection Current consumption Weight CE-conformity ATEX Directive Category of the environment	(standard: st IP 68 max. 21 mA min. 650 g (s EMC Directiv 2014/34/EU	ainless steel vithout cable) ve: 2014/30/E	pipe with a tota		m possible;	other lengths		E0		
Ingress protection Current consumption Weight CE-conformity ATEX Directive Category of the environment Lloyd's Register (LR)	(standard: st IP 68 max. 21 mA min. 650 g (v EMC Directiv 2014/34/EU EMV1, EMV1	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM	pipe with a tota :U :V4	al length up to 2	m possible;	other lengths	ficate: 13/200			
Ingress protection Current consumption Weight CE-conformity ATEX Directive Category of the environment Lloyd's Register (LR) Det Norske Veritas •	(standard: st IP 68 max. 21 mA EMC Directiv 2014/34/EU EMV1, EMV1, EMV1 temperature	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM	pipe with a tota	al length up to 2	m possible;	other lengths				
Ingress protection Current consumption Weight CE-conformity ATEX Directive Category of the environment Lloyd's Register (LR) Det Norske Veritas •	(standard: st IP 68 max. 21 mA min. 650 g (v EMC Directiv 2014/34/EU EMV1, EMV1 temperature humidity:	vithout cable) ve: 2014/30/E 2, EMV3, EM B	pipe with a tota	al length up to 2 B D	m possible;	other lengths	ficate: 13/200			
Ingress protection Current consumption Weight CE-conformity ATEX Directive <b>Category of the environment</b> Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL)	(standard: st IP 68 max. 21 mA min. 650 g (v EMC Directiv 2014/34/EU EMV1, EMV1 temperature humidity:	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM	pipe with a tota	al length up to 2	m possible;	other lengths	ficate: 13/200			
Ingress protection Current consumption Weight CE-conformity ATEX Directive <b>Category of the environment</b> Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) <b>Explosion protection</b>	(standard: st IP 68 max. 21 mA min. 650 g (v EMC Directiv 2014/34/EU EMV1, EMV1 temperature: humidity: electromagn	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM B etic compatib	pipe with a tota	al length up to 2 B D	m possible;	other lengths	ficate: 13/200			
Ingress protection Current consumption Weight CE-conformity ATEX Directive <b>Category of the environment</b> Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) <b>Explosion protection</b>	(standard: st IP 68 max. 21 mA min. 650 g (v EMC Directiv 2014/34/EU EMV1, EMV1 temperature: humidity: electromagn	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM D B etic compatib TEX 1186 X	vibration: enclosure: ility:	al length up to 2 B D	m possible; nu nu	other lengths mber of certii mber of certii	ficate: 13/200 ficate: TAA00	001GM		
Ingress protection Current consumption Weight CE-conformity ATEX Directive <b>Category of the environment</b> Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) <b>Explosion protection</b> Approval DX15A-LMK 458H	(standard: st IP 68 max. 21 mA min. 650 g (t EMC Directit 2014/34/EU EMV1, EMV1, EMV1, temperature humidity: electromagn IBExU 10 AT zone 0 <sup>6</sup> : II 1	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM D B etic compatib TEX 1186 X G Ex ia IIB T-	V4 V4 vibration: enclosure: ility: 4 Ga	B D B	m possible; nu nu nu zo	other lengths mber of certii mber of certii	ficate: 13/200	001GM		
Ingress protection Current consumption Weight CE-conformity ATEX Directive <b>Category of the environment</b> Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) <b>Explosion protection</b> Approval DX15A-LMK 458H	(standard: st IP 68 max. 21 mA min. 650 g (i EMC Directiv 2014/34/EU EMV1, EMV2 temperature: humidity: electromagn IBExU 10 AT zone 0 °: II 1 U <sub>i</sub> = 28 V, I <sub>i</sub> =	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM B etic compatib TEX 1186 X G Ex ia IIB T. 93 mA, P <sub>i</sub> =	v4 vibration: enclosure: ility: 4 Ga 660 mW, C <sub>i</sub> =	B B 94,6 nF; L <sub>i</sub> = 0 μ	m possible; nu nu nu nu	other lengths mber of certii mber of certii ne 20: II 1D E	ficate: 13/200 ficate: TAA00	001GM		
Ingress protection Current consumption Weight CE-conformity ATEX Directive <b>Category of the environment</b> Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) <b>Explosion protection</b> Approval DX15A-LMK 458H Safety technical maximum values	(standard: st IP 68 max. 21 mA min. 650 g (v EMC Directiv 2014/34/EU EMV1, EMV2 temperature: humidity: electromagn IBExU 10 AT zone 0 <sup>6</sup> : II 1 U <sub>i</sub> = 28 V, I <sub>i</sub> = the supply co	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM B etic compatib TEX 1186 X G Ex ia IIB T- G G x ia IIB T- 5 93 mA, P <sub>i</sub> = ponnections ha	V4 vibration: enclosure: ility: 4 Ga 660 mW, C <sub>i</sub> =	B B D B 94,6 nF; L <sub>i</sub> = 0 µ pacity of max. 1	m possible; nu nu nu lH; 10 nF oppos	other lengths mber of certii mber of certii ne 20: II 1D E	ficate: 13/200 ficate: TAA00	001GM		
Ingress protection Current consumption Weight CE-conformity ATEX Directive Category of the environment Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) Explosion protection Approval DX15A-LMK 458H Safety technical maximum values Permissible temperatures for	(standard: st IP 68 max. 21 mA min. 650 g (v EMC Directiv 2014/34/EU EMV1, EMV2 temperature: humidity: electromagn IBExU 10 AT zone 0 <sup>6</sup> : II 1 U <sub>i</sub> = 28 V, I <sub>i</sub> = the supply cc in zone 0:	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM D B etic compatib EX 1186 X G Ex ia IIB Tr = 93 mA, P <sub>i</sub> = onnections ha -20.	V4 vibration: enclosure: ility: 4 Ga 660 mW, C <sub>i</sub> = ave an inner ca 60 °C with pa	B B 94,6 nF; L <sub>i</sub> = 0 μ	m possible; nu nu nu lH; 10 nF oppos	other lengths mber of certii mber of certii ne 20: II 1D E	ficate: 13/200 ficate: TAA00	001GM		
Ingress protection Current consumption Weight CE-conformity ATEX Directive <b>Category of the environment</b> Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) <b>Explosion protection</b> Approval DX15A-LMK 458H Safety technical maximum values Permissible temperatures for environment	(standard: st IP 68 max. 21 mA min. 650 g (v EMC Directiv 2014/34/EU EMV1, EMV1 temperature: humidity: electromagn IBExU 10 AT zone 0 <sup>6</sup> : II 1 U <sub>i</sub> = 28 V, I <sub>i</sub> = the supply cc in zone 0: zone 1 and f	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM D B etic compatib EX 1186 X G Ex ia IIB T = 93 mA, P <sub>i</sub> = onnections ha -20 . iigher: -25 .	V4 vibration: enclosure: ility: 4 Ga 660 mW, C <sub>i</sub> = we an inner ca 60 °C with p. 70 °C	B B D B 94,6 nF; L <sub>i</sub> = 0 µ pacity of max. 1 atm 0.8 bar up to	m possible; nu nu nu nu nu nu nu nu nu nu nu nu nu	other lengths mber of certii mber of certii ne 20: II 1D E site the enclo	ficate: 13/200 ficate: TAA00	001GM		
Ingress protection Current consumption Weight CE-conformity ATEX Directive Category of the environment Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) Explosion protection Approval DX15A-LMK 458H Safety technical maximum values Permissible temperatures for environment Connecting cables	(standard: st IP 68 max. 21 mA min. 650 g (v EMC Directiv 2014/34/EU EMV1, EMV temperature: humidity: electromagn IBExU 10 AT zone 0 <sup>6</sup> : II 1 U <sub>i</sub> = 28 V, I <sub>i</sub> the supply c in zone 0: zone 1 and I cable capaci	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM D B etic compatib TEX 1186 X G Ex ia IIB T- 93 mA, P <sub>i</sub> = ponnections ha -20 . higher: -25 . ty: signa	vibration: enclosure: ility: 4 Ga 660 mW, C <sub>i</sub> = ave an inner ca 60 °C with p. 70 °C al line/shield as	B D B 94,6 nF; L <sub>i</sub> = 0 µ pacity of max. 1 atm 0.8 bar up to s well as signal l	m possible; nu nu nu nu nu nu nu nu nu nu nu nu nu	other lengths mber of certii mber of certii ne 20: II 1D E site the enclo e: 160 pF/m	ficate: 13/200 ficate: TAA00	001GM		
for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive Category of the environment Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) Explosion protection Approval DX15A-LMK 458H Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory)	(standard: st IP 68 max. 21 mA min. 650 g (v EMC Directiv 2014/34/EU EMV1, EMV1 temperature: humidity: electromagn IBExU 10 AT zone 0 <sup>6</sup> : II 1 U <sub>i</sub> = 28 V, I <sub>i</sub> = the supply cc in zone 0: zone 1 and f	ainless steel vithout cable) ve: 2014/30/E 2, EMV3, EM D B etic compatib TEX 1186 X G Ex ia IIB T- 93 mA, P <sub>i</sub> = ponnections ha -20 . higher: -25 . ty: signa	vibration: enclosure: ility: 4 Ga 660 mW, C <sub>i</sub> = ave an inner ca 60 °C with p. 70 °C al line/shield as	B B D B 94,6 nF; L <sub>i</sub> = 0 µ pacity of max. 1 atm 0.8 bar up to	m possible; nu nu nu nu nu nu nu nu nu nu nu nu nu	other lengths mber of certii mber of certii ne 20: II 1D E site the enclo e: 160 pF/m	ficate: 13/200 ficate: TAA00	001GM		

LMK 458 H Technical Data



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

LMK 382, LMK 382H, LMK 458, LMK 458H							
stainless steel 1.4404 (316L)							
according to DIN 2507							
type Ordering code Weight							
	ZSF2540	1.2 kg					
ZSF5040 2.6 kg							
Transmitter flange DN80 / PN16 ZSF8016 4.1 kg							
	LMK 382, LMK 382H, LMK 458 stainless steel 1.4404 (316L) according to DIN 2507	stainless steel 1.4404 (316L) according to DIN 2507 Ordering code ZSF2540 ZSF5040					

#### Mounting flange with cable gland



	dimensions in mm										
size	DN25 /	DN50 /	DN80 /								
SIZE	PN40	DN25 /         DN50 /         DN.           PN40         PN40         PN           18         20         2           115         165         20           14         18         1           68         102         15	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 protectio	rial: TPE (ingress protection IP 68)						
Hole pattern	according to DIN 2507							
Ordering type		Ordering code	Weight					
DN25 / PN40 with cable glane	d brass, nickel plated	ZMF2540	1.4 kg					
DN50 / PN40 with cable glane	d brass, nickel plated	ZMF5040	3.2 kg					
DN80 / PN16 with cable glane	d brass, nickel plated	ZMF8016	4.8 kg					

	Ordering code	e LMK 4	58H		
LMK 458H		1-11-11-	П-П-П-		
Pressure					
in bar, gauge in bar, sealed gauge <sup>1</sup>	7 6 E				aanault
in bar, absolute <sup>1</sup>	764				consult
in mH <sub>2</sub> O	7 6 F				
Input [mH <sub>2</sub> O] [bar]					
0.6 0.06	0 6 0 0				
1.6 0.16	1 6 0 0				
4.0 0.40	4 0 0 0 1 0 0 1				
10 1.0 20 2.0	1 0 0 1 2 0 0 1				
50 5.0	5 0 0 1				
100 10	1 0 0 2				
200 20	2 0 0 2				
customer	1 0 0 2 2 0 0 2 9 9 9 9				consult
Housing					
stainless steel 1.4404 (316L)	1				
copper-nickel-alloy (CuNi10Fe1Mn) customer	9 K				000001
Design	9				consult
probe		1			
flange version <sup>2</sup>		3			
screw-in version		3 5			
Diaphragm					
ceramics Al <sub>2</sub> O <sub>3</sub> 96%		2			
ceramics Al <sub>2</sub> O <sub>3</sub> 99.9%		С			
Output		9			consult
HART <sup>®</sup> -communication					
4 20 mA / 2-wire			Н		
HART <sup>®</sup> -communication					
intrinsic safety 4 20 mA / 2-wire			I		
customer			9		consult
Seals					
FKM			1		
EPDM			3		
FFKM <sup>3</sup>			7 9		anna: It
customer Electrical connection			9		consult
TPE-U-cable (blue, Ø 7.4 mm) <sup>4</sup>			4		
customer			9		
Accuracy					
$P_N \ge 1$ bar: 0.1 % FSO				1	
P <sub>N</sub> < 1 bar: 0.2 % FSO				В	
Cable length		_		9	consult
Cable length in m				999	
Special version				5 5 5 5	
standard				0	0 0
prepared for mounting				5	
with stainless steel pipe 5					
customer				9	9 9 consult

<sup>1</sup> nominal pressure ranges sealed gauge and absolute from 1 bar <sup>2</sup> mounting accessories are not part of supply and have to be ordered separately <sup>3</sup> min. permissible temperature from -15°C

<sup>4</sup> shielded cable with integrated ventilation tube for atmospheric reference

<sup>5</sup> possible for probes in stainless steel; stainless steel pipe is not part of the supply

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## LMK 358H

### Separable Stainless Steel Probe with HART<sup>®</sup>-Communication

Ceramic Sensor

accuracy according to IEC 60770: 0.1 % FSO

#### Nominal pressure

from 0 ... 60 cmH<sub>2</sub>O up to 0 ... 100 mH<sub>2</sub>O

#### **Output signals**

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

#### **Special characteristics**

- diameter 39.5 mm
- HART<sup>®</sup> communication (setting of offset, span and damping)
- permissible temperatures up to 85 °C
- high overpressure resistance
- high long-term stability

#### **Optional versions**

- IS-version
   Ev is = intrinsically acfs for acc
- Ex ia = intrinsically safe for gas and dust
- cable protection on request
- diaphragm 99.9 % Al<sub>2</sub>O<sub>3</sub>
- accessories e.g. mounting flange with cable gland and terminal clamp

The separable stainless steel probe LMK 358H has been designed for level measurement in waste water, waste and higher viscosity media. Basic element is a capacitive ceramic sensor.

In order to facilitate stock-keeping and maintenance the probe head is plugged to the cable assembly with a connector and can be changed easily.

#### Preferred areas of use are



ground water level measurement rain spillway basin



<u>Sewage</u> waste water treatment water recycling

### <u>Fuel and oil</u>

level monitoring in open tanks with low filling heights fuel storage

tank farms biogas plants



Input pressure range <sup>1</sup>											
Nominal pressure gauge	[bar]	0.06	0.16	0.4	1	2	5	10			
Level	[mH <sub>2</sub> O]	0.6	1.6	4	10	20	50	100			
Overpressure	[bar]	2	4	6	8	15	25	35			

Standard	2-wire: 4 20 mA	/ V <sub>s</sub> = 12.	36 V <sub>DC</sub> with HART <sup>®</sup> commu	unication	V <sub>S rated</sub> = 24 V <sub>DC</sub>
Option IS-version	2-wire: 4 20 mA		28 V <sub>DC</sub> with HART <sup>®</sup> commu		V <sub>S rated</sub> = 24 V <sub>DC</sub>
Performance					
Accuracy <sup>2</sup>	P <sub>N</sub> ≥ 160 mbar	TD ≤ 1:5	≤ ± 0.2 % FSO		TD <sub>max</sub> = 1:10
		TD > 1:5	≤ ± [0.2 + 0.03 x TD] % F	SO	
	$P_N < 160 \text{ mbar}$		≤ ± [0.2 + 0.1 x TD] % FS	30	TD <sub>max</sub> = 1:3
	$P_N \ge 1$ bar	TD ≤ 1:5	≤ ± 0.1 % FSO		TD <sub>max</sub> = 1:10
		TD > 1:5	≤ ± [0.1 + 0.02 x TD] % F	SO	
Permissible load	$R_{max} = [(V_S - V_{S min}) /$	0.02 A] Ω	load at HART <sup>®</sup> -communi	cation: R <sub>min</sub> =	= 250 Ω
Long term stability			at reference conditions		
Influence effects	supply: 0.05 % FSC		load: 0.05 % FSO / kΩ		
Turn-on time	850 msec				
Mean response time	140 msec – without	consideration of	electronic damping	measu	ring rate 7/sec
Max. response time	380 msec				
Adjustability		wing parameters	s possible (interface / softwar	e necessarv	3)
,,	- electronic dampin		,	, , , , , , , , , , , , , , , , , , ,	,
	- offset: 0 80 %	0			
	- turn-down of spar				
<sup>2</sup> accuracy according to IEC 60770 - lin					
<sup>3</sup> software, interface, and cable have to			tor Windows <sup>™</sup> 95, 98, 2000, NT	Version 4.0 or	higher, and XP)
Thermal effects (Offset and Spa					
Tolerance band	$\leq \pm (0.2 \text{ x turn-down})$	,			
TC, average	± (0.02 x turn-down)	% FSO / 10 K			
in compensated range	-20 80 °C				
Permissible temperatures	medium / electronic	/ environment / s	storage: -25 85 °C		
Electrical protection <sup>4</sup>					
Short-circuit protection	permanent				
Reverse polarity protection	no damage, but also	no function			
Electromagnetic compatibility	emission and immur		EN 61326		
<sup>4</sup> additional external overvoltage protect	ction unit in terminal box KL	1 or KL 2 with atr	nospheric pressure reference ava	ailable on requ	iest
Mechanical stability					
Vibration	4 g (according to: DI	N EN 60068-2-6	3)		
Electrical connection	<b>J (1111111111111</b>				
Cable with sheath material <sup>5</sup>	PVC (-570°C	C) grey Ø7	7.4 mm		
	PUR (-25 70 °C	C) black Ø7			
	FEP <sup>6</sup> (-25 70 <sup>°</sup>		7.4 mm		
	TPE-U (-25 85 °C	,	7.4 mm		
Bending radius	static installation:	10-fold cabl	e diameter		
	dynamic application:				
<sup>5</sup> shielded cable with integrated ventilat					
<sup>6</sup> do not use freely suspended probes v	will an FEP cable it effects	uue to nighly chai	ging processes are expected		
Materials (media wetted)		4 (0401)			
Housing	stainless steel 1.440	· · /			
Seals	FKM, EPDM, others				
Diaphragm	standard: ceramics				
Destasting and		Al <sub>2</sub> O <sub>3</sub> 99.9 %			
Protection cap	POM-C				
Cable sheath	PVC, PUR, FEP, TP	E-U			
Explosion protection					
Approval DX15A-LMK 358H	IBExU 10 ATEX 118				
	zone 0 <sup>7</sup> : II 1G Ex				
	zone 20: II 1D Ex i				
Safety technical maximum values		, , ,	$C_i = 13,2 \text{ nF}, L_i = 0 \mu H,$	.,	
			er capacity of max. 27 nF opp	osite the end	closure
Dermissible medie temperature	in zone 0:		h p <sub>atm</sub> 0.8 bar up to 1.1 bar		
Permissible media temperature					
·		-25 70 °C			
Connecting cables (by factory)	cable capacitance:	signal line/shiel	d also signal line/signal line: d also signal line/signal line:		

28



Mounting flange with cable gland

#### cable gland M16x1.5 with seal insert (for cable-Ø 4 ... 11 mm) ш 22 n x d2-

ŧ d4-D

	dimensions in mm										
size	DN25 /	DN50 /	DN80 /								
5126	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	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	on IP 68)						
Hole pattern	according to DIN 2507							
Ordering type		Ordering code	Weight					
DN25 / PN40 with cable gland brass	s, nickel plated	ZMF2540	1.4 kg					
DN50 / PN40 with cable gland brass, nickel plated		ZMF5040	3.2 kg					
DN80 / PN16 with cable gland brass	s, nickel plated	ZMF8016	4.8 kg					





Tec	hni	cal	data

Technical data						
Suitable for	all probes with cable $\varnothing$ 5.5 1	0.5 mm				
Material of housing	standard: steel, zinc plated	optionally: stainless ste	eel 1.4301 (304)			
Material of clamping jaws and positioning clips	PA (fibre-glass reinforced)					
Dimensions (mm)	74 x 45 x 32					
Hook diameter	20 mm					
Ordering type		Ordering code	Weight			
Terminal clamp, steel, zinc plated		Z100528	onnroy, 160 g			
Terminal clamp, stainless steel 1.43	301 (304)	Z100527	approx. 160 g			

#### 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	Multicha	nnel process display with graphics-capable LC display	137							
CIT 650	Multicha	nnel process display with graphics-capable LC display and datalogger	hall							
CIT 700 /	CIT 750	Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts								
PA 440	Field dis	play with 4-digit LC display	Fala							
			1 Siles							

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			(	Ord	eri	ng	CO	de	LM	K 3	358	Н									
	LMK 358H			٦-٢	Π		]-[	1-Г	í-Г	1-Г	1-Г	1-Г	1-[]		٦-٢			1-Г		Π	
								1	-		1 -	-			-			1 -			
Pressure				_																	
		in bar in mH₂O	4 4 4 4	5																	
Input	[mH <sub>2</sub> O]	[bar]		0																	
	0.6	0.06		C	) 6	0 0											Г				
	1.6	0.16		1	6	0 0															
	4.0	0.40		4	0	0 0															
	10	1.0		1		0 1															
	20	2.0		2 5	2 0 5 0	0 1 0 1															
	50 100	5.0 10		1	0	0 1 0 2															
	100	customer		c	9	9 9															consult
Housing		cuctomer		, in the second s		0 0															Conoun
	stainless steel 1.44	04 (316L) customer					1 9														consult
Diaphragn	n						Ŭ														Concar
	ceramics /	Al <sub>2</sub> O <sub>3</sub> 96%						2									Т				
	ceramics Al							С													
		customer						9												_	consult
Output									-												
	HART <sup>®</sup> -comr 4 … 20 m	nunication 1A / 2-wire							н												
	HART <sup>®</sup> -comr																				
intr	rinsic safety 4 20 m	nA / 2-wire							I												
		customer							9												consult
Seals		EKA 4																			
		FKM EPDM								1											
		customer								3 9											consult
Electrical	connection	customer								3											consult
	PVC-cable (grey, 9	Ø 7.4 mm) <sup>1</sup>			_	_	_	_	_	_	1						Г				
	PUR-cable (black, \$	Ø 7.4 mm) <sup>1</sup>									2										
	FEP-cable (black, \$	Ø 7.4 mm) <sup>1</sup>									3										
	TPE-U-cable (blue, \$										4										
		customer	_	_	_	_	_	_	_	_	9										consult
Accuracy P <sub>N</sub> ≥1 bar	ſ	).1 % FSO										1									
$P_N \le 1$ bar $P_N < 1$ bar		).1 % FSO ).2 % FSO										B									
customer	L. L											9									consult
Cable leng	gth																				
		in m											9	9 9	9		I				
Special ve	ersion																				
		standard														0 0					
	prepared for with stainless															1 C	6	;			consult
	cable prote																				
	stainless steel corrug															1 C	3		9	9	consult
	with pipe le																		10	5	conoun
		customer													9	9 9	9	)			consult

 $^{\rm 1}$  shielded cable with integrated ventilation tube for atmospheric pressure reference  $^{\rm 2}$  stainless steel pipe is not part of the supply

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## **DCL 531**

### Stainless Steel Probe with RS485 Modbus RTU

Stainless Steel Sensor

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

#### Nominal pressure

from 0 ... 1 mH<sub>2</sub>O up to 0 ... 250 mH<sub>2</sub>O

#### **Output signal**

RS485 with Modbus RTU protocol

#### **Special characteristics**

- diameter 26.5 mm
- small thermal effect
- excellent accuracy
- good long term stability

#### **Optional versions**

- drinking water certificate according to DVGW and KTW
- cable protection via corrugated pipe
- different kinds of cables
- different kinds of seal materials

The stainless steel probe DCL 531 with RS485 interface uses the communication protocol Modbus RTU which has found the way in industrial communication as an open protocol. The Modbus protocol is based on a master slave architecture with which up to 247 slaves can be questioned by a master – the data are transferred in binary form.

Basic element is a high quality stainless steel sensor with high requirements for exact measurement with good long term stability.

#### Preferred areas of use are

#### Water / filtrated sewage



drinking water system, ground water level measurement, rain spillway basin pump and booster stations

level measurement in container water treatment plants water recycling



<u>Fuel and oil</u> fuel storage tank farm



### DCL 531 Technical Data

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	16	25
Level [mH <sub>2</sub> O]		1.6	2.5	4	6	10	16	25	40	60	100	160	250
Overpressure [bar]	1	1	1	2	5	5	10	10	20	40	40	80	80
	0.0		· ·	- 1	0	Ŭ	10	10	20	10	10	00	00
Output signal													
Digital (pressure)	RS485	with Mo	dbus R	TU Proto	ocol								
Supply													
Direct current	V <sub>S</sub> = 9	32 V <sub>c</sub>	C										
Performance													
Accuracy <sup>1</sup>	standa				0.4 bar:		0.50 %						
					0.4 bar:		0.35 %						
Laura tauna atabilita	option:				0.4 bar:		0.25 %	FSO					
Long term stability Measuring rate	≤ ± 0.1 500 Hz		/ year a	t reterer	nce conc	litions							
Delay time													
Delay time         500 msec <sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)         Security													
		usimeni	(11011-1111)ea	anty, nys	<i>eresis, re</i>	pealabili	(y)						
Thermal effects (Offset and Span)				0.40						> 0.4	0		
$\begin{array}{c c} Pressure range P_N & [bar] \\ \hline \end{array}$				0.40						≥ 0.4	-		
Error band [% FSO]			5	≦±1			0 70			≤±0.7	/5		
In compensated range [°C]							0 70						
Permissible temperatures													
Permissible temperatures	mediun	n: -10	. 70 °C				storage	-25	70 °C				
Electrical protection <sup>2</sup>													
Short-circuit protection	permar												
Reverse polarity protection		lage, bu											
Electromagnetic compatibility					ng to EN								
<sup>2</sup> additional external overvoltage protection	on unit in t	terminal b	box KL 1	or KL 2 и	ith atmos	pheric pr	ressure re	eference a	available	e on reque	est		
Electrical connection													
Cable with sheath material <sup>3</sup>	PUR FEP TPE-U	(-10	70 °C 70 °C 70 °C	c) bla	ck Ø7 ck Ø7 ∍ Ø7	.4 mm	(with dri	nking wa	ater an	oroval)			
Cable capacitance					ne/signa								
Cable inductance	-			-	ne/signa								
Bending radius	static ir	nstallatio	n:	10-fold	cable dia	ameter	<b>-</b>						
<sup>3</sup> shielded cable with integrated ventilation	n tube for	atmosph	eric pres	sure refe	rence								
Materials (media wetted)													
Housing	stainles	s steel	1.4404 (	316L)									
Seals	FKM; E	PDM (w	/ithout /	with drir	nking wa	ter appr	oval)			others	on requ	lest	
Diaphragm	stainles	s steel	1.4435 (	316L)									
Protection cap	POM-C	;											
Cable sheath	PUR, F	EP, TPE	E-U										
Miscellaneous													
Drinking water certificate <sup>4</sup>					d UBA K drinking		ertificate	e" is nec	essary)	)			
Adjustable units						-	-			r, atm, m	IH₂O, MI	Pa	
Read out	serial n	umber;	date of o	calibratio	on, min-	and ma	x-value	for pres	sure				
Current consumption	max. 7												
Weight	<u> </u>	. 200 g (	without	cable)									
Ingress protection	IP 68												
CE-conformity		irective:		0/EU									
<sup>4</sup> only possible with EPDM seal in combin	ation with	n TPE-U d	cable										
Wiring diagram													
Supply -	= 9 32	2 V <sub>DC</sub>											
A (+)													

Pin configuration													
Electrical connection		Cá	ble colours (IEC 607	57)									
Supply Supply A	(		WH (white) BN (brown) GN (green)										
	-	YE (yellow)											
Shie Dimensions (mm / in)	GNYE (green yellow)												
15 [4.53]		29] 26,5 [1.04]	protection c	ap removable									
Configuration Modbus RTU													
Standard configuration	001	-	1	-	1								

eeninguruuteri meusue itte					
Standard configuration	001	-	1	-	1
Address					
address	001				
	247				
Baud Rate					
4800 Bd			0		
9600 Bd			1		
19200 Bd			2		
38400 Bd			3		
Parity					
None					0
Odd					1
Even					2
Configuration code (to specify with order)		-		-	

34

cable gland M16x1.5 with seal insert –								
(for cable-Ø 4 11 mm)		•		dimensi	ons in mm			
n x d2		×3	size	DN25 / PN40	DN50 / PN40	DN80 / PN16		
<u>`</u>		1	b	18	20	20		
			D	115	165	200		
		ا م	d2	14	18	18		
		t i i i i i i i i i i i i i i i i i i i	d4	68	102	138		
			f	2	3	3		
	d4	-	k n	85 4	125 4	160 8		
<b>_</b>	k			4	4	U		
	J							
echnical data								
Suitable for	all probes							
Flange material	stainless steel 1.4404 (316L)							
Vaterial of cable gland	standard: brass, nickel plated	on	request: sta	inless steel	1.4305 (303	): plastic		
Seal insert	material: TPE (ingress protection					,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
lole pattern	according to DIN 2507	/						
Drdering type		O	dering code	Э		Weight		
DN25 / PN40 with cable gland	brass, nickel plated		ZMF2540		1.4 kg			
DN50 / PN40 with cable gland	· · ·		ZMF5040			3.2 kg		
DN80 / PN16 with cable gland I	· · ·		ZMF8016			4.8 kg		
sites i i i i i i i i i i i i i i i i i i i			20010010			4.0 Ng		
Ferminal clamp								
- Andrews								
Fechnical data								
Suitable for	all probes with cable $\emptyset$ 5.5 1	0.5 mm						
Material of housing	standard: steel, zinc plated		ptionally: sta	inless steel	1 4301 (304	)		
Material of clamping jaws		0	puonany. sta	11033 31001	1.4001 (004	/		
and positioning clips	PA (fibre-glass reinforced)							
Dimensions (mm)	174 x 45 x 32							
Hook diameter	20 mm							

Hook diameter	20 mm						
Ordering type		Ordering code	Weight				
Terminal clamp, steel, zinc plated		Z100528					
Terminal clamp, stainless steel 1.43	01 (304)	Z100527	approx. 160 g				

				Orde	rin	g	со	de	DC	CL	- 5	31										
	DCL	531			- 🔲			]-[	]-[	]-	·	-	]-[	]-[	]-	·□	]-	- 🔲				
					_																	
Pressure			in bar	4 5 0																		
			in mH <sub>2</sub> O	4 5 0 4 5 1																		
Input	[mH₂O]		[bar]	.101.1																		
		1.0	0.10		1	0	0 0 0 0 0 0 0 0 0 0 0 0 0 1															
		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																	
		16	1.6		1	5																
		25 40	2.5 4.0		4																	
		40 60	6.0		4																	
		100	10		1																	
		160	16		1	6	0 2															
		250	25		2	5	0 2															
			customer		1 2 4 6 1 1 2 9	9	9 9														consul	t
Housing																						
	stainle	ss steel 1.4	1404 (316L)						1													
			customer					ę	9												 consul	t
Diaphragm																						
	stainle	ss steel 1.4	1435 (316L)							1												
Output			customer						,	9											consul	τ
Output		RS485 M	odbus RTU	_		-	-			-	L5											
Seals		110400 10	0000031110								LU											
00010			FKM		_	_	_	_	_	_	_	1										
			EPDM									3										
DVGW/KTW:			EPDM <sup>1</sup>									31	-									
			customer									9									consul	t
Accuracy																						
standard for P <sub>N</sub>			).35 % FSO											3								
standard for P <sub>N</sub>			0.50 % FSO											5								
option for $P_N \ge 0$	.4 bar:	(	0.25 % FSO customer											2 9								
Electrical conn	oction		customer											9							consul	τ
	PLIR-co	able (black	$(0.74 \text{ mm})^2$												2							
	FFP-ca	able (black	Ø 7.4 mm) <sup>2</sup> Ø 7.4 mm) <sup>2</sup>												2							
DVGW/KTW:	TPE-U (	cable (blue	, Ø 7.4 mm) <sup>1, 2</sup>	2											F							
			customer												9						consul	t
Cable length																						
			in m																			
Special version	1																					
			standard															0	0 0	0		
			customer															9	91	9	consul	ι

<sup>1</sup> drinking water certification only possible with EPDM seal (code 3T) in combination with TPE-U cable (code F)
<sup>2</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference



## DCL 571

### **Stainless Steel Probe** with RS485 Modbus RTU

Ceramic Sensor

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

#### Nominal pressure

from 0 ... 1 mH<sub>2</sub>O up to 0 ... 100 mH<sub>2</sub>O

#### **Output signal**

RS485 with Modbus RTU protocol

#### **Special characteristics**

- diameter 22 mm
- good long term stability
- especially for waste water

#### **Optional versions**

- accuracy: 0.25 % FSO
- drinking water certificate according to DVGW and KTW

The stainless steel probe DCL 571 with RS485 interface uses the communication protocol Modbus RTU which has found the way in industrial communication as an open protocol. The Modbus protocol is based on a master slave architecture with which up to 247 slaves can be questioned by a master - the data will transfer in binary form.

The probe was developed for level 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 DCL 551 the outside-diameter is only 22 mm, which allows an easy installation and back fitting in 1" tubes or in cramped fitting conditions.

### 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	[mH₂O]	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
Output signal												
Digital (pressure and terr	nerature)	BS485	with Mor	dhus BTI	J protocol							
Supply	iperature)	110400			5 protocol							
Direct current		V. 0	32 V <sub>D</sub>									
		vs = 9	32 VD	0								
Performance					20							
Accuracy <sup>1</sup>		option	urd: ≤±0 · <+0	).35 % FS ).25 % FS						oth	ers on re	tupet
Long term stability			1 % FSO							Our		40031
Measuring rate		500 H		your								
Delay time		500 m										
<sup>1</sup> accuracy according to IEC	60770 – limi			non-lineari	itv. hvstere	sis, repeata	bilitv)					
Thermal effects (Offset			<i></i>		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,						
Thermal error		-	& ESO for	r nominal	pressure	ranges		in compe	nsated ra	nge 0 7	70 °C	
Permissible temperatur	rae	= 1.0 /		nonnia	pressure	langes		meempe	nsalou ra	nge 0 /	00	
-		una a aliu u		05	05.00							
Permissible temperature	5	meaiu	m / storag	je∠5	. 05 °C							
Electrical protection <sup>2</sup>		1										
Short-circuit protection		perma										
Reverse polarity protection			nage, but									
Electromagnetic compati		1			<u> </u>	to EN 613		-				
<sup>2</sup> additional external overvolt	tage protectio	on unit in	terminal b	ox KL 1 or	KL 2 with a	atmospheric	c pressure	reference	available o	n request		
Electrical connection												
Cable with sheath materi	ial <sup>3</sup>					.4 mm (v			approval)			
Cable capacitance		signal	line/shield	d also si	ignal line/	signal line	: 160 pF/	m				
Cable inductance		signal	line/shield	d also si	ignal line/	signal line	:1 µH/m					
Bending radius			nstallation			le diamete						
2			ic applica			le diamete	er					
<sup>3</sup> shielded cable with integra		n tube fo	r atmosphe	eric pressu	ire referenc	e						
Materials (media wetter	a)				(01)							
Housing			ss steel 1		,						ers on rec	
Cable					ng water a						ers on rec	
Seals (O-rings)				-	ter approv	/al)				othe	ers on rec	luest
Diaphragm			ics Al <sub>2</sub> O <sub>3</sub>	99,9 %								
Protection cap		POM-0										
Cable sheath		TPE-U										
Miscellaneous												
Drinking water certificate	4				70 and UI "with drin	BA KTW king wate	r certifica	te" is nec	essarv)			
Adjustable units						r, mbar, g/				ıtm. mH₀C	). MPa	
Read out						min- and r					, ini a	
Current consumption		max. 7			inoration,	and i	nax value		5010			
Weight		-	(. 180 g (\	without ca	able)							
Ingress protection		IP 68			2010)							
CE-conformity			Directive:	2014/30/	FII							
<sup>4</sup> only possible with EPDM s	eal in combir				20							
Wiring diagram		iution m		4010								
	Supply + Supply - A (+)	V <sub>S</sub> = 9	32 V <sub>DC</sub>									
RS 485	B (-)											



Configuration Modbus RTU					
Standard configuration	001	-	1	-	1
Address			•	•	
Address	001				
	247				
Baud Rate			•	•	
4800 Bd			0		
9600 Bd			1		
19200 Bd			2		
38400 Bd			3		
Parity		•	•	•	
None					0
Odd					1
Even					2
					-
Configuration code (to specify with order)		-		-	

### 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	ll probes						
Flange material	stainless steel 1.4404 (316L)	tainless steel 1.4404 (316L)						
Material of cable gland	standard: brass, nickel plated	tandard: 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	s, nickel plated	ZMF2540	1.4 kg					
DN50 / PN40 with cable gland brass	s, nickel plated	ZMF5040	3.2 kg					
DN80 / PN16 with cable gland brass	s, nickel plated	ZMF8016	4.8 kg					

#### Terminal clamp



Technical data								
Suitable for	all probes with cable $\varnothing$ 5.5 1	II probes with cable $\varnothing$ 5.5 10.5 mm						
Material of housing	standard: steel, zinc plated	tandard: steel, zinc plated optionally: stainless steel 1.4301 (304)						
Material of clamping jaws and positioning clips	PA (fibre-glass reinforced)	PA (fibre-glass reinforced)						
Dimensions (mm)	174 x 45 x 32	174 x 45 x 32						
Hook diameter	20 mm							
Ordering type		Ordering code	Weight					
Terminal clamp, steel, zinc plat	ted	Z100528	approx 160 a					
Terminal clamp, stainless steel	1.4301 (304)	Z100527	approx. 160 g					

			Orc	ler	in	g	coc	le D	)CL	57	1									
	DCL 571			-		T	]-[	]-[	]-[	]-[	]-[	]-[]	-	]-[			-			
Pressure																				
		gauge in bar	3 6 0																	
		uge in mH <sub>2</sub> O	3 6 1																	
Input	[mH <sub>2</sub> O]	[bar]																		
	1.0	0.10		1	0	0 0	)													
	1.6	0.16		1	6 5	0	)													
	2.5	0.25		2 4 6	5	0 0														
	4.0 6.0	0.40 0.60		4	0 0	0 0														
	10	1.0		1	0	0														
	16	1.6		1	6	0	1													
	25	2.5		2	5		1													
	40	4.0		2 4		0	1													
	60	6.0		6	0	0	1													
	100	10		1	0	0	2													
		customer		9	0 9	0 2	9													consult
Housing																				
	stainless steel 1.	. ,																		
		customer					9	9												consult
Design		probo						4												
Disalar		probe		_	_	_	_	1					_				_		_	
Diaphragm	ooromioo /	Al <sub>2</sub> O <sub>3</sub> 99.9 %	_	-	-	-	-	-	0				-				-			
	Ceramics P								C											
Output		customer							9											consult
Output	DS485 N	/lodbus RTU	_						_	L5			_							
	N3403 N	customer								9										consult
Seals		customer								9	1									COnsult
DVGW / KTW:		EPDM <sup>1</sup>									3Т	-								
2.2.7 ((1)).		customer									9									consult
Electrical conn	ection										Ū									
DVGW / KTW:	TPE-U-cable (blue	e, Ø 7.4 mm) <sup>1,</sup>	, 2									F								
		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 9	0	
		customer															9	9	9	consult

 $^1$  drinking water certification only possible with EPDM seal (code 3T) in combination with TPE-U cable (code F)  $^2$  shielded cable with integrated ventilation tube for atmospheric pressure reference



# LMP 305

### **Slimline Probe**

Stainless Steel Sensor

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

#### Nominal pressure

from 0 ... 1 mH<sub>2</sub>O up to 0 ... 250 mH<sub>2</sub>O

#### **Output signals**

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

#### **Special characteristics**

- diameter 19 mm for confined space conditions
   e. g. in 1" pipes
- small thermal effect
- good long term stability
- excellent linearity

#### **Optional versions**

- ► different kinds of cable
- customer specific versions
   e. g. special pressure ranges

The slimline probe LMP 305 with silicon stainless steel sensor is designed for continous level measurement in confined space conditions e.g. 1" pipes. Permissible media are clean or lightly polluted water and thin fluids.

A piezoresistiv stainless steel sensor with low thermal error, an excellent linearity and a long term stability, is basis of LMP 305.

#### Preferred areas of use are

#### <u>Water</u>

level measurement in confined space conditions



ground water monitoring

depth or level measurement in wells and open waters

drinking water system

level measurement in container



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	16	25
Level	[mH <sub>2</sub> O]	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250
Overpressure	[bar]	1	1	1	1	3	3	6	6	20	20	60	60	100
Output signal / Supply														
2-wire		4 20	) mA / V	s = 12	. 36 V <sub>D</sub>	:								
Performance				5		,								
Accuracy <sup>1</sup>		standa	ard: n	ominal r	pressure	e > 0.4 b	ar: ≤:	± 0.35 %	6 FSO					
· · · · · · · · · · · · · · · · · · ·				•		e ≤ 0.4 b		± 0.50 %						
		option	: n	ominal r	oressure	e > 0.4 b	ar: ≤:	± 0.25 %	6 FSO					
Permissible load			$= [(V_{\rm S} - V_{\rm S min}) / 0.02 \text{ A}] \Omega$											
Influence effects			: 0.05 %							loa	d: 0.05	% FSO /	′ kΩ	
Long term stability						ence con	ditions							
Response time		≤ 10 m	nsec											
<sup>1</sup> accuracy according to IEC 6	0770 – limi	t point ac	ljustment	(non-line	arity, hy	steresis, r	epeatabi	lity)						
Thermal effects (Offset a	and Span	)												
Nominal pressure $P_N$	[bar]		≤ 0.1		≤ 0.			≤ 0.4		5	≤ 1		> 1	
	[% FSO]		≤±2		≤±	1.5		≤±1		≤	± 1		≤±0.7	75
<u> </u>	O / 10 K]		± 0.3		± 0			± 0.14		±	0.1		± 0.0	7
In compensated range	[°C]				0	50						0 70		
Permissible temperature	s													
Permissible temperatures		mediu	m: -10	. 70 °C						sto	rage: -2	5 70 °	°C	
Electrical protection <sup>2</sup>														
Short-circuit protection		perma	nent											
Reverse polarity protection	n	no dar	nage, bi	ut also n	o functi	on								
Electromagnetic compatibility emission and immunity according to EN 61326														
<sup>2</sup> additional external overvolta	ge protectio	on unit in	terminal	box KL 1	or KL 2	with atmo	spheric	oressure	reference	e availabi	e on requ	uest		
Electrical connection														
Cable with sheath materia	<sup>3</sup>		(-10	70 °C)	black	Ø 7.4 m Ø 7.4 m Ø 7.4 m	m							
Cable capacitance		signal	line/shie	ld also	signal	line/sign	al line:	160 pF/	m					
Cable inductance		signal	line/shie	ld also	signal	line/sign	al line:	1 µH/m						
Bending radius			nstallatio			l cable d cable d								
<sup>3</sup> shielded cable with integrate <sup>4</sup> do not use freely suspended		n tube fo	or atmosp	heric pre	ssure ref	erence			expected	1				
Materials (media wetted)							• ·							
Housing		stainle	ss steel	1.4404	(316L)									
Seals		FKM,			<u> </u>									
Diaphragm		· · ·	ss steel	1.4435	(316L)									
Protection cap		POM-0	С											
Cable sheath		PVC, I	PUR, FE	P, other	rs on re	quest								
Miscellaneous														
Current consumption		max. 2	25 mA											
Weight		approx	. 100 g	(without	cable)									
Ingress protection		IP 68												
CE-conformity		EMC [	Directive	: 2014/3	0/EU									
Wiring diagram														
2-wire-system (current)														
p supply + supply -	A)	-												



Mounting flange with cable gland



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	all probes	probes						
Flange material	stainless steel 1.4404 (316L)	ainless steel 1.4404 (316L)						
Material of cable gland	standard: brass, nickel plated	andard: brass, nickel plated on request: stainless steel 1.4305 (303); plastic						
Seal insert	naterial: TPE (ingress protection IP 68)							
Hole pattern	according to DIN 2507							
Ordering type		Ordering code	Weight					
DN25 / PN40 with cable gland brass	s, nickel plated	ZMF2540	1.4 kg					
DN50 / PN40 with cable gland brass	s, nickel plated	ZMF5040	3.2 kg					
DN80 / PN16 with cable gland brass	s, nickel plated	ZMF8016	4.8 kg					

#### Terminal clamp



Technical data								
Suitable for	all probes with cable $\varnothing$ 5.5 1	probes with cable $\varnothing$ 5.5 10.5 mm						
Material of housing	standard: steel, zinc plated	tandard: steel, zinc plated optionally: stainless steel 1.4301 (304)						
Material of clamping jaws and positioning clips	PA (fibre-glass reinforced)	A (fibre-glass reinforced)						
Dimensions (mm)	174 x 45 x 32	174 x 45 x 32						
Hook diameter	20 mm							
Ordering type		Ordering code	Weight					
Terminal clamp, steel, zinc plat	ted	Z100528	approx 160 g					
Terminal clamp, stainless steel	1.4301 (304)	Z100527	approx. 160 g					

#### 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



	Ordering code LMP 305	
LMP 305		
Pressure		
in bar	4 0 0 4 0 1	
in mH <sub>2</sub> O Input [mH <sub>2</sub> O] [bar]		
1.0 0.10	1 0 0 0	_
1.6 0.16		
2.5 0.25		
4.0 0.40	2 5 0 0 4 0 0 0	
6.0 0.60	6 0 0 0	
10 1.0		
16 1.6 25 2.5	1 6 0 1 2 5 0 1	
40 4.0	1 6 0 1 2 5 0 1 4 0 0 1	
60 6.0		
100 10	1 0 0 2 1 6 0 2 2 5 0 2 9 9 9 9	
160 16	1 6 0 2	
250 25	2 5 0 2	
customer	9 9 9 9	consult
Housing		
stainless steel 1.4404 (316L)	1 9	oonoult
Diaphragm	9	consult
stainless steel 1.4435 (316L)	1	
customer	9	consult
Output		
4 20 mA / 2-wire	1	
customer	9	consult
Seals		
FKM		
EPDM customer	3 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	consult
Accuracy	9	consult
standard for $P_N > 0.4$ bar 0.35 % FSO	3	
standard for $P_N \le 0.4$ bar $0.5 \%$ FSO	5	
option for $P_N > 0.4$ bar 0.25 % FSO	2 2 9 9	
customer	9	consult
Electrical connection		
PVC-cable (grey, Ø 7.4 mm) <sup>1</sup>		
PUR-cable (black, Ø 7.4 mm) <sup>1</sup> FEP-cable (black, Ø 7.4 mm) <sup>1</sup>		
customer	9	consult
Cable length	3	consult
in m	9 9 9	
Special version		
standard	0 0 0	
customer	9 9 9	consult

### Ordering code LMP 305

<sup>1</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference



## LMP 307

## **Stainless Steel Probe**

**Stainless Steel Sensor** 

accuracy according to IEC 60770: standard: 0.35 % FSO options: 0.25 % / 0.1 % FSO

#### **Nominal pressure**

from 0 ... 1 mH<sub>2</sub>O up to 0 ... 250 mH<sub>2</sub>O

#### **Output signals**

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

#### **Special characteristics**

- diameter 26.5 mm
- small thermal effect
- high accuracy
- good long term stability

#### **Optional versions**

- IS-version
   Ex ia = intrinsically safe for gas and dust
- ► SIL 2 (Safety Integrity Level)
- drinking water certificate according to DVGW and KTW
- different kinds of cables and elastomers
- petrol-version welded pressure sensor and housing
- mounting with stainless steel pipe

The stainless steel probe LMP 307 is designed for continuous level measurement in water and clean or lightly polluted fluids.

Basic element is a high quality stainless steel sensor with high requirements for exact measurement with good long term stability.

#### Preferred areas of use are

<u>Water / filtrated sewage</u> drinking water systems ground water level meas

ground water level measurement rain spillway basins pump and booster stations level measurement in containers water treatment plants water recycling



*Fuel and oil* fuel storage tank farms



## LMP 307 Technical Data

Input pressure range													
Nominal pressure gauge [bar	1 0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25
Level [mH <sub>2</sub> O	-	1.6		4	6	10	16	2.5	4	60	100	160	250
Overpressure [bar		1.6	2.5 1	2	5	5	10	10	20	40	40	80	250 80
• •	-			3	7.5	7.5	15	15	20	50	50		
Burst pressure ≥ [bar	]  1.5	1.5	1.5	3	7.5	7.5	15	15	25	50	50	120	120
Output signal / Supply													
Standard	2-wire	: 4.	20 mA	4 / V <sub>S</sub> =	= 83	2 V <sub>DC</sub>					: 14 2		
Option IS-version	2-wire	: 4.	20 mA	4 / V <sub>s</sub> =	= 10 2	8 V <sub>DC</sub>					: 14 2		
Options 3-wire	3-wire	B-wire: 0 20 mA / $V_S = 14$ 30 $V_{DC}$ 0 10 V / $V_S = 14$ 30 V									0 V <sub>DC</sub>		
Performance													
Accuracy <sup>1</sup>	standa				< 0.4 ba		≤ ± 0.5	% FSO					
					≥ 0.4 ba			5 % FS(					
	option				≥ 0.4 ba			5 % FS					
Permissible load	option				essures:			% FSO					
remissible load		nt 3-wire			/ <sub>S min</sub> ) / 0	.02 AJ 9		e 3-wire:	D 1	0 kO			
Influence effects		/: 0.05 %					0	.05 % F					
Long term stability					ence con	ditione	10au. 0	.05 /6 F	30 / KSZ				
	_	:≤10 m	-			unions	3-wiro:	< 3 mc	00				
Response time <sup>1</sup> accuracy according to IEC 60770 – lin				aaritu bu	etorocia	onooto!		≤3 ms	50				
		Jusiment	(non-line	any, ny	sieresis, I	epealat	mity)						
Thermal effects (Offset and Spa	-			. 0	40						. 0.40		
Nominal pressure P <sub>N</sub> [bar	•			< 0.							$\geq 0.40$		
Tolerance band [% FSO	•			≤ ±	I		0 70			5	≤ ± 0.75		
in compensated range [°C	1						0 70						
Permissible temperatures													
Permissible temperatures	mediu	m: -10.	70 °C				storage	e: -25	70 °C				
Electrical protection <sup>2</sup>													
Short-circuit protection	perma												
Reverse polarity protection	no dar	nage, bi	ut also n	io functi	on								
Electromagnetic compatibility				,	ding to E								
<sup>2</sup> additional external overvoltage protect	ction unit ii	n terminal	box KL	1 or KL 2	with atmo	ospheric	pressure	referenc	e availab	le on req	uest		
Electrical connection													
Cable with sheath material <sup>3</sup>	PVC		. 70 °C)		Ø 7.4 r								
	PUR	(-10 (-10	. 70 °C)		Ø 7.4 r Ø 7.4 r								
		J (-10					(withou	it / with a	drinkina	water c	ertificate	a)	
Bending radius			,		e diamet		<u>`</u>		<u> </u>		able diar	/	
<sup>3</sup> shielded cable with integrated ventilation													
<sup>4</sup> do not use freely suspended probes w	vith an FE	P cable if	effects d	lue to hig	hly chargi	ing proc	esses are	expected	1				
Materials (media wetted)													
Housing		ess steel		<u>, ,</u>									
Seals				with dr	inking wa	ater ce	rtificate),						
		d versio									others of	on reque	est
Diaphragm		ess steel	1.4435	(316L)									
Protection cap	POM-												
Cable sheath		PUR, FE											
<sup>5</sup> not in combination with SIL version a				EP cable	e possible								
Explosion protection (only for 4				<b>X</b> ( )		F 40.0	071/						
Approvals DX19-LMP 307					ECEx IB	E 12.00	J27X	7000	20· II 47		IIIC T 85		
Safety technical maximum values		): II 1G			mW, C <sub>i</sub>	≈0n⊏	l.≈0		LU. II II			o Da	
Callety technical maximum values					an inner				to the h	ousina			
Ambient temperature range					<sub>tm</sub> 0.8 ba	•	•		1 zone 1	-	ner: -2	0 70 °	С
Connecting cables	_	capacita			ine/shiel					<u> </u>			-
(by factory)		inductar		0	ine/shiel		0	0					
Miscellaneous				-									
Option SIL 2 version 6	accord	ding to II	EC 6150	08 / IEC	61511								
Drinking water certificate <sup>7</sup>	accord	ding to D	VGW V	V 270 ar	nd UBA I	KTW							
	(with o	order the	indicati	ion "with	ı drinking	g water	certifica	te" is ne	cessary	')			
Current consumption		output o			5 mA			signal	output	voltage:	max. 7	mA	
Weight		x. 200 g	(withou	t cable)									
Ingress protection	IP 68												
CE-conformity	EMC	Directive	: 2014/3	30/EU									
ATEX Directive	2014/	34/EU											
<sup>6</sup> not in combination with the accuracy of													
<sup>7</sup> only possible with EPDM seal in comb	onation wi	th TPE-U	cable; no	ot possib	le with IS-	version	(explosio	n protecti	on)				

LMP 307 Technical Data



➡ Total length of devices with accuracy 0.1 % FSO IEC 60770 increases by 35 mm!

Mounting flange with cable gland

#### cable gland M16x1.5 with seal insert (for cable- $\varnothing$ 4 ... 11 mm) dimensions in mm DN25 / PN40 DN50 / PN40 53 size n x d2 b 18 D 115 d2 14 68 2 85 d4 f ŧ k ci4 -4 n Тес

	D				
Technical data					
Suitable for	all probes				
Flange material	stainless steel 1.4404 (316L)				
Material of cable gland	standard: brass, nickel plated	on request: stainless stee	l 1.4305 (303); plastic		
Seal insert	material: TPE (ingress protection	on IP 68)	· · · ·		
Hole pattern	according to DIN 2507				
Ordering type		Ordering code	Weight		
DN25 / PN40 with cable gland b	rass, nickel plated	ZMF2540	1.4 kg		
DN50 / PN40 with cable gland b	rass, nickel plated	ZMF5040 3.2 kg			
DN80 / PN16 with cable gland b	rass, nickel plated	ZMF8016	4.8 kg		

Terminal clamp



Technical data								
Suitable for	all probes with cable $\varnothing$ 5.5	10.5 mm						
Material of housing	standard: steel, zinc plated	andard: 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	174 x 45 x 32						
Hook diameter	20 mm							
Ordering type		Ordering code	Weight					
Terminal clamp, steel, zinc plated		Z100528	22272× 160 g					
Terminal clamp, stainless steel 1.4	301 (304)	Z100527 approx. 160 g						

#### 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		35
CIT 650	Multichannel process display with graphics-capable LC display and datalogger	279	3.0
CIT 700 /	CIT 750 Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts		
PA 440	Field display with 4-digit LC display	Telle Ter	
For furth	er information please contact our sales department or visit our homepage:		32

DN80 / PN16

20

200

18

138

3

160

8

20

165

18

102

3 125

4

http://www.bdsensors.com

	Ordering code LMP	307
LMP 307		]-[]-[]-[]-[]-[]]-[]]-[]]-[]]-[]]-[]]-[
Pressure		
in bar in mH <sub>2</sub> O	4 5 0 4 5 1	
Input [mH <sub>2</sub> O] [bar] 1.0 0.10	1 0 0 0 1 6 0 0	
1.6 0.16 2.5 0.25	1 6 0 0 2 5 0 0	
4.0 0.40 6.0 0.60	4 0 0 0	
10 1.0	1 0 0 1	
16 1.6 25 2.5	1 6 0 1 2 5 0 1	
40 4.0 60 6.0	4 0 0 1 6 0 0 1	
100 10	1 0 0 2	
160 16 250 25	1 6 0 2 2 5 0 2 9 9 9 9	
Customer	9 9 9 9	consult
stainless steel 1.4404 (316L)	1	
Diaphragm	9	consult
stainless steel 1.4435 (316L)	1	acrossite and a second
Output	9	consult
4 20 mA / 2-wire 0 20 mA / 3-wire	1	
0 10 V / 3-wire intrinsic safety 4 20 mA / 2-wire	3 E	
SIL2 4 20 mA / 2-wire	15	
SIL 2 with Intrinsic safety 4 20 mA / 2-wire	E	s
customer	9	consult
FKM		1
EPDM DVGW/KTW: EPDM 1		3 3T
petrol-version: without (welded version) 2 customer	.4	21 9 consult
Accuracy		
standard for $P_N \ge 0.4$ bar0.35 % FSOstandard for $P_N < 0.4$ bar0.5 % FSO		3 5 6
option 1 for $P_N \ge 0.4$ bar 0.25 % FSO		2
customer		9 consult
Electrical connection PVC-cable (grey, Ø 7.4 mm) <sup>s</sup>		1
PUR-cable (black, Ø 7.4 mm)		3
FEP-cable (black, Ø 7.4 mm) <sup>3</sup> TPE-U-cable (blue, Ø 7.4 mm) <sup>3</sup>		4
DVGW/KTW: TPE-U-cable (blue, Ø 7.4 mm) <sup>1</sup>	3	F
customer		9 Consult
Cable length in m		
standard: 3 m PVC standard: 5 m PVC		0 0 3 0 0 5
standard: 10 m PVC		0 1 0
standard: 15 m PVC standard: 20 m PVC		0 1 5 0 2 0 9 9 9
special length PVC		
standard: 3 m PUR standard: 5 m PUR		0 0 3 0 0 5
standard: 10 m PUR		0 1 0
standard: 15 m PUR standard: 20 m PUR		0 1 5 0 2 0
special length PUR		9 9 9
standard: 5 m FEP		0 0 5 0 1 0
standard: 10 m FEP special length FEP		0 1 0 9 9 9
special length TPE-U		9 9 9
Special version standard		0 0 0
prepared for mounting with stainless steel pipe		5 0 3
customer	3T) in combination with TPE-U cable (code F); not pos	

<sup>1</sup> drinking water certification only possible with EPDM seal (code 3T) in combination with TPE-U cable (code F); not possible with IS version (explosion protection) <sup>2</sup> not in combination with SIL

<sup>3</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference

 $^{\rm 4}$  petrol-version only in combination with FEP cable

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



# LMP 307T

## Level and Temperature Transmitter

Stainless Steel Sensor

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

#### Nominal pressure / nominal temperature

from 0 ... 1 mH<sub>2</sub>O up to 0 ... 250 mH<sub>2</sub>O

from 0 ... 30 °C up to 0 ... 70 °C

others on request

#### **Output signals**

2-wire: 4 ... 20 mA (pressure)

2-wire: 4 ... 20 mA (temperature)

#### Special characteristics

- diameter 26.5 mm
- separate output signals for pressure and temperature ranges
- easy handling
- low maintenance and wiring costs

#### **Optional versions**

- drinking water certificate according to DVGW and KTW
- different kinds of cables and elastomers
- customer specific versions

BD|SENSORS has developed the stainless steel submersible probe LMP 307T for continuous level and temperature measurement in water and in clean or lightly polluted fluids. The advantage: simultaneous recording of level and temperature with separate independent signal amplification. The maintenance and wiring costs are considerably reduced.

In addition to classical signal processing of the level, an additional signal circuit independent of the level which converts the temperature signal into a 4 ... 20 mA analogue signal in 2-wire technology is provided.

Typical application areas are, for example, drinking water purification, monitoring of rain spillway basins or river courses and level measurement in containers or tank batteries.

#### Preferred areas of use are



<u>Water / filtrated sewage</u> drinking water system rain spillway basins water recycling



*Fuel and oil* tank farm



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	16	25
Level	[Dai] [mH <sub>2</sub> O]	1	1.6	2.5	4	6	10	1.0	2.5	40	60	100	160	250
Overpressure	[bar]	0.5	1.0	1	2	5	5	10	10	20	40	40	80	80
Burst pressure >	[bar]	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50	50	120	120
Durst pressure <u>&gt;</u>	[bai]	1.5	1.5	1.5	5	7.5	7.5	15	15	25	50	50	120	120
Input temperature range														
Temperature measuring ra	inge		0 20	•		0 5	<u></u>			70.00		a tha ra		
standard:	0	0 30 °C 0 50 °C 0 70 °C									others	s on requ	est '	
<sup>1</sup> min. temperature range: 30°C	C; max. ten	nperature	e range: 8	30°C; min	. temper	ature: -10	°C; max.	tempera	ture: 70 °	°C				
Output signal / Supply														
2-wire (pressure) <sup>2</sup>		4 20	mA / V	s = 10	. 30 V <sub>DC</sub>	;								
2-wire (temperature) <sup>2</sup>		4 20	mA / V	<sub>s</sub> = 10	. 30 V <sub>DC</sub>	;								
<sup>2</sup> the circuits are galvanically is	solated from	n each oi	her											
Performance														
Accuracy (pressure) <sup>3</sup>		standa	rd: no	ominal p	ressure	< 0.4 ba	ar: :	≤±0.5 °	% FSO					
, , ,						≥ 0.4 ba		≤ ± 0.35	% FSO					
		option	1: no	ominal p	ressure	≥ 0.4 ba	ar: s	≤ ± 0.25	% FSO					
Accuracy (temperature) 4														
Permissible load		R <sub>max</sub> =	$[(V_s - V_s)]$	/ <sub>S min</sub> ) / 0	.02 A] G	2								
Influence effects				5 FSO /			l	oad: 0.0	)5 % FS	Ο / kΩ				
Long term stability						ence con	ditions							
Response time						-wire (pr		)						
<sup>3</sup> accuracy according to IEC 60		t point ac	ljustment	(non-line	arity, hy	steresis, ı	epeatabi	lity)						
<sup>4</sup> Pt100 class B; compensation		1 h dep	ending or	n constan	t temper	ature and	environr	nental re	spectivel	y mass c	ondition	s		
Thermal effects (Offset and														
Nominal pressure P <sub>N</sub>	[bar]				0.40						<u>&gt;</u> 0.4			
	% FSO]			5	≤±1						≤±0	.75		
in compensated range	[°C]							0 70						
Permissible temperatures														
Permissible temperatures		mediur	n: -10.	70 °C			5	storage:	-25	70 °C				
Electrical protection <sup>5</sup>														
Short-circuit protection		perma	nent											
Reverse polarity protection	ı	no dan	nage, bi	ut also n	o functi	on								
Electromagnetic compatibi	lity	emissi	on and i	mmunity	/ accord	ling to E	N 61326	3						
<sup>5</sup> additional external overvolta	ge protecti	on unit in	terminal	box KL 1	or KL 2	with atmo	ospheric	oressure	reference	e availabi	le on red	quest		
Electrical connection														
Cable with sheath material	6	PVC	(-5	. 70 °C)	grey	Ø 7.4 r	nm							
		PUR		. 70 °C)		Ø 7.4 r								
						Ø 7.4 r		,	,					
Cable canacitance						Ø 7.4 r			/with dri	nking wa	ater cei	uficate)		
Cable capacitance					-	line/sign			11					
Cable inductance			ine/snie nstallatio			line/sign cable d								
Bending radius			ic applic			cable d								
<sup>6</sup> shielded cable with integrate	d ventilatio						amotor							
<sup>7</sup> do not use freely suspended							ng proce	sses are	expected					
Materials (media wetted)														
Housing			ss steel	1.4404	(316L)									
Seals		FKM												
						vater cer	tíficate)				other	s on req	uest	
Diaphragm				1.4435	(316L)									
Protection cap		POM-0												
Cable sheath		PVC, F	'UR, FE	P, TPE-	-U, othe	rs on re	quest							
Miscellaneous														
Drinking water certificate 8						nd UBA I n drinking		certifica	te" is ne	cessarv	)			
Current consumption		max. 2					,	2.2.1.100		y	/			
Weight				(without	cable)									
Ingress protection		IP 68	<u>200 g</u>	minout	. 50510)									
CE-conformity			)irective	: 2014/3	0/FU									
	al in combin	1												
<sup>8</sup> only possible with EPDM sea	aı ın combir	nation wit	n IPE-U	cable										





	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

Technical data									
Suitable for	all probes	probes							
Flange material	stainless steel 1.4404 (316L)	less steel 1.4404 (316L)							
Material of cable gland	standard: brass, nickel plated	on request: stainless stee	el 1.4305 (303); plastic						
Seal insert	material: TPE (ingress protection	rial: TPE (ingress protection IP 68)							
Hole pattern	according to DIN 2507								
Ordering type		Ordering code	Weight						
DN25 / PN40 with cable gland brass	s, nickel plated	ZMF2540	1.4 kg						
DN50 / PN40 with cable gland brase	s, nickel plated	ZMF5040	3.2 kg						
DN80 / PN16 with cable gland brase	s, nickel plated	ZMF8016	4.8 kg						

### Terminal clamp



Technical data									
Suitable for	all probes with cable $\varnothing$ 5.5	probes with cable $\varnothing$ 5.5 10.5 mm							
Material of housing	standard: steel, zinc plated	ndard: steel, zinc plated optionally: stainless steel 1.4301 (304)							
Material of clamping jaws and positioning clips	PA (fibre-glass reinforced)	(fibre-glass reinforced)							
Dimensions (mm)	174 x 45 x 32	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 approx. 160 g							

#### 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	2468
CIT 600	Multichannel process display with graphics-capable LC display	35.65
CIT 650	Multichannel process display with graphics-capable LC display and datalogger	2799.9 14.58
CIT 700 /	CIT 750 Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts	
PA 440	Field display with 4-digit LC display	Later inter
	er information please contact our sales department or homepage: http://www.bdsensors.de	35.45

	Ordering code LMP 307T	
LMP 307T		]-[]]]
Pressure in bar	4 5 5	_
in mH <sub>2</sub> O Input [mH <sub>2</sub> O] [bar]	4 5 6	
1.0 0.10 1.6 0.16		
2.5 0.25	2 5 0 0	
4.0 0.40 6.0 0.60		
10 1.0 16 1.6		
25 2.5	2 5 0 1	
40 4.0 60 6.0	4 0 0 1 6 0 0 1	
100 10		
160 16 250 25	1 6 0 2 2 5 0 2	
customer	9999	consult
0 30	0 0 x 3 0	
0 50 0 70	0       0       x       3       0         0       0       x       5       0         0       0       x       7       0         9       9       9       9       9	
customer	9 9 9 9 9 9	consult
Housing stainless steel 1.4404 (316L)	1	
customer	9	consult
Diaphragm stainless steel 1.4435 (316L)	1	
customer	9 9	consult
Output pressure 4 20 mA / 2-wire	1	
Output temperature 4 20 mA / 2-wire	1	
Seals		
FKM EPDM		
DVGW/KTW: EPDM	1 3T	
Accuracy	9	consult
standard for $P_N \ge 0.4$ bar 0.35 % FSO	3	
standard for $P_N < 0.4$ bar 0.5 % FSO option 1 for $P_N \ge 0.4$ bar 0.25 % FSO	5 2	
customer Electrical connection	9	consult
PVC-cable (grey, Ø 7.4 mm)		
PUR-cable (black, Ø 7.4 mm) FEP-cable (black, Ø 7.4 mm)	2 2 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
TPE-U-cable (blue, Ø 7.4 mm)	<sup>2</sup> 4	
DVGW/KTW: TPE-U-cable (blue, Ø 7.4 mm)	1,2 F	
customer	9	consult
Cable length in m		
standard: 3 m PVC standard: 5 m PVC	0 0 3 0 0 4 0 1 0	3
standard: 10 m PVC	0 0 3	) )
standard: 15 m PVC standard: 20 m PVC	0 1 3	5
special length PVC	9 9	ð l
standard: 3 m PUR standard: 5 m PUR		3
standard: 10 m PUR	0 1 0	0
standard: 15 m PUR standard: 20 m PUR	0 2 0	2
special length PUR standard: 5 m FEP	9 9 9 0 0	5
standard: 10 m FEP	0 1 0	) )
special length FEP special length TPE-U	9 9 9 9 9	) )
Special version	3 3 4	
standard customer		0 0 0 9 9 9 consult

 $^{\rm 1}$  drinking water certification only possible with EPDM seal (code 3T) in combination with TPE-U cable (code F)  $^{\rm 2}$  shielded cable with integrated ventilation tube for atmospheric pressure reference

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



## LMP 308

### Separable Stainless Steel Probe

Stainless Steel Sensor

accuracy according to IEC 60770: standard: 0.35 % FSO option: 0.25 % FSO / 0.1 % FSO

#### Nominal pressure

from 0 ... 1 mH<sub>2</sub>O up to 0 ... 250 mH<sub>2</sub>O

#### **Output signals**

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

#### **Special characteristics**

- diameter 35 mm
- cable and probe head separable
- high accuracy
- good long term stability

#### **Optional versions**

- IS-version
   Ex ia = intrinsically safe for gas and dust
- SIL 2 (Safety Integrity Level)
- customer specific versions
- cable protection via corrugated pipe
- mounting accessories e.g. mounting flange and terminal clamp in stainless steel
- different kinds of cables and elastomers

The separable stainless steel probe LMP 308 is designed for the continuous level measurement of water and low-viscosity fluids.

In order to facilitate stock-keeping and maintenance the probe head is plugged to the cable assembly with a connector and can be changed easily.

#### Preferred areas of use are

#### Water / filtrated sewage

ground water level measurement

level measurement in wells and open waters



rain spillway basin

level measurement in container

water treatment plants

water recycling



## LMP 308 Technical Data

Input pressure range														
Nominal pressure gauge	[bar]	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6	10	16	25
Level	[mH <sub>2</sub> O]	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250
Overpressure	[bar]	0.5	1	1	2	5	5	10	10	20	40	40	80	80
Burst pressure	[bar]	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50	50	120	120
	[]				ļ -			1				1		1
Output signal / Supply		1												
Standard		2-wire:				8 32			-version	-		-		
Option IS-protection		2-wire:	4	20 m	$A / V_s =$	10 28	3 V <sub>DC</sub>	SIL	-version	: V <sub>s</sub> = 1	4 28	V <sub>DC</sub>		
Performance														
Accuracy <sup>1</sup>		standa				< 0.4 ba			0.5 % F					
				•		≥ 0.4 ba			0.35 %					
		option				≥ 0.4 ba			0.25 %					
Dermissible lead		option				essures:		≤±	0.1 % F	SO				
Permissible load					0.02 A] (	2				<b>FOO</b> /	1.0			
Influence effects			: 0.05 %				ditions	load	1:0.05 %	FSO/	KΩ			
Long term stability				) / year	at refere	ence con	ditions							
Response time		≤ 10 m												
<sup>1</sup> accuracy according to IEC 6		t point ac	ijustment	(non-line	earity, hys	steresis, r	epeatabi	lity)						
Thermal effects (Offset an		1			0.40							0		
Nominal pressure P <sub>N</sub>	[bar]				0.40						≥ 0.4			
Tolerance band	[% FSO]			4	≤±1						≤±0.	/5		
in compensated range	[°C]							0 70						
Permissible temperatures	i	i												
Permissible temperatures		mediur	n: -20.	70 °C				storage	: -25	70 °C				
Electrical protection <sup>2</sup>														
Short-circuit protection		perma												
Reverse polarity protection					o functio									
Electromagnetic compatib	oility	emissi	on and i	mmunit	y accord	ling to E	N 6132	6						
<sup>2</sup> additional external overvolta	ge protectio	on unit in	terminal	box KL 1	or KL 2	with atmo	spheric	oressure	reference	availabl	le on requ	uest		
Electrical connection														
Cable with sheath materia	al <sup>3</sup>		(-20 '		black Ø	ð 7.4 mr ð 7.4 mr ð 7.4 mr	n							
Bending radius		static i	nstallati	on:	10-fold o	cable dia	meter							
<sup>3</sup> shielded cable with integrate	ed ventilatio	n tube fo	r atmosp	heric pre	ssure refe	erence								
<sup>4</sup> do not use freely suspended	l probes wit	h an FEF	cable if	effects d	ue to high	nly chargi	ng proce	sses are	expected					
Materials (media wetted)														
Housing			ss steel	1.4404	(316L)									
Seals		FKM EPDM others	on requ	est										
Diaphragm		1	ss steel	1.4435	(316L)									
Protection cap		POM-0												
Cable sheath		PVC, F	PUR, FE	P, othe	rs on ree	quest								
Explosion protection														
Approvals DX19-LMP 308	3	zone 0	): II 10	S Ex ia I	X / IE IC T4 G IIC T 85		E 12.00	27X						
Safety technical maximum	n values			nection	s have a	mW, C <sub>i</sub> an inner	capacity	of max	. 27 nF		ousing			
Permissible temperatures environment	for	in zone in zone	e 0: e 1 or hi	- gher: -	20 60 20 70	°C with °C	p <sub>atm</sub> 0.8	3 bar up	to 1.1 ba	ar	-			
Connecting cables (by factory)			capacita nductar			e/shield e/shield								
Miscellaneous			in a 4 17	0.0450	0 / 15 0	04544								
Option SIL2 version <sup>5</sup>				-0 6150	8 / IEC	01511								
Current consumption		max. 2		/										
Weight			. 250 g	(without	cable)									
Ingress protection		IP 68												
CE-conformity			Directive	: 2014/3	30/EU									
ATEX Directive		2014/3	4/EU											
<sup>5</sup> not in combination with the a	accuracy 0.	1 % FSO												

LMP 308 Technical Data



Mounting flange with cable gland

#### cable gland M16x1.5 with seal insert (for cable- $\varnothing$ 4 ... 11 mm) dimensions in mm DN25 / PN40 DN50 / PN40 53 size n x d2 b 18 D 115 d2 14 68 2 d4 f Ŧ 85 k d44 n

4	-D						
Technical data							
Suitable for	all probes						
Flange material	stainless steel 1.4404 (316L)	tainless steel 1.4404 (316L)					
Material of cable gland	standard: brass, nickel plated	standard: brass, nickel plated on request: stainless steel 1.4305 (303); plastic					
Seal insert	material: TPE (ingress protecti	on IP 68)					
Hole pattern	according to DIN 2507						
Ordering type		Ordering code	Weight				
DN25 / PN40 with cable gland bras	s, nickel plated	ZMF2540	1.4 kg				
DN50 / PN40 with cable gland bras	s, nickel plated	ZMF5040	3.2 kg				
DN80 / PN16 with cable gland bras	s, nickel plated	ZMF8016	4.8 kg				

Terminal clamp



Technical data			
Suitable for	all probes with cable $\varnothing$ 5.5 10.	.5 mm	
Material of housing	standard: steel, zinc plated	optionally: stainless ste	el 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	
Terminal clamp, stainless stee	1.4301 (304)	Z100527	approx. 160 g

#### 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	1
PA 440	Field display with 4-digit LC display	1

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



DN80 / PN16

20

200

18

138 3

160 8

20

165

18

102 3

125

4

	Orderir	ng code	EMP 3	308						
LMP 308		]-[]-[			]-[]]]]	-□		]-□		
Pressure										
in bar	4 4 0 4 4 1									
in mH <sub>2</sub> O	4 4 1			_						
Input [mH₂O] [bar] 1.0 0.10	1 0 0 (	0								_
1.6 0.16	1 6 0	0								
2.5 0.25	2 5 0 0	0								
4.0 0.40	4 0 0 0	0								
6.0 0.60		0								
10 1.0 16 1.6		1								
25 2.5		1								
40 4.0	4 0 0	1								
60 6.0	6 0 0	1								
100 10	1 0 0 2	2								
160 16	1 6 0 2 2 5 0 2	2								
250 25 customer	2 5 0 2 9 9 9 9	2								consult
Housing	3 3 3 .	5								consult
stainless steel 1.4404 (316L)		1								
customer		9								consult
Diaphragm		1								
stainless steel 1.4435 (316L) customer		1 9								consult
Output										consult
4 20 mA / 2-wire			1							
intrinsic safety 4 20 mA / 2-wire			E							
SIL2 4 20 mA / 2-wire			1S							
SIL2 with intrinsic safety 4 20 mA / 2-wire			ES							
customer			9							consult
Seals			0							oonouit
FKM			1							
EPDM			3							
customer Electrical connection		_	9							consult
PVC-cable (grey, Ø 7.4 mm)	1	_	_	1						
PUR-cable (black, Ø 7.4 mm)				2						
FEP-cable (black, Ø 7.4 mm)	1			2 3						
customer				9						consult
Accuracy standard for $P_N \ge 0.4$ bar 0.35 % FSO					3					
standard for $P_N \ge 0.4$ bar 0.35 % FSO standard for $P_N < 0.4$ bar 0.5 % FSO					3					
option 1 for $P_N \ge 0.4$ bar 0.25 % FSO					5 2					
option 2 0.1 % FSO	2				1					
customer			_		9					consult
Cable length					0 0 0					
Version in m					999					
standard						0	0 0			
prepared for mounting	3						0 6			consult
with stainless steel pipe						· '   '				consult
cable protection with stainless steel corrugated pipe						1	3 3	0		concult
with pipe length in m						' '	3	9	99	consult
customer						9	9 9			consult
						- 1		•		

<sup>1</sup> cable with integrated ventilation tube for atmospheric pressure reference

<sup>2</sup> not in combination with SIL
 <sup>3</sup> stainless steel pipe is not part of the supply



## LMK 306

### **Stainless Steel Probe**

**Ceramic Sensor** 

accuracy according to IEC 60770: 0.5 % FSO

#### Nominal pressure

from 0 ... 6 mH<sub>2</sub>O up to 0 ... 200 mH<sub>2</sub>O

#### **Output signals**

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

#### **Special characteristics**

- diameter 17 mm
- suitable for hydrostatic level measurement
   e.g. in 3/4" pipes
- good linearity
- good long term stability

#### **Optional versions**

- different cable materials
- customer specific versions
   e.g. special pressure ranges

The slimline probe LMK 306 with ceramic sensor has been especially designed for the continuous level measurement at confined space conditions. Permissible media are clean or slightly contaminated water and thin fluids.

Different cable sheath materials are available in order to achieve maximum media compatibility.

#### Preferred areas of use are

#### <u>Water</u>

level measurement at confined space conditions



ground water monitoring

depth or level measurement in wells

drinking water abstraction

level measurement in open and closed tanks



Input proceure range									
Input pressure range	orl 0	C 1	1.0	25	4	C	10	10	20
	oar] 0.		1.6	2.5	4	6	10	16	20
Level [mH	-		16	25	40	60	100	160	200
· ·		2 2	4	4	10	10	20	40	40
Burst pressure ≥ [b	oar] 4	4	5	5	12	12	25	50	50
Output signal / Supply									
2-wire	4 2	20 mA / V <sub>s</sub> = 12	36 V <sub>DC</sub>						
Performance									
Accuracy	<+(	).5 % FSO							
Permissible load		$= [(V_{\rm S} - V_{\rm S min}) /$	0 02 A1 O						
Influence effects		oly: 0.05 % FSO	-	i	oad: 0.05 %	6 ESO / kO			
Response time		msec	110 0		544. 0.00 /	01007132			
<sup>1</sup> accuracy according to IEC 60770 -			nearitv. hvste	resis. repeata	ability)				
Thermal effects (Offset and S					.,				
Thermal error		.2 % FSO / 10 k		i	n compensa	ted range -	25 70 °C		
Permissible temperatures		um: -10 70 °			torage: -25		20 70 0		
Electrical protection <sup>2</sup>	medi		-	3	.5.ugo20				
Short-circuit protection	norm	anent							
•		anent	no function						
Reverse polarity protection		amage, but also			00				
Electromagnetic protection <sup>2</sup> additional external overvoltage pro		sion and immun		•		foronoo ovoil	oblo on roque	of	
Electrical connection	lection unit	In terminal box KL	T OF KL 2 WIL	n aunosphen	c pressure re	lerence avail	able on reque	51	
		( E 70 °C		7 4 100 100					
Cable with sheath material <sup>3</sup>		( -5 … 70 °C (-10 … 70 °C							
		(-10 … 70 °C							
		rs on request		7. <del>7</del> .11111					
Cable capacitance		al line/shield als	o signal lin	e/signal line	: 160 pF/m				
Cable inductance		al line/shield als							
Bending radius		c installation:		able diamet					
Denang radiae		mic application:		able diamet					
<sup>3</sup> shielded cable with integrated vent	tilation tube	for atmospheric pr	ressure refere	ence					
<sup>4</sup> do not use freely suspended probe	s with an Fl	EP cable if effects	due to highly	charging pro	cesses are ex	pected			
Materials (media wetted)									
Housing	stain	less steel 1.4404	4 (316L)						
Seals	FKM								
Diaphragm	cera	mics Al <sub>2</sub> O <sub>3</sub> 96 %							
Protection cap	PON	I-C							
Cable sheath	PVC	, PUR, FEP							
Miscellaneous									
Current consumption	max.	25 mA							
Weight	appr	ox. 100 g (witho	ut cable)						
Ingress protection	IP 68		,						
CE-conformity		Directive: 2014	/30/EU						
Wiring diagram									
2-wire-system (current)									
• · · ·									
p supply +									
	Vs								
	- 0								
supply –									
Ϋ́Υ	-0 -								
Pin configuration									
Electrical connection				cable c	olours (IEC	60757)			
Suppl	v +				WH (white)				
Suppl					BN (brown)				
	ield			GNY	E (green-ye				
						,			

## LMK 306 Technical Data



	Ordering code LMK 306	
LMK 306		
Pressure in bar in mH₂O	3 7 0 3 7 1	
Input [mH <sub>2</sub> O] [bar]		
6 0.60 10 1.0	6 0 0 0 1 0 0 1	
16 1.6 25 2.5		
25 2.5 40 4.0	1 6 0 1 2 5 0 1 4 0 0 1	
60 6.0	6 0 0 1	
100 10 160 16	1 0 0 2 1 6 0 2	
200 20 outcomer	2 0 0 2	annout the second s
Customer	9 9 9 9	consult
stainless steel 1.4404 (316L)	1 9	conou!!
Customer Diaphragm	9	consult
ceramics Al <sub>2</sub> O <sub>3</sub> 96%	2 9	
Output	9	consult
4 20 mA / 2-wire	1 9	
Customer Seals	9	consult
FKM	1	
Accuracy	9	consult
0.5 % FSO	5	
customer Electrical connection	9	consult
PVC-cable (grey, Ø 7.4 mm)	1	
PUR-cable (black, Ø 7.4 mm) FEP-cable (black, Ø 7.4 mm)	2	
customer	9	consult
Cable length in m	9	9 9
Special version		
standard customer		0 0 0 9 9 9 consult

<sup>1</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference



# LMK 307

## Stainless Steel Probe

Ceramic Sensor

accuracy according to IEC 60770: 0.5 % FSO

#### Nominal pressure

from 0 ... 4 mH<sub>2</sub>O up to 0 ... 250 mH<sub>2</sub>O

#### **Output signals**

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

#### **Special characteristics**

- diameter 27 mm
- good linearity
- excellent long term stability
- easy handling

#### **Optional versions**

- IS-version
   Ex ia = intrinsically safe for gas and dust
- SIL 2 (Safety Integrity Level) according to IEC 61508 / IEC 61511
- different kinds of cables and elastomers
- customer specific versions
   e. g. special pressure ranges

The level transmitter LMK 307 is designed for continuous level measurement in water or waste water applications. Basic element is a flush mounted ceramic sensor.

Suitable for all fluids which are compatible with media wetted materials. Different cable and elastomer materials can be offered according to the customer-specific operating conditions.

#### Preferred areas of use are



<u>Water</u> drinking water systems ground water monitoring

storm water systems

<u>Sewage</u> waste water treatment water recycling



<u>Fuel and oil</u> fuel storage tank farm biogas plants

dumpsite



66

Input pressure range											
Nominal pressure gauge	[bar]	0.4	0.6	1	1.6	2.5	4	6	10	16	25
Level	[mH <sub>2</sub> O]	4	6	10	16	25	40	60	100	160	250
Overpressure	[bar]	2	2	2	4	4	10	10	20	40	40
	[bar]	4	4	4	5	5	10	10	25	50	50
Burst pressure	[Dai]	4	4	4	5	5	12	12	25	50	50
Output signal / Supply											
Standard		2-wire:	4 20	mA / \	/ <sub>s</sub> = 8;	32 V <sub>DC</sub>	SIL-	/ersion: V	s= 14 2	8 V <sub>DC</sub>	
Option IS-version		2-wire:	4 20	mA / \	/ <sub>s</sub> = 10 2	28 V <sub>DC</sub>	SIL-	/ersion: V	s= 14 2	8 V <sub>DC</sub>	
Options 3-wire		3-wire:	0 20	mA / \	/ <sub>s</sub> = 14 ; / <sub>s</sub> = 14 ;	30 V <sub>DC</sub>					
Performance					0	00					
Accuracy <sup>1</sup>		≤±0.5 %	ESO								
Permissible load				- [()/	<u> </u>	02 41 0					
		current 3	-wire: R <sub>n</sub> -wire: R <sub>n</sub> 8-wire: R <sub>n</sub>	nax = 500 C		02 AJ 12					
Influence effects			.05 % FS				load	0.05 % F	SO / kΩ		
Response time		≤ 10 mse									
<sup>1</sup> accuracy according to IEC 6	60770 – limit			-linearity. h	ysteresis, re	peatability)					
Thermal effects (Offset a			,		-, -						
Thermal error			FSO / 10	K			in co	mpensate	ed range -2	5 70 °C	;
Permissible temperature	06	0.2 /0	,100,10	1			11 00	mpensale	Ja range -z		,
			10 70	°C			- 1		70.00		
Permissible temperatures		medium:	-10 70	- U			stora	ge: -25	. 70 °C		
Electrical protection <sup>2</sup>											
Short-circuit protection		permane	nt								
Reverse polarity protectio	n	no damag	ge, but als	o no func	tion						
Electromagnetic protection	n	emission	and immu	unity accor	rding to EN	61326					
<sup>2</sup> additional external overvolta	ige protectio	on unit in ter	minal box k	KL 1 or KL 2	2 with atmos	pheric press	sure referenc	ce available	e on request		
Electrical connection											
Cable with sheath materia	al <sup>3</sup>	PVC ( -	5 70 °C	) arev	Ø 7.4 m	n					
		PUR (-1	0 70 °C 0 70 °C	) black	Ø 7.4 mr Ø 7.4 mr	n					
Bending radius		static inst	allation:	10-fol	d cable dia	meter					
		dynamic	annlicatio	20 fol		motor					
<sup>3</sup> shielded cable with integrate		n tube for a		pressure re	d cable dia			ad			
<sup>4</sup> do not use freely suspended	l probes witl	n tube for a	tmospheric	pressure re	d cable dia		are expecte	ed			
<sup>4</sup> do not use freely suspended Materials (media wetted)	l probes witl	n tube for ai h an FEP ca	tmospheric able if effect	pressure re ts due to hig	d cable dia eference ghly charging		are expecte	ed			
<sup>4</sup> do not use freely suspended Materials (media wetted Housing	l probes witl	n tube for ai h an FEP ca stainless	tmospheric	pressure re ts due to hig	d cable dia eference ghly charging		are expecte	ed			
<sup>4</sup> do not use freely suspended Materials (media wetted)	l probes witl	n tube for ai h an FEP ca stainless FKM	tmospheric able if effect	pressure re ts due to hig	d cable dia eference ghly charging		are expecte	ed			
<sup>4</sup> do not use freely suspended <b>Materials (media wetted</b> ) Housing Seals	l probes witl	n tube for an h an FEP ca stainless FKM EPDM	steel 1.44	pressure re ts due to hig 04 (316L)	d cable dia eference ghly charging		are expecte	ed			
<sup>4</sup> do not use freely suspended <b>Materials (media wetted</b> Housing Seals Diaphragm	l probes witl	n tube for at h an FEP ca stainless FKM EPDM ceramics	tmospheric able if effect	pressure re ts due to hig 04 (316L)	d cable dia eference ghly charging		are expecte	2d			
<sup>4</sup> do not use freely suspended <b>Materials (media wetted</b> Housing Seals Diaphragm Protection cap	l probes witl	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C	steel 1.44	pressure re ts due to hig 04 (316L)	d cable dia eference ghly charging		are expecte	ed			
<sup>4</sup> do not use freely suspended Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath	l probes with	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP	pressure re ts due to hig 04 (316L)	d cable dia eference ghly charging		are expecte	ed			
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap	l probes with	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA /	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b>	pressure re ts due to hig 04 (316L) %	d cable dia eference ghly chargin	g processes	are expecte	20			
<sup>4</sup> do not use freely suspended Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals	l probes with	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA /	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b>	pressure re ts due to hig 04 (316L) %	d cable dia eference ghly charging	g processes	are expecte	20			
<sup>4</sup> do not use freely suspended Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or	l probes with	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA /	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b> O ATEX 10	pressure re ts due to hig 04 (316L) %	d cable dia eference ghly charging	g processes	are expecte	2d			
<sup>4</sup> do not use freely suspended Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals	l probes with	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b> ATEX 10 II 1G E	pressure re ts due to hig 04 (316L) %	d cable dia aference ghly chargin CEx IBE 1 Ga	g processes	are expecte	2d			
<sup>4</sup> do not use freely suspended Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals	l probes with ) nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b> ATEX 10 II 1G E: II 1D Ex (, I <sub>i</sub> = 93 m	pressure re ts due to hig 04 (316L) % 068 X / IE x ia IIC T4 x ia IIC T A, Pi = 66	d cable dia aference ghly chargin ECEx IBE 1 Ga 85°C Da 0 mW, Ci ≈	g processes 2.0027X ∻ 0nF, L <sub>i</sub> ≈			pusing		
<sup>4</sup> do not use freely suspended Materials (media wetted) Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b> O ATEX 10 II 1G E: II 1D Ex (, I <sub>i</sub> = 93 m ly connect	pressure re ts due to hig -04 (316L) % 	d cable dia aference ghly chargin ECEx IBE 1 Ga 85°C Da 0 mW, Ci ≈	g processes 2.0027X ≎ OnF, L <sub>i</sub> ≈ apacity of	0 μH, max. 27 nF		pusing		
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307 Safety technical maximum	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl in zone 0	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b> D ATEX 10 II 1G E: II 1D E: I, I <sub>i</sub> = 93 m ly connect : -20 6	pressure re ts due to hig 04 (316L) % % 068 X / IE x ia IIC T4 x ia IIC T A, P <sub>i</sub> = 66 ions have 0 °C with	d cable dia aference ghly chargin CEx IBE 1 Ga 85°C Da 0 mW, Ci ≈ an inner c	g processes 2.0027X ≎ OnF, L <sub>i</sub> ≈ apacity of	0 μH, max. 27 nF		pusing		
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307 Safety technical maximum Permissible temperatures environment	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl in zone 0 in zone 1	tmospheric         able if effect         steel 1.44         Al <sub>2</sub> O <sub>3</sub> 96         R, FEP <b>2-wire)</b> D ATEX 10 II 10 E2         Y, I <sub>i</sub> = 93 m         y connect         : -20 6         : -20 7	pressure re ts due to hig 04 (316L) % % 068 X / IE x ia IIC T4 x ia IIC T A, P <sub>i</sub> = 66 ions have 0 °C with 0 °C	d cable dia aference ghly chargin Ga 85°C Da 0 mW, C <sub>i</sub> ≈ an inner c p <sub>atm</sub> 0.8 ba	2.0027X 2.0027X conF, Li≈ apacity of r up to 1.1	0 μH, max. 27 nF bar	to the ho			
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307 Safety technical maximum Permissible temperatures	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl in zone 0 in zone 1 cable cap	Al <sub>2</sub> O <sub>3</sub> 96           R, FEP <b>2-wire)</b> ATEX 10 II 10 E2           II 10 E2           I, i = 93 m           y connect           : -20 6           : -20 7           pacitance:	pressure re ts due to hig 04 (316L) % 068 X / IE x ia IIC T4 x ia IIC T A, P <sub>i</sub> = 66 ions have 0 °C with 0 °C signal lir	d cable dia aference ghly chargin Ga 85°C Da 0 mW, Ci ≈ an inner c p <sub>atm</sub> 0.8 ba ne/shield al	2.0027X 2.0027X apacity of r up to 1.1 so signal I	0 μH, max. 27 nF	to the ho	oF/m		
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307 Safety technical maximum Permissible temperatures environment Connecting cables (by factory)	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl in zone 0 in zone 1 cable cap	Al <sub>2</sub> O <sub>3</sub> 96           R, FEP <b>2-wire)</b> ATEX 10 II 10 E2           II 10 E2           I, i = 93 m           y connect           : -20 6           : -20 7           pacitance:	pressure re ts due to hig 04 (316L) % 068 X / IE x ia IIC T4 x ia IIC T A, P <sub>i</sub> = 66 ions have 0 °C with 0 °C signal lir	d cable dia aference ghly chargin Ga 85°C Da 0 mW, Ci ≈ an inner c p <sub>atm</sub> 0.8 ba ne/shield al	2.0027X 2.0027X apacity of r up to 1.1 so signal I	0 μH, max. 27 nF bar ine/signal I	to the ho	oF/m		
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307 Safety technical maximum Permissible temperatures environment Connecting cables (by factory) Miscellaneous	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl in zone 0 in zone 1 cable cap cable ind	tmospheric         able if effect         steel 1.44         Al <sub>2</sub> O <sub>3</sub> 96         R, FEP <b>2-wire)</b> D ATEX 10 II 10 E3 (, I <sub>1</sub> = 93 m y connect)         : -20 6 : -20 7         : -20 7         pacitance:         uctance:	pressure re ts due to hig 04 (316L) % % % 068 X / IE x ia IIC T4 x ia IIC T4 x ia IIC T4 x ia IIC T A, P <sub>i</sub> = 66 ions have 0 °C with 0 °C signal lir signal lir	d cable dia aference ghly chargin Ga 85°C Da 0 mW, Ci ≈ an inner c patm 0.8 ba ne/shield al	2.0027X 2.0027X apacity of r up to 1.1 so signal I	0 μH, max. 27 nF bar ine/signal I	to the ho	oF/m		
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307 Safety technical maximum Permissible temperatures environment Connecting cables (by factory) Miscellaneous Option SIL 2 version <sup>5</sup>	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl in zone 0 in zone 1 cable cap cable ind	tmospheric         able if effect         steel 1.44         Al <sub>2</sub> O <sub>3</sub> 96         R, FEP <b>2-wire)</b> D ATEX 10 II 10 E3 (, I <sub>1</sub> = 93 m (y connect)         : -20 6 : -20 7 pacitance:         uctance:         g to IEC 6	pressure re ts due to hig -04 (316L) % % 	d cable dia aference ghly chargin CEx IBE 1 Ga 85°C Da 0 mW, Ci ≈ an inner c patm 0.8 ba ne/shield al constant con	2.0027X 2.0027X apacity of r up to 1.1 so signal I	0 μH, max. 27 nF bar ine/signal I	to the ho	oF/m		
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307 Safety technical maximum Permissible temperatures environment Connecting cables (by factory) Miscellaneous Option SIL 2 version <sup>5</sup> Current consumption	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl in zone 0 in zone 1 cable cap cable ind according signal our	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b> D ATEX 10 II 1G E: II 1D E: $I_1$ = 93 m ly connect : -20 6 : -20 7 pacitance: uctance: g to IEC 6 tput current tput voltag	pressure re ts due to hig -04 (316L) % -068 X / IE x ia IIC T4 x ia IIC T4 x ia IIC T4 x ia IIC T A, P <sub>i</sub> = 66 ions have 0 °C with 0 °C signal Iir signal Iir 1508 / IEC nt: ma: ge: ma:	d cable dia aference ghly chargin CEx IBE 1 Ga 85°C Da 0 mW, Ci ≈ an inner c patm 0.8 ba ne/shield al ne/shield al c 61511 x. 25 mA x. 7 mA	2.0027X 2.0027X apacity of r up to 1.1 so signal I	0 μH, max. 27 nF bar ine/signal I	to the ho	oF/m		
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307 Safety technical maximum Permissible temperatures environment Connecting cables (by factory) Miscellaneous Option SIL 2 version <sup>5</sup>	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl in zone 0 in zone 1 cable cap cable ind according signal our signal our	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b> D ATEX 10 II 1G E: II 1D E2 (, I <sub>i</sub> = 93 m ly connect : -20 6 : -20 7 pacitance: uctance: g to IEC 6 tput current	pressure re ts due to hig -04 (316L) % -068 X / IE x ia IIC T4 x ia IIC T4 x ia IIC T4 x ia IIC T A, P <sub>i</sub> = 66 ions have 0 °C with 0 °C signal Iir signal Iir 1508 / IEC nt: ma: ge: ma:	d cable dia aference ghly chargin CEx IBE 1 Ga 85°C Da 0 mW, Ci ≈ an inner c patm 0.8 ba ne/shield al ne/shield al c 61511 x. 25 mA x. 7 mA	2.0027X 2.0027X apacity of r up to 1.1 so signal I	0 μH, max. 27 nF bar ine/signal I	to the ho	oF/m		
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307 Safety technical maximum Permissible temperatures environment Connecting cables (by factory) Miscellaneous Option SIL 2 version <sup>5</sup> Current consumption	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl in zone 0 in zone 1 cable cap cable ind according signal our	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b> D ATEX 10 II 1G E: II 1D E: $I_1$ = 93 m ly connect : -20 6 : -20 7 pacitance: uctance: g to IEC 6 tput current tput voltag	pressure re ts due to hig -04 (316L) % -068 X / IE x ia IIC T4 x ia IIC T4 x ia IIC T4 x ia IIC T A, P <sub>i</sub> = 66 ions have 0 °C with 0 °C signal Iir signal Iir 1508 / IEC nt: ma: ge: ma:	d cable dia aference ghly chargin CEx IBE 1 Ga 85°C Da 0 mW, Ci ≈ an inner c patm 0.8 ba ne/shield al ne/shield al c 61511 x. 25 mA x. 7 mA	2.0027X 2.0027X apacity of r up to 1.1 so signal I	0 μH, max. 27 nF bar ine/signal I	to the ho	oF/m		
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307 Safety technical maximum Permissible temperatures environment Connecting cables (by factory) Miscellaneous Option SIL 2 version <sup>5</sup> Current consumption Weight	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl in zone 0 in zone 1 cable cap cable ind according signal our approx. 2 IP 68	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b> D ATEX 10 II 1G E: II 1D E: $I_1$ = 93 m ly connect : -20 6 : -20 7 pacitance: uctance: g to IEC 6 tput current tput voltag	pressure re ts due to hig 04 (316L) % % 068 X / IE x ia IIC T4 x i	d cable dia aference ghly chargin CEx IBE 1 Ga 85°C Da 0 mW, Ci ≈ an inner c patm 0.8 ba ne/shield al ne/shield al c 61511 x. 25 mA x. 7 mA	2.0027X 2.0027X apacity of r up to 1.1 so signal I	0 μH, max. 27 nF bar ine/signal I	to the ho	oF/m		
<sup>4</sup> do not use freely suspended Materials (media wetted Housing Seals Diaphragm Protection cap Cable sheath Explosion protection (or Approvals DX19-LMK 307 Safety technical maximum Permissible temperatures environment Connecting cables (by factory) Miscellaneous Option SIL 2 version <sup>5</sup> Current consumption Weight Ingress protection	nly for 4	n tube for ai h an FEP ca stainless FKM EPDM ceramics POM-C PVC, PU . 20 mA / IBExU 10 zone 0: zone 20: U <sub>i</sub> = 28 V the suppl in zone 0 in zone 1 cable cap cable ind according signal our approx. 2 IP 68	tmospheric able if effect steel 1.44 Al <sub>2</sub> O <sub>3</sub> 96 R, FEP <b>2-wire)</b> O ATEX 10 II 1G E: II 1D E3 (, I <sub>1</sub> = 93 m y connect : -20 6 : -20 7 Dacitance: uctance: g to IEC 6 tput current tput voltag 50 g (with ective: 201	pressure re ts due to hig 04 (316L) % % 068 X / IE x ia IIC T4 x i	d cable dia aference ghly chargin CEx IBE 1 Ga 85°C Da 0 mW, Ci ≈ an inner c patm 0.8 ba ne/shield al ne/shield al c 61511 x. 25 mA x. 7 mA	2.0027X 2.0027X apacity of r up to 1.1 so signal I	0 μH, max. 27 nF bar ine/signal I	to the ho	oF/m		



	Ordering	code LMK 3	307		
LMK 307		]-[]-[]-[]			П
Pressure in bar	3 8 0 3 8 1				
in mH <sub>2</sub> O Input [mH <sub>2</sub> O] [bar]					
4 0.4 6 0.6	4 0 0 0 6 0 0 0				
10 1.0 16 1.6	1 0 0 1 1 6 0 1				
25 2.5 40 4.0	2 5 0 1 4 0 0 1				
60 6.0	6 0 0 1				
100 10 160 16	1 0 0 2 1 6 0 2				
250 25 customer	2 5 0 2 9 9 9 9				consult
Housing					
stainless steel 1.4404 (316L) customer		1 9			consult
Diaphragm ceramics Al <sub>2</sub> O <sub>3</sub> 96%		2			
Customer Output		9			consult
4 20 mA / 2-wire 0 20 mA / 3-wire		1 2			
0 10 V / 3-wire		3			
intrinsic safety 4 20 mA / 2-wire SIL2 4 20 mA / 2-wire		E 1S			
SIL2 with intrinsic safety		ES			
4 20 mA / 2-wire customer		9			consult
Seals FKM		1			
EPDM		3			
Accuracy customer		9			consult
0.5 % FSO customer			5 9		consult
Electrical connection					
PVC-cable (grey, Ø 7.4 mm) PUR-cable (black, Ø 7.4 mm)			1		
FEP-cable (black, Ø 7.4 mm) customer			2 3 9		consult
Cable length			3		
in m standard: 3 m PVC				0 0 3	
standard: 5 m PVC standard: 10 m PVC				0 0 5 0 1 0	
standard: 15 m PVC				0 1 5	
standard: 20 m PVC special length PVC				0 2 0 9 9 9	
standard: 3 m PUR					
standard: 5 m PUR				0       0       3         0       0       5         0       1       0         0       1       5         0       2       0         9       9       9	
standard: 10 m PUR standard: 15 m PUR				0 1 0	
standard: 20 m PUR				0 2 0	
special length PUR					
standard: 5 m FEP standard: 10 m FEP				0 0 5	
special length FEP				0 0 5 0 1 0 9 9 9	
Special version standard					0 0
customer				9 9	0 0 9 9 consult

<sup>1</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference

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



# LMK 307T

### Level and Temperature Transmitter

**Ceramic Sensor** 

accuracy according to IEC 60770: 0.5 % FSO

#### Nominal pressure / nominal temperature

from 0 ... 4 mH<sub>2</sub>O up to 0 ... 250 mH<sub>2</sub>O from 0 ... 30 °C up to 0 ... 70 °C others on request

#### Output signals

2-wire: 4 ... 20 mA (pressure) 2-wire: 4 ... 20 mA (temperature)

#### **Special characteristics**

- diameter 26.5 mm
- separate output signals for pressure and temperature ranges
- good long term stability
- easy handling
- low maintenance and wiring costs

#### **Optional versions**

- different kinds of cables and elastomers
- customer specific versions

The stainless steel submersible probe LMK 307T with flush mounted ceramic sensor has developed for continuous level and temperature measurement in water or waste water applications.

The advantage: simultaneous recording of level and temperature with separate independent signal amplification. The maintenance and wiring costs are considerably reduced.

In addition to classical signal processing of the level, an additional signal circuit independent of the level which converts the temperature signal into a 4 ... 20 mA analogue signal in 2-wire technology is provided.

#### Preferred areas of use are

#### <u>Water</u>



drinking water systems ground water monitoring domestic water tanks rain spillway basin

#### <u>Sewage</u>



waste water treatment, water recycling dumpsite, waste water tanks



<u>Fuel and oil</u> fuel storage tank farm, biogas plants

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Input pressure range												
Nominal pressure gauge	[bar]	0.4	0.6	1	1.6	2.5	4	6	10		16	25
Level	[mH <sub>2</sub> O]	4	6	10	16	25	40	60	100		160	250
Overpressure	[bar]	1	2	2	4	4	10	10	20		40	40
Burst pressure >	[bar]	2	4	4	5	5	12	12	25		50	50
Input temperature range Temperature measuring r	range											
standard:	-		0 30 °C 0 50 °C 0 70 °C others of						rs on re	quest 1		
<sup>1</sup> min. temperature range: 30 min. temperature: -10°C; m			nge: 80°C									
Output signal / Supply												
2-wire (pressure) <sup>2</sup>		1	20 mA / V <sub>S</sub> = 10 30 V <sub>DC</sub>									
2-wire (temperature) <sup>2</sup>		4 20 m	-	10 30	V <sub>DC</sub>							
<sup>2</sup> the circuits are galvanically	isolated from	m each othe	r									
Performance												
Accuracy (pressure) <sup>3</sup>		≤±0.5 %	FSO									
Accuracy (temperature) <sup>4</sup>		≤±1°C										
Permissible load		R <sub>max</sub> = [(\	/ <sub>s</sub> – V <sub>s</sub> m	in) / 0.0	2 A] Ω							
Influence effects		supply: 0	.05 % FS	SO / 10 V			load	: 0.05 % F	SO / k	Ω		
Long term stability		≤±0.3 %	FSO / ye	ear at re	erence con	ditions						
Response time		< 10 mse	c (for out	put sign	al 2-wire (pre	essure))						
<ul> <li><sup>3</sup> accuracy according to IEC ( <sup>4</sup> Pt 100 class B; compensation</li> </ul>							ital respecti	vely mass c	ondition	s		
Thermal effects (Offset a	nd Span)											
Thermal error		≤±0.2 %	FSO / 10	0 K			in co	ompensate	ed rang	e -25 .	70 °C	,
Permissible temperatures	S											
Permissible temperatures	3	medium:	-10 70	°C			stor	age: -25	. 70 °C			
Electrical protection <sup>5</sup>												
Short-circuit protection		permane	nt									
Reverse polarity protection	n	no dama		so no fu	nction							
Electromagnetic compatit					ording to El	N 61326						
<sup>5</sup> additional external overvolta					-		sure referen	ce available	on real	uest		
Electrical connection	<u> </u>								,			
Cable with sheath materia	al <sup>6</sup>	PVC (-	5 70 °	C) gre	y Ø 7.4 n	ווית m						
		PUR (-1										
		FEP 7 (-1	0 70 °	C) bla	ck Ø 7.4 n	nm						
		others on										
Cable capacitance		signal line	e/shield a	also sig	nal line/signa	al line: 160	pF/m					
Cable inductance					nal line/signa		l/m					
Bending radius		static inst dynamic			fold cable di fold cable di							
<sup>6</sup> shielded cable with integrat	ed ventilatio	n tube for a	tmospheric	c pressure	reference							
<sup>7</sup> do not use freely suspende	d probes wit	th an FEP ca	able if effec	cts due to	highly chargii	ng processes	s are expect	ed				
Materials (media wetted)												
Housing		stainless	steel 1.44	404 (316	L)							
Seals		FKM										
		EPDM										
		others on		0/								
Diaphragm		ceramics	Al <sub>2</sub> O <sub>3</sub> 96	%								
Protection cap		POM-C										
Cable sheath		PVC, PU	K, FEP									
Miscellaneous			-									
Current consumption		max. 25										
Weight		approx. 2	250 g (wit	hout cab	le)							
Ingress protection		IP 68										
CE-conformity		EMC Dire	ective: 20	14/30/E	J							





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				

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Technical data						
Suitable for	all probes					
Flange material	stainless steel 1.4404 (316L)					
Material of cable gland	standard: brass, nickel plated		eel 1.4305 (303); plastic			
Seal insert	material: TPE (ingress protection	material: TPE (ingress protection IP 68)				
Hole pattern	according to DIN 2507					
Ordering type		Ordering code	Weight			
DN25 / PN40 with cable gland brass	s, nickel plated	ZMF2540	1.4 kg			
DN50 / PN40 with cable gland brass	3.2 kg					
DN80 / PN16 with cable gland brass	s, nickel plated	ZMF8016	4.8 kg			

#### Terminal clamp



Technical data						
Suitable for	all probes with cable $\varnothing$ 5.5 10	Il probes with cable $\varnothing$ 5.5 10.5 mm				
Material of housing	standard: steel, zinc plated	optionally: stainless st	eel 1.4301 (304)			
Material of clamping jaws and positioning clips	PA (fibre-glass reinforced)					
Dimensions (mm)	174 x 45 x 32	174 x 45 x 32				
Hook diameter	20 mm					
Ordering type		Ordering code	Weight			
Terminal clamp, steel, zinc plated		Z100528				
Terminal clamp, stainless stee	1.4301 (304)	Z100527	approx. 160 g			

#### 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		246A
CIT 600	Multichannel process display with graphics-capable LC display	35.65	
CIT 650	Multichannel process display with graphics-capable LC display and datalogger	2799.9 14.58	
CIT 700	/ CIT 750 Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts		ä
PA 440	Field display with 4-digit LC display	TANK STORE STORE	201
	her information please contact our sales department our homepage: http://www.bdsensors.de	39.65	Sales
	Ordering code LM	K 307T	
--	-------------------------------	--	
LMK 307T		]-[]-[]-[]-[]-[]-[]-[]-[]]-[]-[]-[]-[]-[	
Pressure in bar	3 8 A		
in mH <sub>2</sub> C Input [mH <sub>2</sub> O] [bar] 4 0.4	3 8 B		
4 0.4 6 0.6 10 1.0	4 0 0 0 6 0 0 0 1 0 0 1		
16 1.6 25 2.5	1 6 0 1 2 5 0 1		
40 4.0 60 6.0			
100 10 160 16	1 0 0 2		
250 25 customer	1 6 0 2 2 5 0 2 9 9 9 9	consult	
Input temperature °C 0 30	0 0 0 x 3 0		
0 50 0 70	0 0 0 × 5 0 0 0 0 × 7 0		
Customer		consult	
stainless steel 1.4404 (316L) customer	1 9	consult	
Diaphragm ceramic Al <sub>2</sub> O <sub>3</sub> 96 % customer		2 9 consult	
Output pressure 4 20 mA / 2-wire			
Output temperature 4 20 mA / 2-wire			
Seals FKM			
EPDM customer		3 9 consult	
Accuracy 0.5 % FSC		5	
Electrical connection		9 consult	
PVC-cable (grey, Ø 7.4 mm) PUR-cable (black, Ø 7.4 mm)			
FEP-cable (black, Ø 7.4 mm) customer Cable length		9 consult	
in m standard: 3 m PVC		0 0 3	
standard: 5 m PVC standard: 5 m PVC standard: 10 m PVC		0 0 5 0 1 0	
standard: 15 m PVC		0 1 5	
standard: 20 m PVC special length PVC		0 2 0 9 9 9	
standard: 3 m PUR standard: 5 m PUR		9 9 9 0 0 3 0 0 5	
standard: 10 m PUR standard: 15 m PUR		0 1 0 0 0 1 5	
standard: 20 m PUR		0 2 0	
special length PUR standard: 5 m FEF		<b>9 9 9</b> 0 0 5	
standard: 10 m FEF		0 1 0	
special length FEP Special version		9 9 9	
standard		0 0 0	
customer		9 9 9 consult	

<sup>1</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference

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



## **Stainless Steel Probe**

Ceramic Sensor

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

### Nominal pressure

from 0 ... 40 cmH<sub>2</sub>O up to 0 ... 200 mH<sub>2</sub>O

#### **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 % Al<sub>2</sub>O<sub>3</sub>
- 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

<u>Sewage</u>



<u>Water</u> drinking water abstraction



waste water treatment water recycling

#### Fuel and oil

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



## LMK 382 Technical Data

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 <sub>2</sub> 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	e: 4 :	20 mA	/ V <sub>s</sub> =	9 32	V <sub>DC</sub>									
Option IS-version						14 2										
Option 3-wire		1				12.5		0								
Performance					-		_	-								
Accuracy <sup>1</sup>		stand	lard: ≤	≤±0.3	5 % FS	0										
· · · · · <b>,</b>		optio	n: :	≤±0.2	5 % FS	SO										
Permissible load		R <sub>max</sub>	= [(Vs -	– V <sub>S mir</sub>	) / 0.02	: A] Ω										
Influence effects		supp	ly: 0.05	5 % FS	O / 10	V			lo	ad: 0.0	)5 % F	SO / kg	2			
Long term stability		≤ ± 0	.1 % F	SO / y	ear at r	eferenc	e conc	litions								
Turn-on time		700 r	nsec													
Mean response time		< 200	) msec						m	easuri	ng rate	5/sec				
Max. response time		380 r	nsec													
<sup>1</sup> accuracy according to IEC	60770 – lim	it point a	adjustm	ent (noi	n-linearit	ty, hyste	resis, re	peatabi	lity)							
Thermal effects (Offset	and Span	)														
Thermal error		≤ ± 0.	1 % F	SO / 10	) K				in	comp	ensate	d range	e 0 7	′0 °C		
Permissible temperatur	es															
Permissible temperatures		medi	um / ele	ectroni	cs / en	vironme	ent / sto	orage:	-7	25 12	25 °C					
Electrical protection <sup>2</sup>	-	1														
Short-circuit protection		norm	anent													
Reverse polarity protection				but al	so no fi	unction										
Electromagnetic compatil			-				n to EN	61326	2							
<sup>2</sup> additional external overvolta										referen	ice avai	lahle on	reques	<i>t</i>		
Electrical connection	uge proteeti	on unit i					1 411100	prierie p	1000010	referen			request			
Cable with sheath materia	al <sup>3</sup>	PVC	( -	5 7	1°C)	grey	Ø7	4 mm								
	a	PUR		5 7			Ø7									
		FEP		5 7			Ø7									
			U (-2	5 12	25 °Ć)	blue	Ø 7	.4 mm								
Bending radius		static	installa	ation:				e diam								
2			nic app					e diam	eter							
<sup>3</sup> shielded cable with integrat <sup>4</sup> do not use freely suspended								a proces	sees are	evnect	ad					
Materials (media wetted			r cable	ii eneu		onigniy	chargin	g proces	ses ale	expect	eu					
•	4)	otoinl	ooo oto	al 1 1	104 (21	61)										
Housing Seals																
					· ·	,										
		FKM,	FFKM	, EPDI	M, othe	rs on re	equest									
Diaphragm		FKM, stand	FFKM ard: c	, EPDI cerami	M, othe cs Al <sub>2</sub> O	ers on re 3 96 %										
		FKM, stand optior	FFKM ard: c n: c	, EPDI cerami	M, othe cs Al <sub>2</sub> O	rs on re										
Protection cap		FKM, stand option POM	FFKM lard: c n: c -C	, EPDI cerami cerami	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O	ers on re 3 96 %										
Protection cap Cable sheath	only for 4	FKM, stand option POM- PVC,	FFKM ard: c n: c -C PUR,	, EPDI ceramio ceramio FEP, 1	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O	ers on re 3 96 %										
Protection cap Cable sheath Explosion protection (o		FKM, stand option POM PVC, 20 r	FFKM ard: c n: c -C PUR, <b>nA / 2-</b>	, EPDI ceramic ceramic FEP, 1 <b>wire)</b>	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O PE-U	ers on re 3 96 %										
Protection cap Cable sheath		FKM, stand option POM PVC, 20 r	FFKM ard: c -C PUR, <b>mA / 2-</b> U05AT	, EPDI cerami cerami FEP, 1 <b>wire)</b> EX107	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O PE-U '0 X	ers on re <sup>1</sup> <sub>3</sub> 96 % <sup>1</sup> <sub>3</sub> 99.9 9										
Protection cap Cable sheath Explosion protection (o		FKM, stand option POM PVC, 20 r IBExt zone	FFKM ard: c -C PUR, <b>nA / 2-</b> U05AT 0 <sup>5</sup> : II	, EPDI cerami FEP, 1 <b>wire)</b> EX107 1G Ex	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O PE-U '0 X ia IIB 1	rs on re ₃ 96 % ₃ 99.9 9	%									
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3	82	FKM, stand option POM PVC, <b> 20 r</b> IBExt zone zone	FFKM ard: c -C PUR, <b>nA / 2-</b> J05AT 0 <sup>5</sup> : II 20: II	, EPDI ceramic FEP, 1 <b>wire)</b> EX107 1G Ex 1D Ex	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O PE-U 70 X ia IIB 1 ia IIIC	rs on re ₃ 96 % ⅓ 99.9 ° Г4 Ga T85 °C	Da	= 27 nF	1.=5	uH C		7 nF				
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3 Safety technical maximur	82 m values	FKM, stand optior POM PVC, 20 r IBExI zone zone U <sub>i</sub> = 2	FFKM ard: c -C PUR, <b>nA / 2-</b> J05AT 0 <sup>5</sup> : II 20: II 28 V, I <sub>i</sub>	, EPDI ceramic FEP, 1 <b>wire)</b> EX107 1G Ex 1D Ex	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O PE-U 70 X ia IIB ia IIIC 1A, P <sub>1</sub> =	rs on re ₃ 96 % ⅓ 99.9 ° Г4 Ga T85 °C ≅ 660 m	% Da W, C <sub>i</sub> =					7 nF				
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3	82 m values	FKM, stand optior POM PVC, IBExI zone zone U <sub>i</sub> = 2 in zor	FFKM ard: c -C PUR, <b>nA / 2-</b> U05AT 0 <sup>5</sup> : II 20: II 28 V, I <sub>i</sub> ne 0:	, EPDI ceramic reramic FEP, 1 <b>wire)</b> EX107 1G Ex 1D Ex = 93 n	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O 'PE-U '0 X ia IIB 1 ia IIIC '1A, P <sub>i</sub> = -10	rs on re ₃ 96 % ₃ 99.9 ° Г4 Ga T85 °C ₅ 660 m 60 °C	Da W, C <sub>i</sub> =					7 nF				
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3 Safety technical maximum Permissible media tempe	82 m values	FKM, stand optior POM PVC, 20 r IBExt zone zone U <sub>i</sub> = 2 in zor zone	FFKM ard: c -C PUR, <b>nA / 2-</b> J05AT 0 <sup>5</sup> : II 20: II 28 V, I <sub>i</sub>	, EPDI æramid æramid FEP, 1 <b>wire)</b> EX107 1G Ex 1D Ex = 93 n higher	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O 'PE-U '0 X ia IIB 1 ia IIIC '1A, P <sub>i</sub> = -10 : -10	rs on re ₃ 96 % ⅓ 99.9 ° Г4 Ga T85 °C ≅ 660 m	 Da  W, C <sub>i</sub> = C with γ	D <sub>atm</sub> 0.8	bar up	to 1.1	bar					
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3 Safety technical maximur Permissible media tempe Connecting cables (by factory)	82 m values erature	FKM, stand option POM PVC, 20 r IBExt zone zone U <sub>i</sub> = 2 in zor zone cable cable	FFKM ard: c -C PUR, <b>nA / 2-</b> J05AT 0 <sup>5</sup> : II 20: II 28 V, I <sub>i</sub> ne 0: 1 and capace induct	, EPDI ceramic reamine FEP, 1 Wire) EX107 1G Ex 1D Ex = 93 m higher itance	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O PE-U 0 X ia IIB T ia IIIC nA, P <sub>i</sub> = -10 : -10 : sign sign	rs on re 3 96 % 3 99.9 ° 4 Ga T4 Ga T85 °C 660 m 60 °C 70 °C al line/s al line/s	Da W, C <sub>i</sub> = C with p Shield a shield a	o <sub>atm</sub> 0.8 also sig also sig	bar up nal line	to 1.1 e/signa	bar I line: 1	160 pF/				
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3 Safety technical maximum Permissible media tempe Connecting cables	82 m values erature	FKM, stand option POM PVC, 20 r IBExt zone zone U <sub>i</sub> = 2 in zor zone cable cable	FFKM ard: c -C PUR, <b>nA / 2-</b> J05AT 0 <sup>5</sup> : II 20: II 28 V, I <sub>i</sub> ne 0: 1 and capace induct	, EPDI ceramic reamine FEP, 1 Wire) EX107 1G Ex 1D Ex = 93 m higher itance	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O PE-U 0 X ia IIB T ia IIIC nA, P <sub>i</sub> = -10 : -10 : sign sign	rs on re 3 96 % 3 99.9 ° 4 Ga T4 Ga T85 °C 660 m 60 °C 70 °C al line/s al line/s	Da W, C <sub>i</sub> = C with p Shield a shield a	o <sub>atm</sub> 0.8 also sig also sig	bar up nal line	to 1.1 e/signa	bar I line: 1	160 pF/				
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3 Safety technical maximur Permissible media tempe Connecting cables (by factory)	82 m values erature	FKM, stand option POM PVC, 20 r IBExt zone zone U <sub>i</sub> = 2 in zor zone cable cable	FFKM ard: c -C PUR, <b>nA / 2-</b> J05AT 0 <sup>5</sup> : II 20: II 28 V, I <sub>i</sub> ne 0: 1 and capace induct	, EPDI ceramic reamine FEP, 1 Wire) EX107 1G Ex 1D Ex = 93 m higher itance	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O PE-U 0 X ia IIB T ia IIIC nA, P <sub>i</sub> = -10 : -10 : sign sign	rs on re 3 96 % 3 99.9 ° 4 Ga T4 Ga T85 °C 660 m 60 °C 70 °C al line/s al line/s	Da W, C <sub>i</sub> = C with p Shield a shield a	o <sub>atm</sub> 0.8 also sig also sig	bar up nal line	to 1.1 e/signa	bar I line: 1	160 pF/				
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3 Safety technical maximur Permissible media tempe Connecting cables (by factory) <sup>5</sup> for optional stainless steel p	82 m values erature	FKM, stand option POM PVC, <b>20 r</b> IBExt zone zone U <sub>i</sub> = 2 in zon zone cable cable g design	FFKM ard: c -C PUR, <b>mA / 2-</b> J05AT 0 <sup>5</sup> : II 20: II 20: II 28 V, I <sub>i</sub> ne 0: 1 and capac induct nation is	, EPDI ceramid FEP, 1 <b>wire)</b> EX107 1G Ex 1D Ex = 93 n higher itance ance: <i>valid</i> :	M, othe cs Al₂O cs Al₂O PE-U 70 X ia IIB 1 ia IIIC 1A, P <sub>i</sub> = -10 : -10 : sign sign <i>"II 1G E</i> 2	rs on re 3 96 % 3 99.9 ° 4 Ga T4 Ga T85 °C 660 m 60 °C 70 °C al line/s al line/s	Da W, C <sub>i</sub> = C with µ Shield a shield a <i>4 Ga</i> " (	D <sub>atm</sub> 0.8 Also sig Also sig <i>zone 0)</i>	bar up nal line nal line	e/signa e/signa	bar   line: 1   line: 1	l60 pF/ I μH/m				
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3 Safety technical maximur Permissible media tempe Connecting cables (by factory) <sup>5</sup> for optional stainless steel p Miscellaneous Option cable protection for probes	82 m values erature	FKM, stand optior POM PVC, 20 r IBExt zone Zone U <sub>i</sub> = 2 in zor zone cable cable g design	FFKM ard: con: -C PUR, D05AT 0 <sup>5</sup> : II 20: II 28 V, I <sub>i</sub> ne 0: 1 and capace induct mation is ared for dard: s	, EPDI æramin æramin FEP, 1 <b>wire)</b> EX107 1G Ex 1D Ex 1D Ex = 93 n higher itance æance: <i>valid:</i>	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O TPE-U 0 X ia IIB 1 ia IIIC 1A, P <sub>i</sub> = -10 : -10 : sign sign <i>sign</i>	FS on re 3 96 % 3 99.9 ℃ 3 99.9 ℃ 5 660 m 60 ℃ 70 ℃ al line/s × ia IIC 7	Da W, C <sub>i</sub> = C with p Shield a shield a <i>i</i> 4 Ga" (	D <sub>atm</sub> 0.8 also sig also sig <i>zone 0)</i> eel pipe	bar up nal line nal line e; availa	to 1.1 e/signa e/signa	bar   line: 1   line: 1 s comp	I60 pF/ I μH/m act pro	duct	ns on re	equest)	
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3 Safety technical maximur Permissible media tempe Connecting cables (by factory) <sup>5</sup> for optional stainless steel p Miscellaneous Option cable protection	82 m values erature	FKM, stand optior POM PVC, 20 r IBExt zone Zone U <sub>i</sub> = 2 in zor zone cable cable g design	FFKM ard: con: -C PUR, D05AT 0 <sup>5</sup> : II 20: II 28 V, I <sub>i</sub> ne 0: 1 and capace induct mation is	, EPDI æramin æramin FEP, 1 <b>wire)</b> EX107 1G Ex 1D Ex 1D Ex = 93 n higher itance æance: <i>valid:</i>	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O TPE-U 0 X ia IIB 1 ia IIIC 1A, P <sub>i</sub> = -10 : -10 : sign sign <i>sign</i>	FS on f6 3 96 % 3 99.9 ° 5 99.9 ° 6 4 Ga T85 °C 6 60 m 60 °C 70 °C al line/s ⟨ ia IIC 1 th stainl	Da W, C <sub>i</sub> = C with p Shield a shield a <i>i</i> 4 Ga" (	D <sub>atm</sub> 0.8 also sig also sig <i>zone 0)</i> eel pipe	bar up nal line nal line e; availa	to 1.1 e/signa e/signa	bar   line: 1   line: 1 s comp	I60 pF/ I μH/m act pro	duct	ns on re	equest)	
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3 Safety technical maximur Permissible media tempe Connecting cables (by factory) <sup>5</sup> for optional stainless steel p Miscellaneous Option cable protection for probes	82 m values erature	FKM, stand option POM PVC, <b>20</b> r IBEXI zone zone U <sub>i</sub> = 2 in zor zone cable cable g design prepa (stand	FFKM ard: 0 -C PUR, <b>nA / 2-</b> U05AT 0 <sup>5</sup> : II 20: II 20: II 28 V, I <sub>i</sub> 1 and capace induct nation is ared for dard: s 21 mA	, EPDI ceramic FEP, 1 wire) EX107 1G Ex 1D Ex = 93 n higher itance cance: s valid:	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O TPE-U 0 X ia IIB 1 ia IIIC 1A, P <sub>i</sub> = -10 : -10 : sign sign <i>sign</i>	FS on re 3 96 % 3 99.9 ° 5 99.9 ° 6 4 Ga T85 °C 6 60 m 60 °C 70 °C al line/s c ia line/s c ia line/s c ia line with	Da W, C <sub>i</sub> = C with p Shield a shield a <i>i</i> 4 Ga" (	D <sub>atm</sub> 0.8 also sig also sig <i>zone 0)</i> eel pipe	bar up nal line nal line e; availa	to 1.1 e/signa e/signa	bar   line: 1   line: 1 s comp	I60 pF/ I μH/m act pro	duct	ns on re	equest)	
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3 Safety technical maximur Permissible media tempe Connecting cables (by factory) <sup>5</sup> for optional stainless steel p Miscellaneous Option cable protection for probes Current consumption	82 m values erature	FKM, stand option POM PVC, <b>20</b> r IBEXI zone zone U <sub>i</sub> = 2 in zor zone cable cable g design prepa (stand	FFKM ard: con- -C PUR, D05AT 0 <sup>5</sup> : II 20: II 28 V, I <sub>i</sub> 1 and capace induct mation is ared for dard: s 21 mA ox. 400	, EPDI ceramic FEP, 1 wire) EX107 1G Ex 1D Ex = 93 n higher itance cance: s valid:	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O PE-U O X ia IIB T ia IIIC $A, P_i =$ -10 : sign sign "/// 1G E ting wit s steel	FS on re 3 96 % 3 99.9 ° 5 99.9 ° 6 4 Ga T85 °C 6 60 m 60 °C 70 °C al line/s c ia line/s c ia line/s c ia line with	Da W, C <sub>i</sub> = C with p Shield a shield a <i>i</i> 4 Ga" (	D <sub>atm</sub> 0.8 also sig also sig <i>zone 0)</i> eel pipe	bar up nal line nal line e; availa	to 1.1 e/signa e/signa	bar   line: 1   line: 1 s comp	I60 pF/ I μH/m act pro	duct	ns on re	equest)	
Protection cap Cable sheath Explosion protection (c Approval DX14-LMK 3 Safety technical maximur Permissible media tempe Connecting cables (by factory) <sup>5</sup> for optional stainless steel p Miscellaneous Option cable protection for probes Current consumption Weight	82 m values erature	FKM, stand option POM PVC, <b>20 n</b> IBEXI zone zone U <sub>i</sub> = 2 in zor zone cable cable cable g design prepa (stand max. appro IP 68	FFKM ard: c -C PUR, <b>nA / 2-</b> U05AT 0 <sup>5</sup> : II 20: II 28 V, I <sub>i</sub> 1 and c capac induct nation is ared for dard: s 21 mA ox. 400	, EPDI ceramic FEP, 1 wire) EX107 1G Ex 1D Ex = 93 n higher itance cance: s valid: moun tainles g (with	M, othe cs Al <sub>2</sub> O cs Al <sub>2</sub> O PE-U O X ia IIB T ia IIIC $A, P_i =$ -10 : sign sign "/// 1G E ting with s steel	FS on re 3 96 % 3 99.9 ° 5 99.9 ° 6 60 m 60 °C 70 °C al line/s al line/s (a ia IIC 7 th stain pipe wi ble)	Da W, C <sub>i</sub> = C with p Shield a shield a <i>i</i> 4 Ga" (	D <sub>atm</sub> 0.8 also sig also sig <i>zone 0)</i> eel pipe	bar up nal line nal line e; availa	to 1.1 e/signa e/signa	bar   line: 1   line: 1 s comp	I60 pF/ I μH/m act pro	duct	ns on re	equest)	

LMK 382 Technical Data



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Transmitter flange for flange	version					
a 4 <b>6</b> 40				dimensi	ons in mm	
n x Ød2		-	size	DN25 / PN40	DN50 / PN40	DN80 / PN16
			b	18	20	20
		Ļ	D	115	165	200
		_	d2	14	18	18
	41		d4	68	102	138
	94		f	2	3	3
H			k	85	125	160
-	D		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		Ord	ering code	e		Weight
Transmitter flange DN25 / PN4	0	Z	SF2540			1.2 kg
Transmitter flange DN50 / PN4	0	Z	SF5040			2.6 kg
Transmitter flange DN80 / PN1	6	Z	SF8016			4.1 kg
Mounting flange with cable g	land					
with seal insert (for cable-Ø 4 11 mm)		-		dimonsi	ons in mm	
				DN25 /	DN50 /	DN80 /
n x d2		-52	size	PN40	PN40	PN16
n x d2		122	size b	PN40 18	PN40 20	PN16 20
n x d2						
n x d2			b	18	20	20
n x d2		- p	b D	18 115	20 165	20 200
n x d2			b D d2	18 115 14	20 165 18	20 200 18
n x d2			b D d2 d4	18 115 14 68	20 165 18 102	20 200 18 138

## Technical data

Suitable for	all probes								
Flange material	stainless steel 1.4404 (316L)								
Material of cable gland	standard: brass, nickel plated	andard: brass, nickel plated on request: stainless steel 1.4305 (303); plastic							
Seal insert	material: TPE (ingress protection	on IP 68)							
Hole pattern	according to DIN 2507								
Ordering type		Ordering code	Weight						
DN25 / PN40 with cable gland brass	s, nickel plated	ZMF2540	1.4 kg						
DN50 / PN40 with cable gland brass	s, nickel plated	ZMF5040	3.2 kg						
DN80 / PN16 with cable gland brass	s, nickel plated	ZMF8016	4.8 kg						

### Terminal clamp



D

Technical data									
Suitable for	all probes with cable $\varnothing$ 5.5	10.5 mm							
Material of housing	standard: steel, zinc plated	andard: 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							
Terminal clamp, stainless steel 1.4	301 (304)	Z100527	approx. 160 g						

	Ordering code LMK 382	
LMK 382		)-[]]]
Pressure		
in bar in mH <sub>2</sub> O	5 6 5 5 6 6	
Input [mH <sub>2</sub> O] [bar] 0.4 0.04	0 4 0 0	
0.6 0.06 .0 0.10	0 6 0 0 1 0 0 0	
1.6 0.16	1 6 0 0	
2.5 0.25 4.0 0.40	2 5 0 0 4 0 0 0	
6.0 0.60	6 0 0 0	
10 1.0 16 1.6	1 0 0 1 1 1 6 0 1	
25 2.5 40 4.0	2 5 0 1	
60 6.0		
100 10 160 16	1 0 0 2 1 6 0 2 2 0 0 2	
200 20		
Housing	$\overline{9}$ $\overline{9}$ $\overline{9}$	consult
stainless steel 1.4404 (316L) customer	1 9	consult
Diaphragm		consult
ceramics Al <sub>2</sub> O <sub>3</sub> 96% ceramics Al <sub>2</sub> O <sub>3</sub> 99.9%	2 C	
customer	9	consult
Output 4 20 mA / 2-wire	1	
0 10 V / 3-wire	3	
intrinsic safety 4 20 mA / 2-wire customer	E 9	consult
Seals FKM	1	
EPDM	7	
FFKM customer	7 9	consult
Electrical connection		
PVC-cable (grey, Ø 7.4 mm) <sup>1</sup> PUR-cable (black, Ø 7.4 mm) <sup>1</sup>	2	
FEP-cable (black, Ø 7.4 mm) <sup>1</sup> TPE-U-cable (blue, Ø 7.4 mm) <sup>1</sup>	3 4	
customer	4 9	consult
Accuracy standard 0.35 % FSO	3	
option 0.25 % FSO	2 9	aanault
Cable length	9	consult
in m standard: 3 m PVC	0 0 3	3
standard: 5 m PVC	0 0 5	5
standard: 10 m PVC standard: 15 m PVC	0 1 0	j j
standard: 20 m PVC	0 1 5 0 2 0 9 9 5	
special length PVC		
standard: 3 m PUR standard: 5 m PUR	0 0 3 0 0 5	5
standard: 10 m PUR	0 1 0	
standard: 15 m PUR standard: 20 m PUR	0 1 5 0 2 0	
special length PUR	9 9 9	
standard: 5 m FEP	0 0 5	5
standard: 10 m FEP special length FEP	0 0 5 0 1 0 9 9 5	
special length TPE-U Special version	2   9   9	
standard		0 0 0
prepared for mounting with stainless steel pipe <sup>2</sup>		5 0 2
flange version customer		5 1 0 9 9 9 consult
customer		J J J J J CONSULT

 $^1$  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

## PROBES



# 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 mH<sub>2</sub>O up to 0 ... 100 mH<sub>2</sub>O

#### **Output signal**

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

#### **Special characteristics**

- diameter 22 mm
- diaphragm ceramics 99.9% Al<sub>2</sub>O<sub>3</sub>
- good long-term stability
- especially for waste water

#### **Optional versions**

- 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



<u>Water</u> groundwater and level monitoring



<u>Sewage</u> waste water treatment water recycling



<u>Fuel and oil</u> tank battery biogas plants



## LMK 387 Technical Data

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
	[mH <sub>2</sub> O]	1	1.6	2.5	4	6	10	1.0	2.0	40	60	100
Overpressure	[bar]	3	4	5	5	7	7	10	20	20	20	20
· ·		4	6	8	8	9	9	12	20	20	30	30
Burst pressure ≥ Permissible vacuum	[bar]		-0.3	0		0.5	9	10	25		30	- 30
	[bar]	-0.2	-0.3		-	0.5				-1		
Output signal / Supply												
Standard	2	wiro: 1	20 m /	V <sub>S</sub> = 12	36 \/							
Option IS-version				$V_{\rm S} = 12$								
- I		wire. 4.	20 MA /	V <sub>S</sub> = 14	. 26 V <sub>DC</sub>							
Option temperature element P												
Temperature range	-2	5 125	5 °C									
Connectivity technology	3-	wire				max. volt	age 10 V <sub>DC</sub>	, in intrin	sically safe	e circuit 30	V <sub>DC</sub>	
Resistance	10	00 Ω at 0	0 °C			max. curi	ent 2 mA,	in intrin	isically safe	e circuit 54	mA	
Temperature coefficient	38	350 ppm	n/K			max. pow	/er 10 mW	in intrin	isically safe	e circuit 40	5 mW	
Supply Is	0.	3 1.0	mA DC			-						
Performance	1 -											
	- 4		< 1.0.05.0	V F00				200				
			≤ ± 0.35 °			option: $\leq$	± 0.25 % F	SO				
Permissible load				/ 0.02 A]	Ω							
Influence effects			.05 % FSC			load: 0.0	5 % FSO /	kΩ				
Long term stability	≤	± 0.1 %	FSO / ye	ar								
Turn-on time	4	50 msec	;									
Mean response time		70 mse										
Measuring rate		0 Hz										
<sup>1</sup> accuracy according to IEC 60770			ent (non_lir	nearity hve	teresis rer	eatahility)						
		aajastint			.e. ee.e, rep	cataomty)						
Thermal effects (Offset and Sp		1.0.01 =	00					00	0.00			
Tolerance band	≤	1.0 % F	50			in compe	nsated ran	ge -20 8	SO °C			
Permissible temperatures												
Permissible temperatures	m	edium /	storage: -	25 85 °	С							
Electrical protection <sup>2</sup>												
Short-circuit protection		ermaner	.+									
				a na funati								
Reverse polarity protection		o damag	ie duraiso									
			and immu	nity accord	ding to EN							
			and immu	nity accord	ding to EN		re reference	e available d	on request			
<sup>2</sup> additional external overvoltage pr			and immu	nity accord	ding to EN		re reference	e available o	on request			
<sup>2</sup> additional external overvoltage pr Electrical connection	rotection unit		and immu	nity accord 1 or KL 2 w	ding to EN vith atmosp		re reference	e available c	on request			
<sup>2</sup> additional external overvoltage pr Electrical connection	rotection unit	in termir	and immu nal box KL (-25	nity accord 1 or KL 2 w 70 °C)	ding to EN vith atmosp black	heric pressu	re reference	e available c	on request			
<sup>2</sup> additional external overvoltage pr Electrical connection	rotection unit	<i>in termir</i> UR EP <sup>4</sup>	and immu nal box KL (-25 (-25	nity accord 1 or KL 2 w 70 °C) 70 °C)	ding to EN vith atmosp black	<i>heric pressu</i> Ø 7.4 mm Ø 7.4 mm				ertificate)		
<sup>2</sup> additional external overvoltage pr Electrical connection	rotection unit	<i>in termir</i> UR EP <sup>4</sup> PE-U	and immu nal box KL (-25 (-25	nity accord 1 or KL 2 w 70 °C) 70 °C) 125 °C)	ding to EN with atmosp black black blue	<i>heric pressu</i> Ø 7.4 mm Ø 7.4 mm Ø 7.4 mm			on request	,	hers on rec	uest
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<sup>2</sup> additional external overvoltage pr Electrical connection Cable with sheath material <sup>3</sup> Bending radius	otection unit	in termin UR EP <sup>4</sup> PE-U PE-U <sup>5</sup> atic insta /namic a	(-25 (-25 (-25 (-25 (-25 allation:	nity accord 1 or KL 2 w 70 °C) 70 °C) 125 °C) 125 °C) 125 °C)	ding to EN with atmosp black s black s blue s red s 10-fold ca 20-fold ca	heric pressu Ø 7.4 mm Ø 7.4 mm Ø 7.4 mm Ø 9.0 mm ble diamete ble diamete	(without /	with drinki	ing water c	ot	hers on rec	quest
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<ul> <li><sup>2</sup> additional external overvoltage prise</li> <li>Electrical connection</li> <li>Cable with sheath material 3</li> <li>Bending radius</li> <li><sup>3</sup> shielded cable with integrated air</li> <li><sup>4</sup> do not use freely suspended prob</li> <li><sup>5</sup> only in combination with IS-version</li> <li>Materials (media wetted)</li> <li>Housing</li> <li>Seals (O-rings)</li> <li>Diaphragm</li> <li>Protection cap</li> <li>Cable sheath</li> <li>Explosion protection</li> <li>Approval DX14B-LMK 387</li> <li>Safety technical maximum value (pressure)</li> <li>Safety technical maximum value (temperature)</li> <li>Permissible temp. for environme</li> <li>Connecting cables</li> <li>(by factory)</li> <li>Miscellaneous</li> <li>Drinking water certificate <sup>6</sup></li> </ul>	otection unit PI Fit Tf Tf tube for atm res with an F on (explosion explosion Pr Ce Pr Pr St St St St St St St St St St	in termin UR EP 4 PE-U 5 atic insta ospheric EP cable protectio ainless s andard: otion: eramics 0 OM-C UR, FEF DE 20: = 28 V, e supply = 30 V, zone 0: one 1 an able indu	and immu nal box KL (-25 (-25 (-25 (-25 allaltion: pressure r a f effects s on) and ter steel 1.444 FKM EPDM ( FFKM (I Al <sub>2</sub> O <sub>3</sub> 99.5 P, TPE-U ATEX 100 II 1G Ex i II 1D Ex i II = 93 m/y connection II = 93 m/y connection II = 54 m/ id higher: acity: jutance:	nity accord 1 or KL 2 w 70 °C) 70 °C) 125 °C	ding to EN with atmosp black black black blue 10-fold ca 20-fold ca 20-fold ca for nominal ly charging element Pt with drinkin issible term Ex IBE 18 ba 5 °C Da 0 mW, Ci = an inner ca 5 °C Da 0 mW, Ci = an inner ca 5 °C ma me/shield a ine/shield a md UBA KT	Afferic pressu 7.4 mm 7.4 mm 7.4 mm 7.4 mm 7.4 mm 9.0 mm ble diamete pressure rar processes a 100 100 100 100 100 100 100 10	(without / rr rges absolu re expected tificate) m -15 °C) = 0 µH; ax. 100 nF p µH (tempo up to 1.1 b ine/signal I ine/signal I ine/signal I	opposite the air turner opposi	ing water c <i>ibe is closed</i> <i>he enclosu</i> ment Pt 10 <i>f/m</i> n	ct d) 	hers on req	uest
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Mounting flange with cable gland

#### cable gland M16x1.5 with seal insert (for cable-Ø 4 $\dots$ 11 mm) dimensions in mm DN50 / PN40 DN80 / PN16 DN25 / ŝ size n x d2-PN40 b 18 20 20 D 115 165 200 d2 18 14 18 d4 68 102 138 3 125 2 3 f ł 85 160 k d4 n 4 4 8 D Technical data Suitable for all probes Flange material Material of cable stainless steel 1.4404 (316L) on request: stainless steel 1 4305 (303): plastic aland abla otondard: braca nickal plata

Material of cable gland	standard: brass, nickel plated	on request: stainless steel 1	.4305 (303); plastic					
Seal insert	material: TPE (ingress protection IF	rial: TPE (ingress protection IP 68)						
Hole pattern	according to DIN 2507							
Ordering type		Ordering code	Weight					
DN25 / PN40 with cable gland brass, nic	kel plated	ZMF2540	1.4 kg					
DN50 / PN40 with cable gland brass, nic	kel plated	ZMF5040	3.2 kg					
DN80 / PN16 with cable gland brass, nic	kel plated	ZMF8016	4.8 kg					



Technical data						
Suitable for	all probes with cable $\varnothing$ 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				
Terminal clamp, stainless steel 1.4301	(304)	Z100527	approx. 160 g			

#### 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 / C	<b>CIT 750</b> 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



			Ord	erii	ng	C	ode	LN	/IK	387	7									
	LMK 387			-[			-[	]-[	]-[	]-[]	-	-	-[]	-			-	П		
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	gaug	je in bar	3 6 0			Т								_						
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	gauge i		3 6 1	_									_	_		_	_			
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	4.0	0.40		4	0	0 0														
	6.0	0.60		6	0	0 0														
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	CI	ustomer		9	9	9 9														consult
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		probe			_	_		1												
	screw-in version G1/							A B												
	screw-in version G3/	/4" flush		_	_	_	_	В					_	_		_	_			
Diaphragm		00.0%							0											
	ceramics Al <sub>2</sub> O	ustomer							C 9											consult
Output	0	ustomer							9											Consult
Culput	4 20 mA	/ 2-wire			_	_				1										
intr	rinsic safety 4 20 mA	/ 2-wire								E										
	CI	ustomer								9										consult
Seals		FIGM																		
		FKM EPDM									1 3									
DVGW / KTW:		EPDM 1									3T									
		FFKM <sup>2</sup>									7									consult
		ustomer									9									consult
Electrical conn		7.4																		
	PUR-cable (black, Ø 7 FEP-cable (black, Ø 7											2 3								
	TPE-U-cable (blue, Ø											4								
	TPE-U-cable (red, Ø 9											42								
DVGW / KTW:	TPE-U-cable (blue, Ø	7.4 mm) <sup>1,3</sup>										F								
	CI	ustomer										9								consult
Accuracy																				
standard		% FSO											3 2							
option		% FSO ustomer											2 9							consult
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prepared for mo	ounting with stainless st	eel pipe 5															5	0 9	2	consult
		astorilei															J	3	5	consult

<sup>1</sup> drinking water certification only possible with EPDM seal (code 3T) in combination with TPE-U cable (code F); not possible with IS-protection (explosion protection) <sup>2</sup> min. permissible temperature from -15 °C <sup>3</sup> shielded cable with integrated air tube for atmospheric pressure reference <sup>4</sup> who is combined to the protection of 
 $^{\rm 4}$  only in combination with IS version (explosion protection) and temperature element Pt100

<sup>5</sup> stainless steel pipe is not part of the supply



## Probe for Marine and Offshore 22 mm

**Ceramic Sensor** 

accuracy according to IEC 60770: 0.25 % FSO

### Nominal pressure

from 0 ... 1 mH<sub>2</sub>O up to 0 ... 100 mH<sub>2</sub>O

### **Output signals**

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

### Special characteristics

- diameter 22 mm
- LR-certificate (Lloyd's Register)
- DNV-GL Approval (Det Norske Veritas - Germanischer Lloyd)
- diaphragm 99.9 % Al<sub>2</sub>O<sub>3</sub>
- high long-term stability

### **Optional versions**

- housing material titanium
- IS-version
   Ex ia = intrinsically safe for gas and dust
- temperature element Pt 100
- different kinds of elastomer

The hydrostatic probe LMK 487 has been developed for measuring levels in various tank applications for shipbuilding and offshore. In comparison to the hydrostatic probe LMK 458 the external diameter amounts to only 22 mm by which the installation in 1" pipes can be carried out easily.

Beside the housing materials stainless steel and titanium, different elastomer materials are available by which an optimum adaptation to the application can be ensured.

### Preferred areas of use



<u>Water</u> drinking water abstraction desalinization plant

<u>Shipbuilding / Offshore</u> ballast tanks



monitoring of a ship's position and draught level measurement in ballast and storage tanks



## LMK 487 Technical Data

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	[Dar] [mH <sub>2</sub> O]	1	1.6	2.5	4	6	10	1.0	2.5	40	60	100
Overpressure	[hill <u>2</u> 0]	3	4	5	5	7	7	10	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	Ū		).5	0	10	20	-1	00	
	[]											
Output signal / Supply		1										
Standard				$A / V_s = 1$								
Option IS-version			20 m	$A / V_{s} = 1$	4 28 \							
Option Pt 100-temperat	ure eleme	1	25.00			1						
Temperature range		-25 12	25 0									.,
Connectivity technology Resistance		3-wire 100 Ω at	0.00				tage 10 V				circuit 30	
Temperature coefficient		3850 ppr					rent 2 m/ wer 10 m				circuit 54 circuit 40	
Supply Is		0.3 1.				max. po		۷۷,		Sally Sale		5 11100
Performance		0.5 1.				ļ						
Accuracy <sup>1</sup>		nominal	proceuro	e ≥ 0.4 bar	·· < + 0 2	5 % ESO		ominal n		0.4 bar s	≦±0.35 %	ESO
Permissible load				nin) / 0.02 /		5 /0 F30	I	iominai p	iessuie >	0.4 Dai 3	\$±0.33 /0	F30
Influence effects				SO / 10 V				oad: 0.05	% FSO /	kO		
Long term stability		$\leq \pm 0.1$ %						040. 0.00	/01007	1122		
Turn-on time		450 mse		,								
Mean response time		≤ 70 ms										
Measuring rate		80 Hz										
<sup>1</sup> accuracy according to IEC	60770 – lim	it point adjus	tment (no	n-linearity,	hysteresis	s, repeatabi	ility)					
Thermal effects (Offset	and Span	)										
Tolerance band		≤ 1.0% F	SO				i	n compei	nsated rar	nge -20	. 80 °C	
Permissible temperatur	es	-										
Permissible temperatures	S	medium	/ storage	: -25 8	5 °C							
Electrical protection <sup>2</sup>		-										
Short-circuit protection		permane	ent									
Reverse polarity protection	on	no dama	ige, but a	also no fur	nction							
Electromagnetic compati	bility	emission	and imr	nunity acc	cording to	)						
		- EN 61				GL (Det No						
<sup>2</sup> additional external overvolt	age protecti	on unit in teri	minal box	KL 1 or KL	2 with atr	nospheric p	pressure re	ference av	ailable on i	request		
Mechanical stability		1										
Vibration		4 g (acco	ording to	DNV•GL:	Class B	, curve 2 /	basis: IE	C 60068	-2-6)			
Electrical connection						~						
Cable with sheath materi	al	TPE-U		125 °C)	blue	Ø 7.4 mr Ø 9.0 mr						
Bending radius		TPE-U <sup>4</sup>		125 C) 10-fold c	red			hynamia r	polication	v: 20 fold	cable diar	motor
<sup>3</sup> shielded cable with integrat	ted ventilatic											
<sup>4</sup> only in combination with IS								, angee as	001410, 110			
Materials (media wetted	d)											
Housing				ss steel 1								
				n (resistai	nt agains	st sea wate	er)			othe	rs on requ	iest
Seals (O-rings)		standard										
					nin. perm	nissible ter	mperature	e from -18	5 °C)	othe	rs on requ	est
Diaphragm		ceramics	s Al <sub>2</sub> O <sub>3</sub> 9	9.9%								
Drotootion con												
Protection cap		POM-C										
Cable sheath						free, incr		sistance a	against oil	and gase	oline,	
Cable sheath		POM-C				free, incre a water, he		sistance a	igainst oil	and gase	oline,	
Cable sheath Category of the enviror	nment	POM-C TPE-U	resista	nt against	t salt, sea	a water, he	eavy oil)			and gase	oline,	
Cable sheath Category of the enviror Lloyd's Register (LR)	nment	POM-C TPE-U number	resista of certific	nt against ate: 18/20	t salt, sea	a water, he	eavy oil)	sistance a /2, ENV3		and gase	oline,	
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/		POM-C TPE-U number of number of	resista of certific of certific	nt against ate: 18/20 ate: TAA0	salt, sea 0068 00000RN	a water, he El	eavy oil) NV1, EN\	/2, ENV3	, ENV4			
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/ Germanischer Lloyd (DN		POM-C TPE-U number	resista of certific of certific	nt against ate: 18/20 ate: TAA0	t salt, sea	a water, he El	eavy oil)	/2, ENV3			oline, osure: D	
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/ Germanischer Lloyd (DN Explosion protection	V GL)	POM-C TPE-U number o temperat	resista of certific of certific ture: D	nt against ate: 18/20 ate: TAA0 humi	t salt, sea 0068 00000RN dity: B	a water, he El 1 vil	eavy oil) NV1, EN\ bration: B	/2, ENV3	, ENV4			
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/ Germanischer Lloyd (DN	V GL)	POM-C TPE-U number of temperat	resista of certific of certific ture: D 5 ATEX	nt against ate: 18/20 ate: TAA( humi 1066 X / II	t salt, sea 0068 00000RN dity: B ECEx IB	a water, he El	eavy oil) NV1, EN\ bration: B	/2, ENV3	, ENV4			
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/ Germanischer Lloyd (DN Explosion protection	V GL)	POM-C TPE-U number of temperat	resista of certific of certific ture: D 5 ATEX II 10	nt against ate: 18/20 ate: TAA0 humi 1066 X / II 3 Ex ia IIE	t salt, sea 0068 00000RN dity: B ECEx IB 3 T4 Ga	a water, he El 1 vil E 18.0019	eavy oil) NV1, EN\ bration: B	/2, ENV3	, ENV4			
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/ Germanischer Lloyd (DN Explosion protection Approval DX14B-LMK 48	V GL) 37	POM-C TPE-U number temperal IBExU 19 zone 0: zone 20:	resista of certific of certific ture: D 5 ATEX II 10 II 11	nt against ate: 18/20 ate: TAA0 humi 1066 X / II 3 Ex ia IIE D Ex ia III	t salt, sea 0068 00000RN dity: B ECEx IB 3 T4 Ga C T135 °	a water, hi El 1 E 18.0019 C Da	eavy oil) NV1, EN\ bration: B	/2, ENV3	, ENV4			
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/ Germanischer Lloyd (DN Explosion protection Approval DX14B-LMK 48 Safety technical maximum	V GL) 37	POM-C TPE-U number temperal IBExU 19 zone 0: zone 20: U <sub>i</sub> = 28 V	of certific of certific ture: D 5 ATEX II 10 II 11 /, I <sub>i</sub> = 93	nt against ate: 18/20 hate: TAA0 humi 1066 X / II 3 Ex ia IIE D Ex ia III mA, P <sub>i</sub> = 6	t salt, sea 0068 00000RM dity: B ECEx IB 3 T4 Ga C T135 ° 660 mW,	a water, ho El 1 vil E 18.0019 C Da C <sub>i</sub> = 49.2	eavy oil) NV1, ENV bration: B X nF, $L_i = 0$	/2, ENV3 6 E	, ENV4 EMC: B	enclo	osure: D	
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/ Germanischer Lloyd (DN Explosion protection Approval DX14B-LMK 48	V GL) 37 m values	POM-C TPE-U number of temperat IBExU 11 zone 0: zone 20: U <sub>i</sub> = 28 V the supp	resista of certific of certific ture: D 5 ATEX II 10 II 11 /, I <sub>i</sub> = 93 Ily conne	nt against ate: 18/2( ate: TAA( humi 1066 X / II 3 Ex ia IIE D Ex ia III mA, P <sub>i</sub> = 6 ctions hav	t salt, sea 0068 00000RN dity: B ECEx IB 3 T4 Ga C T135 ° 660 mW, ve an inn	a water, h El 1 Vil E 18.0019 C Da C <sub>i</sub> = 49.2 er capacit	eavy oil) NV1, ENV bration: B IX nF, L <sub>i</sub> = 0 ty of max.	/2, ENV3 5 Ε μΗ; . 100 nF c	, ENV4 EMC: B	enclos	osure: D	
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/ Germanischer Lloyd (DN Explosion protection Approval DX14B-LMK 48 Safety technical maximum (pressure)	V GL) 37 m values	POM-C TPE-U number of temperat IBExU 11 zone 0: zone 20: U <sub>i</sub> = 28 V the supp	resista of certific of certific ture: D 5 ATEX II 10 II 11 /, I <sub>i</sub> = 93 Ily conne	nt against ate: 18/2( ate: TAA( humi 1066 X / II 3 Ex ia IIE D Ex ia III mA, P <sub>i</sub> = 6 ctions hav	t salt, sea 0068 00000RN dity: B ECEx IB 3 T4 Ga C T135 ° 660 mW, ve an inn	a water, ho El 1 vil E 18.0019 C Da C <sub>i</sub> = 49.2	eavy oil) NV1, ENV bration: B IX nF, L <sub>i</sub> = 0 ty of max.	/2, ENV3 5 Ε μΗ; . 100 nF c	, ENV4 EMC: B	enclos	osure: D	
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/ Germanischer Lloyd (DN Explosion protection Approval DX14B-LMK 48 Safety technical maximum (pressure) Safety technical maximum	V GL) 37 m values m values	POM-C TPE-U number of temperat IBExU 11 zone 0: zone 20: U <sub>i</sub> = 28 V the supp	resista of certific of certific ture: D 5 ATEX II 10 II 11 I, I <sub>i</sub> = 93 Ily conne /, I <sub>i</sub> = 54	nt against ate: 18/20 ate: TAA0 humi 1066 X / II G Ex ia IIE D Ex ia III0 mA, P <sub>i</sub> = 6 ctions hav	t salt, sea 2068 20000RN dity: B ECEx IB 3 T4 Ga C T135 ° 360 mW, ye an inn 405 mW,	a water, h El 1 Vil E 18.0019 C Da C <sub>i</sub> = 49.2 er capacit	eavy oil) NV1, EN bration: B X nF, $L_i = 0$ ty of max , $L_i = 0$ µł	/2, ENV3 8 E 9 µH; 100 nF c H (temper	, ENV4 EMC: B	enclos	osure: D	
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/ Germanischer Lloyd (DN Explosion protection Approval DX14B-LMK 48 Safety technical maximum (pressure) Safety technical maximum (temperature)	V GL) 37 m values m values	POM-C TPE-U number of temperat IBExU 11 zone 0: zone 20: U <sub>i</sub> = 28 V the supp U <sub>i</sub> = 30 V in zone 0	resista of certific of certific ture: D 5 ATEX 1 II 10 II 11 /, I <sub>1</sub> = 93 I/y conne /, I <sub>i</sub> = 54 ):	nt against ate: 18/20 ate: TAA0 humi 1066 X / II G Ex ia IIE D Ex ia IIE D Ex ia IIE Ctions hav mA, $P_i = 4$ -20 r: -25	t salt, sea 0068 00000RN dity: B ECEx IB 3 T4 Ga C T135 ° 560 mW, ve an inn 405 mW, 60 °C wi 65 °C	a water, ho El 1 vil E 18.0019 C Da C Da C = 49.2 er capacit C = 0 nF th p <sub>atm</sub> 0.8	eavy oil) NV1, ENV bration: E X nF, L <sub>i</sub> = 0 ty of max , L <sub>i</sub> = 0 $\mu$ t bar up to	/2, ENV3 6 E 9 µH; 100 nF c H (temper 5 1.1 bar	, ENV4 EMC: B opposite th rature eler	enclo he enclos ment Pt 1	osure: D	
Cable sheath Category of the enviror Lloyd's Register (LR) Det Norske Veritas/ Germanischer Lloyd (DN Explosion protection Approval DX14B-LMK 48 Safety technical maximum (pressure) Safety technical maximum (temperature) Permissible temperatures	V GL) 37 m values m values	POM-C TPE-U number of temperat IBExU 11 zone 0: zone 20: U <sub>i</sub> = 28 V the supp U <sub>i</sub> = 30 V in zone 0	resista of certific of certific ture: D 5 ATEX 7 II 10 J 11 J, I <sub>i</sub> = 93 J 10 Jy conne J, I <sub>i</sub> = 54 D: nd highe pacity:	nt against ate: 18/20 ate: TAA0 humi 1066 X / II G Ex ia IIE D Ex ia IIE D Ex ia IIE Ctions hav mA, $P_i = 4$ -20 signal	t salt, sea 0068 00000RN dity: B ECEx IB 3 T4 Ga C T135 ° 360 mW, ve an inn 405 mW, 60 °C wi 65 °C line/shie	a water, h El 1 vil E 18.0019 C Da C <sub>i</sub> = 49.2 er capacit C <sub>i</sub> = 0 nF	eavy oil) NV1, ENV bration: E NX nF, $L_i = 0$ ty of max , $L_i = 0 \mu I$ bar up to as signal	/2, ENV3	, ENV4 EMC: B opposite th rature eler	enclos ne enclos ment Pt 1	osure: D	

LMK 487 Technical Data



#### Mounting flange with cable gland cable gland M16x1.5 with seal insert -(for cable-Ø 4 ... 11 mm) dimensions in mm N25 / DN50 / PN40 PN40 DN80 / DN25 / 53 size n x d2-PN40 PN16 b m 18 20 20 D 115 165 200 d2 d4 14 18 18 68 2 85 4 102 138 3 125 f 3 160 k d4 n 8 4 D Technical data

Suitable for	all probes			
Flange material	stainless steel 1.4404 (316L)			
Material of cable gland	standard: brass, nickel plated	on request: stainless stee	el 1.4305 (303); plastic	
Seal insert	material: TPE (ingress protection	on IP 68)		] :
Hole pattern	according to DIN 2507		_	] :
Ordering type		Ordering code	Weight	
DN25 / PN40 with cable gland brass	s, nickel plated	ZMF2540	1.4 kg	] ·
DN50 / PN40 with cable gland brass	s, nickel plated	ZMF5040	3.2 kg	].
DN80 / PN16 with cable gland brass	s, nickel plated	ZMF8016	4.8 kg	] :

#### Terminal clamp



Technical data									
Suitable for	all probes with cable $\varnothing$ 5.5 10.	5 mm							
Material of housing	standard: steel, zinc plated	optionally: stainless st	eel 1.4301 (304)						
Material of clamping jaws and positioning clips	PA (fibre-glass reinforced)	ν (fibre-glass reinforced)							
Dimensions (mm)	174 x 45 x 32								
Hook diameter	20 mm								
Ordering type		Ordering code	Weight						
Terminal clamp, steel, zinc plat	ed	Z100528	onoroy, 160 g						
Terminal clamp, stainless steel	1.4301 (304)	Z100527	approx. 160 g						

#### 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		1	
CIT 400	Process display with LED display, contacts, analogue output and Ex-approval			468
CIT 600	Multichannel process display with graphics-capable LC display	Sal	35.65	
CIT 650	Multichannel process display with graphics-capable LC display and datalogger	Jun Bl	2799.9 14.58	
CIT 700 /	CIT 750 Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts		-	ũ e
PA 440	Field display with 4-digit LC display	The second	3386 A -14 mil	
	er information please contact our sales department or visit our homepage: w.bdsensors.com		39.05	

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		Or	der	ing	g c	ode	e Ll	МK	48	7									
LMK 487	7		]-[			]-[	]-[	-[	]-[	]-[	-	]-[	]-[			-[			
Pressure																			
	gauge in bar	365	5																
	gauge in mH <sub>2</sub> O	366	5																
	nH <sub>2</sub> O] [bar]		4	0	0 0														
	1.0 0.10 1.6 0.16		1	-	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 40 4.0		2		0 1 0 1														
	40 4.0 60 6.0		4	0	0 1														
	100 10		1	0	0 2														
	customer		9	9	0 1 0 2 9 9														consult
Housing																			
stainless ste	el 1.4404 (316L)					1													
	titanium					Т													
Design	customer	_				9													consult
Design	probe	_	_	-	-	_	1									-			
screw-in ver	rsion G3/4" flush						B												
Diaphragm																			
	nics Al <sub>2</sub> O <sub>3</sub> 99,9%							С											
	customer							9											consult
Output																			
	20 mA / 2-wire								1										
intrinsic safety 4									E			_							
Seals	customer	_	_		_	_	_	_	9							_			consult
Seals	FKM									1									
	EPDM									3									
	FFKM <sup>1</sup>									7									
	customer									9									consult
Electrical connection																			
	(blue, Ø 7.4 mm) <sup>2</sup>										4								
	(red, Ø 9.0 mm) <sup>2,3</sup>						_				42	1							
Accuracy standard for $p_N < 0.4$ bar	0.35 % FSO											0							
	0.35 % FSO 0.25 % FSO											3 2							
standard for $p_N \ge 0,4$ bar	customer											2							consult
Cable length	Guatomor											Э	1						Consult
	in m												9	9	9				
Special version																			
	standard															0			
	re sensor Pt 100															0	1	3	
permissible temperature	es -40 … 125 °C customer															~			consult
	customer															g	9	9	consult

 $^1\,$  min. permissible temperature from -15 °C  $^2\,$  shielded cable with integrated ventilation tube for atmospheric pressure reference  $^3\,$  only in combination with IS version (explosion protection) and temperature element Pt 100  $^3\,$ 



## Probe for Marine and Offshore

Ceramic Sensor

accuracy according to IEC 60770: standard: 0.25 % FSO option: 0.1 % FSO

#### **Nominal pressure**

from 0 ... 40 cmH<sub>2</sub>O up to 0 ... 200 mH<sub>2</sub>O

#### **Output signals**

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

#### **Special characteristics**

- diameter 39.5 mm
- LR-certificate (Lloyd's Register)
- DNV-GL Approval (Det Norske Veritas - Germanischer Lloyd)
- ABS-certificate (American Bureau of Shipping)
- CCS-certificate (China Classification Society)
- high overpressure resistance
- high long-term stability

### **Optional versions**

- ▶ diaphragm Al<sub>2</sub>O<sub>3</sub> 99.9 %
- different housing materials (stainless steel, CuNiFe)
- IS-version
   Ex ia = intrinsically safe for gas
- screw-in and flange version
- accessories e.g. assembling and probe flange, mounting clamp

The hydrostatic probe LMK 458 has been developed for measuring level in service and storage tanks and is certificated for shipbuilding and offshore applications.

A permissible operating temperature up to 125 °C and the possibility to use the device in intrinsic safe areas enable to measure the pressure of various fluids under extreme conditions. The basis for the LMK 458 is a capacitive ceramic sensor element designed by BD|SENSORS, which offers a high overload resistance and medium compatibility.

#### Preferred areas of use are

#### <u>Water</u> drinkin

drinking water abstraction

desalinization plant

Shipbuilding / Offshore



ballast tanks monitoring of a ship's position and draught

level measurement in ballast and storage tanks



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Nominal propours 1	
Nominal pressure <sup>1</sup> [ba	ar] 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 <sub>2</sub> 0	
Overpressure [ba	ar] 2 2 4 4 6 6 8 8 15 25 25 35 35 45 45
Permissible vacuum [ba	ar] -0.2 -0.3 -0.5 -1
<sup>1</sup> available in gauge and absolute; nomin	al pressure ranges absolute from 1 bar
Output signal / Supply	
Standard	2-wire: 4 20 mA / V <sub>S</sub> = 10 32 V <sub>DC</sub> V <sub>S rated</sub> = 24 V <sub>DC</sub>
Option IS-version	2-wire: 4 20 mA / Vs = 12 28 Vpc $V_{s rated} = 24 V_{pc}$
Performance	
Accuracy <sup>2</sup>	standard: $\leq \pm 0.25$ % FSO option: for P <sub>N</sub> $\geq 0.6$ bar <sup>3</sup> : $\leq \pm 0.1$ % FSO
Permissible load	$R_{max} = [(V_S - V_S \min) / 0.02 A] \Omega$
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Influence effects	supply: 0.05 % FSO / 10 V permissible load: 0.05 % FSO / kΩ
Turn-on time	700 msec
Mean response time	< 200 msec mean measuring rate 5/sec
Max. response time	380 msec
<sup>2</sup> accuracy according to IEC 60770 - limit	point adjustment (non-linearity, hysteresis, repeatability)
<sup>3</sup> under the influence of disturbance burst	t according to EN 61000-4-4 (2004) +2 kV accuracy decreased to $\leq$ ± 0.25 % FSO
Thermal effects / Permissible tem	iperatures
Thermal error	$\leq \pm 0.1$ % FSO / 10 K in compensated range -20 80 °C
Permissible temperatures	medium / electronics / environment: -25 125 °C storage: -40 125 °C
Electrical protection <sup>4</sup>	
•	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to
	- EN 61326 - DNV-GL (Det Norske Veritas • Germanischer Lloyd)
<sup>4</sup> additional external overvoltage protection	on unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available
Mechanical stability	
Vibration	4 g (according to DNV-GL: class B, curve 2 / basis: DIN EN 60068-2-6)
Electrical connection	
Cable with sheath material <sup>5</sup>	TPE-U blue Ø 7.4 mm
Bending radius	static installation: 10-fold cable diameter dynamic application: 20-fold cable diameter
	n tube for atmospheric pressure reference (for nominal pressure ranges absolute, the ventilation tube is closed)
Materials	
Housing	standard: stainless steel 1.4404 (316L)
	option: CuNi10Fe1Mn (resistant against sea water) others on request
Seals (media wetted)	standard: FKM
	options: 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 %
Protection cap	POM-C
•	
Cable sheath	TPE-U (flame-resistant, halogen free, increased resistance against oil and gasoline,
•	TPE-U (flame-resistant, halogen free, increased resistance against oil and gasoline, resistant against salt, sea water, heavy oil)
•	
Cable sheath Miscellaneous	resistant against salt, sea water, heavy oil)
Cable sheath Miscellaneous Option cable protection	resistant against salt, sea water, heavy oil) prepared for mounting with stainless steel pipe; available as compact product
Cable sheath Miscellaneous Option cable protection for probes in stainless steel	resistant against salt, sea water, heavy oil) 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)
Cable sheath Miscellaneous Option cable protection for probes in stainless steel Ingress protection	resistant against salt, sea water, heavy oil)  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) IP 68
Cable sheath Miscellaneous Option cable protection for probes in stainless steel Ingress protection Current consumption	resistant against salt, sea water, heavy oil)  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) IP 68 max. 21 mA
Cable sheath Miscellaneous Option cable protection for probes in stainless steel Ingress protection Current consumption Weight	resistant against salt, sea water, heavy oil)  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) IP 68 max. 21 mA min. 650 g (without cable)
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity	resistant against salt, sea water, heavy oil)  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) IP 68 max. 21 mA min. 650 g (without cable) EMC Directive: 2014/30/EU
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive	resistant against salt, sea water, heavy oil)  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) IP 68 max. 21 mA min. 650 g (without cable) EMC Directive: 2014/30/EU 2014/34/EU
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Cable sheath Miscellaneous Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive Option Pt 100 temperature element	resistant against salt, sea water, heavy oil)  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) IP 68 max. 21 mA min. 650 g (without cable) EMC Directive: 2014/30/EU 2014/34/EU nt <sup>6</sup>
Cable sheath Miscellaneous Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive Option Pt 100 temperature element Temperature range Connection temperature element	resistant against salt, sea water, heavy oil)  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) IP 68 max. 21 mA min. 650 g (without cable) EMC Directive: 2014/30/EU 2014/34/EU nt <sup>6</sup> -25 125°C 3-wire
Cable sheath Miscellaneous Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive Option Pt 100 temperature element Temperature range Connection temperature element Resistance	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt <sup>e</sup> -25 125°C         3-wire         100 Ω at 0°C
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt <sup>6</sup> -25 125°C         3-wire         100 Ω at 0°C         3850 ppm/K
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply I <sub>S</sub>	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt <sup>6</sup> -25 125°C         3-wire         100 $\Omega$ at 0°C         3850 ppm/K         0.3 1.0 mA <sub>DC</sub>
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply Is <sup>6</sup> not possible in combination with IS	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt <sup>6</sup> -25 125°C         3-wire         100 $\Omega$ at 0°C         3850 ppm/K         0.3 1.0 mA <sub>DC</sub>
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply Is <sup>6</sup> not possible in combination with IS Category of the environment	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt <sup>6</sup> -25 125°C         3.wire         100 $\Omega$ at 0°C         3850 ppm/K         0.3 1.0 mA pc
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply Is <sup>6</sup> not possible in combination with IS	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt <sup>6</sup> -25 125°C         3-wire         100 $\Omega$ at 0°C         3850 ppm/K         0.3 1.0 mA <sub>DC</sub>
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Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply Is <sup>6</sup> not possible in combination with IS Category of the environment Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL)	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt <sup>6</sup> -25 125°C         3-wire         100 Ω at 0°C         3850 ppm/K         0.3 1.0 mA pc         S-version         EMV1, EMV2, EMV3, EMV4
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply Is 6 not possible in combination with IS Category of the environment Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) Explosion protection 7	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt 6         -25 125°C         3-wire         100 Ω at 0°C         3850 ppm/K         0.3 1.0 mA <sub>DC</sub> S-version         EMV1, EMV2, EMV3, EMV4       number of certificate: 13/20056         temperature:       D         vibration:       B         number of certificate: TAA00001GM         humidity:       B         enclosure:       D         electromagnetic compatibility:
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply Is <sup>6</sup> not possible in combination with IS Category of the environment Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) Explosion protection <sup>7</sup> Approval DX14A-LMK 458	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt 6         -25 125°C         3-wire         100 Ω at 0°C         3850 ppm/K         0.3 1.0 mA pc         Serversion         EMV1, EMV2, EMV3, EMV4         number of certificate: 13/20056         temperature:       D         vibration:       B         IBExU 07 ATEX 1180 X       zone 0 <sup>6</sup> : II 1G Ex ia IIB T4 Ga
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply Is 6 not possible in combination with IS Category of the environment Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) Explosion protection 7	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt <sup>6</sup> -25 125°C         3-wire         100 Ω at 0°C         3850 ppm/K         0.3 1.0 mA bc         S-version         EMV1, EMV2, EMV3, EMV4         number of certificate: 13/20056         temperature: D       vibration: B         number of certificate: TAA00001GM         humidity: B       enclosure: D         electromagnetic compatibility: B         IBEXU 07 ATEX 1180 X       zone 0 <sup>e</sup> : II 1G Ex ia IIB T4 Ga         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> = 0 µH;
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply Is <sup>6</sup> not possible in combination with IS Category of the environment Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) Explosion protection <sup>7</sup> Approval DX14A-LMK 458 Safety technical maximum values	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt <sup>6</sup> -25 125°C         3-wire         100 Ω at 0°C         3850 ppm/K         0.3 1.0 mA pc         S-version         EMV1, EMV2, EMV3, EMV4         humber of certificate: 13/20056         temperature: D       vibration: B         number of certificate: TAA00001GM         humidity: B       enclosure: D         IBEXU 07 ATEX 1180 X       zone 0 <sup>8</sup> : II 1G Ex ia IIB T4 Ga         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> = 0 µH;         the supply connections have an inner capacity of max. 140 nF opposite the enclosure
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply Is <sup>6</sup> not possible in combination with IS Category of the environment Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) Explosion protection 7 Approval DX14A-LMK 458 Safety technical maximum values Permissible temperatures for	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt <sup>6</sup> -25 125°C         3-wire         100 Ω at 0°C         3850 ppm/K         0.3 1.0 mA pc         S-version         EMV1, EMV2, EMV3, EMV4       number of certificate: 13/20056         temperature: D       vibration: B         number of certificate: TAA00001GM         humidity: B       enclosure: D         electromagnetic compatibility: B         IBExU 07 ATEX 1180 X       zone 0 %: II 1G Ex ia IIB T4 Ga         Ui = 28 V, Ii = 93 mA, Pi = 660 mW, Ci = 105 nF; Li = 0 µH;         the supply connections have an inner capacity of max. 140 nF opposite the enclosure         in zone 0:       -20 60°C with patm 0.8 bar up to 1.1 bar
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply Is <sup>6</sup> not possible in combination with IS Category of the environment Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) Explosion protection <sup>7</sup> Approval DX14A-LMK 458 Safety technical maximum values Permissible temperatures for environment	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU <b>t</b> <sup>6</sup> -25 125°C         3-wire         100 Ω at 0°C         3850 ppm/K         0.3 1.0 mA pc         S-version         EMV1, EMV2, EMV3, EMV4         number of certificate: 13/20056         temperature: D       vibration: B         number of certificate: TAA00001GM         humidity: B       enclosure: D         electromagnetic compatibility: B         IBExU 07 ATEX 1180 X       zone 0 <sup>8</sup> : II 1G Ex ia IIB T4 Ga         U; = 28 V, I; = 93 mA, P; = 660 mW, C; = 105 nF; L; = 0 µH;         the supply connections have an inner capacity of max. 140 nF opposite the enclosure         in zone 0:       -20 60°C with patm 0.8 bar up to 1.1 bar         zone 1 and higher: -25 70°C
Cable sheath  Miscellaneous  Option cable protection for probes in stainless steel Ingress protection Current consumption Weight CE-conformity ATEX Directive  Option Pt 100 temperature element Temperature range Connection temperature element Resistance Temperature coefficient Supply Is <sup>6</sup> not possible in combination with IS Category of the environment Lloyd's Register (LR) Det Norske Veritas • Germanischer Lloyd (DNV•GL) Explosion protection 7 Approval DX14A-LMK 458 Safety technical maximum values Permissible temperatures for	resistant against salt, sea water, heavy oil)         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)         IP 68         max. 21 mA         min. 650 g (without cable)         EMC Directive: 2014/30/EU         2014/34/EU         nt 6         -25 125°C         3-wire         100 Ω at 0°C         3850 ppm/K         0.3 1.0 mA pc         S-version         EMV1, EMV2, EMV3, EMV4       number of certificate: 13/20056         temperature: D       vibration: B         number of certificate: TAA00001GM         humidity: B       enclosure: D         IBExU 07 ATEX 1180 X       zone 0 %: II 1G Ex ia IIB T4 Ga         Ui = 28 V, Ii = 93 mA, Pi = 660 mW, Ci = 105 nF; Li = 0 µH;       the supply connections have an inner capacity of max. 140 nF opposite the enclosure         in zone 0:       -20 60°C with patm 0.8 bar up to 1.1 bar

<sup>8</sup> for optional stainless steel pipe the following designation is valid: "II 1 G Ex ia IIC T4" (zone 0)

LMK 458 Technical Data



n x Ød2					ons in mm		
			size	DN25 / PN40	DN50 / PN40	DN80 / PN16	
		_ <u>4</u> _	b	18	20	20	
		± ↓	D	115	165	200	
		4	d2	14	18	18	
	d4	-	d4	68	102	138	
-	k		f k	2 85	3 125	3 160	
-	D		n	4	4	8	
Technical data		0.1.1.1.4.4.5.5.					
Suitable for	LMK 382, LMK 382H, LMK 45	8, LMK 458H	H				
Flange material	stainless steel 1.4404 (316L)						
Hole pattern	according to DIN 2507						
Ordering type		0	rdering cod	le		Weight	
Transmitter flange DN25 / PN			ZSF2540			1.2 kg	
Transmitter flange DN50 / PN			ZSF5040		2.6 kg 4.1 kg		
Transmitter flange DN80 / PN	116		ZSF8016		2.6 kg		
cable gland M16x1.5	gland						
	gland			dimensi	ons in mm		
cable gland M16x1.5 with seal insert (for cable-⊘ 4 11 mm)	gland	52 	size	DN25 /	DN50 /	DN80 /	
cable gland M16x1.5 with seal insert	gland		size	DN25 / PN40	DN50 / PN40	PN16	
cable gland M16x1.5 with seal insert (for cable-⊘ 4 11 mm)	gland	55	b	DN25 / PN40 18	DN50 / PN40 20	PN16 20	
cable gland M16x1.5 with seal insert (for cable-⊘ 4 11 mm)	gland		b D	DN25 / PN40 18 115	DN50 / PN40 20 165	PN16 20 200	
cable gland M16x1.5 with seal insert (for cable-⊘ 4 11 mm)	gland	- p - <b>-</b>	b	DN25 / PN40 18 115 14 68	DN50 / PN40 20 165 18 102	PN16 20 200 18 138	
with seal insert $\frown$ (for cable- $\varnothing$ 4 11 mm)	gland		b D d2 d4 f	DN25 / PN40 18 115 14 68 2	DN50 / PN40 20 165 18 102 3	PN16 20 200 18 138 3	
cable gland M16x1.5 with seal insert (for cable-⊘ 4 11 mm)	gland		b D d2 d4 f k	DN25 / PN40 18 115 14 68 2 85	DN50 / PN40 20 165 18 102 3 125	PN16 20 200 18 138 3 160	
cable gland M16x1.5 with seal insert (for cable-⊘ 4 11 mm)	gland		b D d2 d4 f	DN25 / PN40 18 115 14 68 2	DN50 / PN40 20 165 18 102 3	PN16 20 200 18 138 3	
cable gland M16x1.5 with seal insert (for cable-⊘ 4 11 mm)	gland		b D d2 d4 f k	DN25 / PN40 18 115 14 68 2 85	DN50 / PN40 20 165 18 102 3 125	PN16 20 200 18 138 3 160	
cable gland M16x1.5 with seal insert (for cable-⊘ 4 11 mm)	gland		b D d2 d4 f k	DN25 / PN40 18 115 14 68 2 85	DN50 / PN40 20 165 18 102 3 125	PN16 20 200 18 138 3 160	
cable gland M16x1.5 with seal insert (for cable-Ø 4 11 mm) n x d2	gland		b D d2 d4 f k	DN25 / PN40 18 115 14 68 2 85	DN50 / PN40 20 165 18 102 3 125	PN16 20 200 18 138 3 160	
cable gland M16x1.5 with seal insert (for cable-Ø 4 11 mm) n x d2 Technical data	d4 d4 b all probes		b D d2 d4 f k	DN25 / PN40 18 115 14 68 2 85	DN50 / PN40 20 165 18 102 3 125	PN16 20 200 18 138 3 160	
cable gland M16x1.5 with seal insert (for cable-Ø 4 11 mm) nx d2 Technical data Suitable for			b D d2 d4 f k	DN25 / PN40 18 115 14 68 2 85	DN50 / PN40 20 165 18 102 3 125	PN16 20 200 18 138 3 160	
cable gland M16x1.5 with seal insert (for cable-Ø 4 11 mm) nx d2 Technical data Suitable for Flange material Material of cable gland	all probes stainless steel 1.4404 (316L) standard: brass, nickel plated		b D d2 d4 f k n	DN25 / PN40 18 115 14 68 2 85	DN50 / PN40 20 165 18 102 3 125 4	PN16 20 200 18 138 3 160 8	
cable gland M16x1.5 with seal insert (for cable-Ø 4 11 mm) nx d2 Technical data Suitable for Flange material Material of cable gland Seal insert	all probes stainless steel 1.4404 (316L) standard: brass, nickel plated material: TPE (ingress protect		b D d2 d4 f k n	DN25 / PN40 18 115 14 68 2 85 4	DN50 / PN40 20 165 18 102 3 125 4	PN16 20 200 18 138 3 160 8	
cable gland M16x1.5 with seal insert (for cable-Ø 4 11 mm) nx d2 Technical data Suitable for Flange material Material of cable gland Seal insert Hole pattern	all probes stainless steel 1.4404 (316L) standard: brass, nickel plated	tion IP 68)	b D d2 d4 f k n	DN25 / PN40 18 115 14 68 2 85 4 4 tainless stee	DN50 / PN40 20 165 18 102 3 125 4	PN16 20 200 18 138 3 160 8	
cable gland M16x1.5 with seal insert (for cable-Ø 4 11 mm) nx d2 Technical data Suitable for Flange material Material of cable gland Seal insert Hole pattern Ordering type	all probes stainless steel 1.4404 (316L) standard: brass, nickel plated material: TPE (ingress protect according to DIN 2507	tion IP 68)	b D d2 d4 f k n	DN25 / PN40 18 115 14 68 2 85 4 4 tainless stee	DN50 / PN40 20 165 18 102 3 125 4	PN16 20 200 18 138 3 160 8 3); plastic Weight	
cable gland M16x1.5 with seal insert (for cable-Ø 4 11 mm) nx d2 Technical data Suitable for Flange material Material of cable gland Seal insert Hole pattern Ordering type DN25 / PN40 with cable gland	all probes stainless steel 1.4404 (316L) standard: brass, nickel plated material: TPE (ingress protec according to DIN 2507	tion IP 68)	b D d2 d4 f k n	DN25 / PN40 18 115 14 68 2 85 4 4 tainless stee	DN50 / PN40 20 165 18 102 3 125 4	PN16 20 200 18 138 3 160 8 3); plastic 3); plastic Ueight 1.4 kg	
cable gland M16x1.5 with seal insert (for cable-Ø 4 11 mm) nx d2 Technical data Suitable for Flange material Material of cable gland Seal insert Hole pattern Ordering type	all probes         stainless steel 1.4404 (316L)         standard: brass, nickel plated         material: TPE (ingress protect         according to DIN 2507         d brass, nickel plated         d brass, nickel plated	tion IP 68)	b D d2 d4 f k n	DN25 / PN40 18 115 14 68 2 85 4 4 tainless stee	DN50 / PN40 20 165 18 102 3 125 4	PN16 20 200 18 138 3 160 8 3); plastic Weight	

	Ordering c	ode LMK 458	
LMK 458		]-[]-[]-[]-[]-[]-[]-[]-	
Pressure			
in bar, gauge	7 6 5 7 6 8 7 6 6		
in bar, absolute <sup>1</sup> in mH₂O	7 6 8		
Input [mH <sub>2</sub> O] [bar]	7 0 0		
0.4 0.04	0 4 0 0		
0.6 0.06	0 6 0 0 1 0 0 0		
1.0 0.10 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 10 1.0	6 0 0 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 6.0 100 10	6 0 0 1 1 0 0 2		
160 16	1 6 0 2		
200 20	2002		
customer	9 9 9 9		consult
Housing stainless steel 1.4404 (316L)		1	
copper-nickel-alloy (CuNi10Fe1Mn)		K	
customer		9	consult
Design		1	
probe flange version <sup>2</sup>		3	
screw-in version		5	
Diaphragm			
ceramics Al <sub>2</sub> O <sub>3</sub> 96% ceramics Al <sub>2</sub> O <sub>3</sub> 99.9%		2 C	
customer		9	consult
Output			
4 20 mA / 2-wire intrinsic safety 4 20 mA / 2-wire		1	
customer		E 9	consult
Seals			
FKM		1	
EPDM FFKM <sup>3</sup>		3 7	
customer		9	consult
Electrical connection			
TPE-U-cable (blue, Ø 7.4 mm) <sup>4</sup>		4	
Accuracy customer		9	consult
standard 0.25 % FSO		2	
option für P <sub>N</sub> ≥0.6 bar: 0.1 % FSO		1	
Cable length		9	consult
Cable length in m			9 9 9
Special version			
standard			0 0 0
with temperature sensor Pt 100 <sup>5</sup> prepared for mounting <sup>6</sup>			0 1 3
with stainless steel pipe			5 0 2
customer			9 9 9 consult

nominal pressure ranges absolute from 1 bar
 <sup>2</sup> mounting accessories are not part of supply and have to be ordered separately
 <sup>3</sup> min. permissible temperature from -15°C

<sup>4</sup> shielded cable with integrated ventilation tube for atmospheric reference

<sup>5</sup> not possible in combination with IS-version

<sup>6</sup> possible for probes in stainless steel; stainless steel pipe is not part of the supply



## Separable Stainless Steel Probe

Ceramic Sensor

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

#### Nominal pressure

from 0 ... 40 cmH<sub>2</sub>O up to 0 ... 100 mH<sub>2</sub>O

#### **Output signals**

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

#### **Special characteristics**

- cable assembly and ► probe head separable
- diameter 39.5 mm
- especially suitable for sewage, viscous and pasty media

#### **Optional versions**

- **IS-version** Ex ia = intrinsically safe for gas and dust
- mounting with stainless steel pipe
- diaphragm 99.9 % Al<sub>2</sub>O<sub>3</sub> ►
- different kinds of cables ► and elastomers

The separable stainless steel probe LMK 358 has been designed for level measurement in waste water, waste and higher viscosity media. Basic element is a capacitive ceramic sensor.

In order to facilitate stock-keeping and maintenance the probe head is plugged to the cable assembly with a connector and can be changed easily.

### Preferred areas of use are

Water



ground water level measurement rain spillway basin



Sewage waste water treatment water recycling

Fuel and oil level monitoring in open tanks with low filling heights fuel storage tank farms biogas plants



## LMK 358 Technical Data

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
1 0 0	[mH <sub>2</sub> O]	0.04	0.6	1	1.6	2.5	4	6	10	1.0	2.5	40	60	100
Overpressure	[hill 120] [bar]	2	2	4	4	6	6	8	8	15	25	25	35	35
	[Dai]	2	4	-7		0	0	0	0	15	_ 25	_ 23	00	1 35
Output signal / Supply														
Standard		2-wire:	4	20 mA	/ Vs	= 9.	32 Vn	C.						
Option IS-version		2-wire:				= 14								
Option 3-wire		3-wire:		10 V		= 12.5								
Performance		0 1110.	•	10 1	, •3	12.0	02 10	0						
Accuracy <sup>1</sup>		standa	rd: ≤±	0.35.%	580									
Accuracy		option:		0.35 % I 0.25 % I										
Permissible load		R <sub>max</sub> =	$[(V_s - V_s)]$	′ <sub>s min</sub> ) / 0	.02 A] 🤇	2								
Influence effects			: 0.05 %				lo	ad: 0.05	5 % FSC	) / kΩ				
Long term stability		≤ ± 0.1	% FSC	) / year a	at refere	ence con	ditions							
Turn-on time		700 m		,										
Mean response time		≤ 200					m	easurin	g rate 5/	/sec				
Max. response time		380 m							5 5					
<sup>1</sup> accuracy according to IEC 60				(non-line	arity hv	steresis	eneatah	lity)						
Thermal effects (offset an		ponn au	Jasanen	(	ancy, my		opealabl							
			0/ 500	11011					marts 1		70.00			
Thermal error		≤ ± 0.1	% FSO	/ 10 K			in	compe	nsated r	ange 0	70 °C			
Permissible temperatures														
Permissible temperatures		mediur	n /electr	onic / e	nvironm	ent: -25	125	°C	storage	e: -40	125 °C			
Electrical protection <sup>2</sup>														
Short-circuit protection		perma	nent											
Reverse polarity protection		no dan	nage, bu	it also n	o functi	on								
Electromagnetic compatibil			<b>.</b>			ling to E	N 6132	6						
<sup>2</sup> additional external overvoltage	-								reference	availabl	le on reai	lest		
Electrical connection									2.2.01100					
Cable with sheath material	3	PVC	( 5	70 % ()	arou	074								
Cable with sheath material		PUR		. 70 °C) . 70 °C)		Ø 7.4 Ø 7.4								
			(-25			¢Ø7.4								
			(-25											
Bending radius		static i	nstallatio	on:		ld cable	diamet							
<b>^</b>			ic applic			old cable	diamet	er						
<sup>3</sup> shielded cable with integrated							na nro		avaata	4				
<sup>4</sup> do not use freely suspended µ	biobes with	i aii FEF	capie if	enecis di	ue lo niĝi	ny chargi	ng proce	sses are	ехресте					
Materials (media wetted)														
Housing			ss steel	1.4404	(316L)									
Seals		FKM												
		EPDM	00	oot										
Dianhragm			on requ		0 00 0	1/								
Diaphragm			rd: cera		2O <sub>3</sub> 96 9 2O <sub>3</sub> 99.9									
Protoction can		option: POM-0		annes Al	203 99.5	0/ 0								
Protection cap														
Cable sheath			PUR, FE		-0									
Explosion protection (onl	-			,										
Approval DX14-LMK 358			05ATEX											
			) <sup>5</sup> :    1(											
Ostatuta al 1 de 1			20: II 1E				07				-			
Safety technical maximum									μH, C <sub>gn</sub>		F			
Permissible temperature		in zone	e 0: or high				<sub>atm</sub> 0.8 b	ar up to	o 1.1 bar					
Connecting cables							lso siar	al line/	signal lin	e: 100 r	)F/m			
(by factory)									signal lin					
<sup>5</sup> for optional stainless steel cor					•					<b>σ.</b> τ μτη				
•	. agaica pip				vana. n			. (20116	-,					
Miscellaneous			a al <b>6</b>			liala	40.01.02							
Option cable protection									able as c		product	L .		
(on request)				ness st	eei pipe	with a t	Jai ienę	un up to	o 2 m po	ssible)				
Current consumption		max. 2		( <del>.</del>										
Weight			. 650 g	without	cable)									
Ingress protection		IP 68			a									
CE-conformity		EMC D	Directive	: 2014/3	80/EU									
ATEX Directive		2014/3												



Mounting flange with cable gland

#### cable gland M16x1.5 with seal insert dimensions in mm N25 / DN50 / (for cable-Ø 4 ... 11 mm) DN25 / DN80 / ŝ size n x d2-PN40 PN40 PN16 b 18 20 20 D 115 165 200 14 68 2 d2 18 18 d4 102 138 3 125 f 3 85 160 k d4 4 4 8 n D Technical data

Suitable for	all probes									
Flange material	stainless steel 1.4404 (316L)									
Material of cable gland	standard: brass, nickel plated	on request: stainless stee	el 1.4305 (303); plastic							
Seal insert	material: TPE (ingress protection	terial: TPE (ingress protection IP 68)								
Hole pattern	according to DIN 2507	ding to DIN 2507								
Ordering type		Ordering code	Weight							
DN25 / PN40 with cable gland bras	s, nickel plated	ZMF2540	1.4 kg							
DN50 / PN40 with cable gland bras	s, nickel plated	ZMF5040	3.2 kg							
DN80 / PN16 with cable gland bras	s, nickel plated	ZMF8016	4.8 kg							

#### Terminal clamp



Technical data									
Suitable for	all probes with cable $\varnothing$ 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 pla	ted	Z100528	100						
Terminal clamp, stainless stee	l 1.4301 (304)	Z100527 approx. 16							

#### 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	Multicha	nnel process display with graphics-capable LC display	
CIT 650	Multicha	nnel process display with graphics-capable LC display and datalogger	ko
CIT 700 /	CIT 750	Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts	
PA 440	Field dis	play with 4-digit LC display	60
Fau fauth			

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



	Order	ring coc	de LIV	IK (	358								
LMK 358		□-		- 🗌	-D-	- 🗌 -	·	-	- 🔲		- 🔲		
Pressure in bar	4 4 5												
in mH <sub>2</sub> O	4 4 5												
Input [mH <sub>2</sub> O] [bar]													
0.4 0.04	0 4	0 0											
0.6 0.06	0 6	0 0											
1.0 0.10	1 0	0 0											
1.6 0.16 2.5 0.25	1 6 2 5	0 0 0											
4.0 0.40	2 5 4 0	0 0											
6.0 0.60	6 0	0 0											
10 1.0		0 1											
16 1.6	1 0 1 6 2 5	0 1											
25 2.5	2 5	0 1											
40 4.0	4 0 6 0	0 1											
60 6.0 100 10	6 0	0 1											
100 10 customer	1 0 9 9	0 2 9 9											consult
Housing	5 5	5 5											consult
stainless steel 1.4404 (316L)		1											
customer		9											consult
Diaphragm													
ceramics Al <sub>2</sub> O <sub>3</sub> 96 %			2										
ceramics Al <sub>2</sub> O <sub>3</sub> 99.9 % customer			C 9										concult
Output			9										consult
4 20 mA / 2-wire			1										
0 10 V / 3-wire			3										
intrinsic safety 4 20 mA / 2-wire			3 E										
customer			9								_		consult
Seals FKM				4									
EPDM				1 3									
customer				9									consult
Electrical connection				•									oonour
PVC-cable (grey, Ø 7.4 mm) <sup>1</sup>					1								
PUR-cable (black, Ø 7.4 mm)					2								
FEP-cable (black, Ø 7.4 mm) <sup>1</sup>					3								
TPE-U-cable (blue, Ø 7.4 mm) 1					4								000001-14
Accuracy					9								consult
standard 0.35 % FSO						3							
option 0.25 % FSO						2							
customer						2 9							consult
Cable length													
in m Special version							99	9					
Special Version standard									0 (				
prepared for mounting													
with stainless steel pipe 2	2								1 (	0 6			consult
cable protection with													
stainless steel corrugated pipe									1 (	3	9	9 9	consult
with pipe length in m customer													a
customer									9 9	9 9			consult

<sup>1</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference

<sup>2</sup> stainless steel pipe is not part of the supply



# LMP 808

### Separable Plastic Probe

**Stainless Steel Sensor** 

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

#### Nominal pressure

from 0 ... 1 mH<sub>2</sub>O up to 0 ... 100 mH<sub>2</sub>O

#### **Output signals**

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

#### **Special characteristics**

- diameter 35 mm
- cable assembly and probe head separable
- excellent linearity
- small thermal effect

#### **Optional versions**

- SIL 2 (Safety Integrity Level) according to IEC 61508 / 61511
- mounting accessories e.g. mounting flange and terminal clamp in stainless steel
- different kinds of cables and elastomers
- customer specific versions
   e. g. special pressure ranges

The separable plastic probe is designed for level measurement of water, sewage as well as fuels and oils. Basic element is a piezoresistive stainless steel sensor.

In order to facilitate stock-keeping and maintenance the probe head is plugged to the cable assembly with a connector and can be changed easily.

#### Preferred areas of use are



<u>Water / filtrated sewage</u> ground water level measurement rain spillway basins drinking water systems water treatment plants

Fuel
fuel
tank
biog

<u>Fuel and oil</u> fuel storage tank farms biogas plants process water recycling



Input pressure range												
Nominal pressure gauge	e [bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10
Level	[mH <sub>2</sub> O]		1.6	2.5	4	6	10	16	25	40	60	100
Overpressure	[bar]	1 .	1	1	2	5	5	10	10	20	40	40
Burst pressure ≥	[bar]	1	1.5	1.5	3	7.5	7.5	15	15	25	50	50
•		1		1	1		1	1	.1	1	1	
Output signal / Supply	,											
Standard		2-wire:	4 2	) mA / V	s = 8	32 V <sub>DC</sub>		SIL-ve	ersion: V <sub>s</sub>	= 14 2	8 V <sub>DC</sub>	
Options 3-wire		3-wire:	3-wire: 0 20 mA / V <sub>S</sub> = 14 30 V <sub>DC</sub> 0 10 V / V <sub>S</sub> = 14 30 V <sub>DC</sub>									
Performance												
Accuracy		standard:nominal pressure < 0.4 bar: $\leq \pm 0.5 \%$ FSO $\leq \pm 0.35 \%$ FSOnominal pressure $\geq 0.4$ bar: $\leq \pm 0.35 \%$ FSO										
Permissible load		1	current 2-wire: $R_{max} = [(V_s - V_{s min}) / 0.02 \text{ A}] \Omega$ current 3-wire: $R_{max} = 500 \Omega$									
Influence effects				R <sub>min</sub> = 10 SO / 10 V				load.(	.05 % FS	O/kO		
Long term stability				year at ref		onditione		1000.0		0 / 1122		
Response time		$\leq \pm 0.1$ $\leq$ 10 ms		yeararie								
<sup>1</sup> accuracy according to IEC	C 60770 – limi			on-linearity	hysteresi	s. reneatab	ilitv)					
Thermal effects (Offse				e.r micanty,	,	c, ropouldb						
Nominal pressure P <sub>N</sub>	[bar]	,		< 0.4(	0					2 0.40		
Tolerance band	[% FSO]			< 0.40 ≤ ± 1						± 0.40		
in compensated range	[% F30] [°C]			> I			0 50		2	10.75		
		[					050					
Permissible temperature		no o clivere	/ alc str	ning /		/ ators = -	05 0	0.00				
Permissible temperature		meaium	/ electro	nics / envi	nonment	/ storage:	-25 8	0.0				
Electrical protection <sup>2</sup>												
Short-circuit protection		permane										
Reverse polarity protect		1		also no fui			-					
Electromagnetic compar				munity acc				-				
<sup>2</sup> additional external overvo	Itage protectio	on unit in te	erminal bo	x KL 1 or K	L 2 with at	mospheric	pressure r	eference a	vailable on	request		
Electrical connection												
Cable with sheath mate	rial <sup>3</sup>		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									
		FEP 4 (	-25 7	)°C) bla )°C) bla	ск Ø7.4 ck Ø7.4	mm						
Cable capacitance		FEP <sup>4</sup> (	-25 7	0°C) bla	ck Ø 7.4	mm	160 pF/m	<u>ו</u>				
Cable capacitance Cable inductance		FEP <sup>₄</sup> ( signal lir	-25 7 ne/shield	°C) bla c) °C) bla also sigi also sigi	ck Ø7.4 nal line/si	mm gnal line:		1				
		FEP <sup>4</sup> ( signal lir signal lir static ins	-25 70 ne/shield ne/shield stallation	) °C) bla also sigi also sigi : 10-i	ck Ø7.4 nal line/si nal line/si fold cable	mm gnal line: gnal line: diameter	1 µH/m	1				
Cable inductance		FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph	-25 7 ne/shield ne/shield stallation application neric pres	0 °C) bla also sign also sign : 10- ion: 20- sure referen	ck Ø 7.4 nal line/si nal line/si fold cable fold cable nce	mm gnal line: gnal line: e diameter e diameter	1 μH/m					
Cable inductance Bending radius <sup>3</sup> shielded cable with integra	led probes witi	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph	-25 7 ne/shield ne/shield stallation application neric pres	0 °C) bla also sign also sign : 10- ion: 20- sure referen	ck Ø 7.4 nal line/si nal line/si fold cable fold cable nce	mm gnal line: gnal line: e diameter e diameter	1 μH/m					
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend Materials (media wette	led probes witi	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph	-25 7 ne/shield ne/shield stallation application neric pres	0 °C) bla also sign also sign : 10- ion: 20- sure referen	ck Ø 7.4 nal line/si nal line/si fold cable fold cable nce	mm gnal line: gnal line: e diameter e diameter	1 μH/m					
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend Materials (media wette	led probes witi	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic or atmosph h an FEP c	-25 7 ne/shield ne/shield stallation application neric pres	0 °C) bla also sign also sign : 10- ion: 20- sure referen	ck Ø 7.4 nal line/si nal line/si fold cable fold cable nce	mm gnal line: gnal line: e diameter e diameter	1 μH/m					
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend <b>Materials (media wette</b> Housing Seals	led probes witi	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph h an FEP c PP-HT FKM EPDM	-25 70 ne/shield ne/shield stallation application peric press sable if eff	0 °C) bla also sign also sign : 10- ion: 20- sure referen	ck Ø 7.4 nal line/si nal line/si fold cable fold cable highly cha	mm gnal line: gnal line: e diameter e diameter	1 μH/m					
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend <b>Materials (media wette</b> Housing Seals Diaphragm	led probes witi	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph h an FEP c PP-HT FKM EPDM	-25 70 ne/shield ne/shield stallation application peric press sable if eff	0 °C) bla also sign also sign : 10- ion: 20- sure referent ects due to	ck Ø 7.4 nal line/si nal line/si fold cable fold cable highly cha	mm gnal line: gnal line: e diameter e diameter	1 μH/m					
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend <b>Materials (media wette</b> Housing Seals Diaphragm	led probes witi	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph h an FEP c PP-HT FKM EPDM stainless POM-C	-25 70 ne/shield stallation applicatio	0 °C) bla also sign also sign : 10- ion: 20- sure referent ects due to	ck Ø 7.4 nal line/si nal line/si fold cable fold cable highly cha	mm gnal line: gnal line: diameter diameter	1 μH/m					
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend <b>Materials (media wette</b> Housing Seals Diaphragm Protection cap	led probes witi	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph h an FEP c PP-HT FKM EPDM stainless POM-C	-25 70 ne/shield stallation applicatio	0 °C) bla also sign also sign : 10- ion: 20- sure referent ects due to 4435 (316	ck Ø 7.4 nal line/si nal line/si fold cable fold cable highly cha	mm gnal line: gnal line: diameter diameter	1 μH/m					
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend <b>Materials (media wette</b> Housing Seals Diaphragm Protection cap Cable sheath	led probes with ed)	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph h an FEP c PP-HT FKM EPDM stainless POM-C PVC, PU	-25 70 ne/shield he/shield stallation application eric press sable if eff	0 °C) bla also sign also sign : 10- ion: 20- sure referent ects due to 4435 (316	ck Ø 7.4 nal line/si nal line/si fold cable fold cable nce highly cha BL)	mm gnal line: gnal line: diameter diameter	1 μH/m - esses are e	expected	compact g	product		
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend <b>Materials (media wette</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Miscellaneous</b>	led probes with ed)	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph h an FEP c PP-HT FKM EPDM stainless POM-C PVC, PL	-25 70 he/shield he/shield stallation application eric pres- sable if eff s steel 1. JR, FEP	0 °C) bla also sign also sign : 10- ion: 20- sure referen ects due to 4435 (316 , others or	ck Ø 7.4 nal line/si nal line/si fold cable fold cable fold cable nce highly cha SL) n request	mm gnal line: gnal line: diameter diameter rging proce	1 μH/m esses are d	expected	compact p	product		
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend <b>Materials (media wette</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Miscellaneous</b> Option cable protection (on request) Option SIL 2 application	led probes with ed)	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph h an FEP c PP-HT FKM EPDM stainless POM-C PVC, PU prepared (standar accordin	-25 70 ne/shield he/shield stallation application	0 °C) bla also sign also sign : 10- ion: 20- sure referen ects due to 4435 (316 , others or unting with vith a total 61508 / II	ck Ø 7.4 nal line/si nal line/si fold cable fold cable fold cable nce highly cha bL) D PP-HT p length u EC 61511	mm gnal line: gnal line: diameter diameter <i>rging proce</i>	1 μH/m esses are d	expected	compact p	product		
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend <b>Materials (media wette</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Miscellaneous</b> Option cable protection (on request)	led probes with ed)	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph h an FEP c PP-HT FKM EPDM stainless POM-C PVC, PU prepared (standar accordin signal ou	-25 70 ne/shield he/shield stallation application	0 °C) bla also sign also sign : 10- ion: 20- sure referen ects due to 4435 (316 , others or unting with vith a total	ck Ø 7.4 nal line/si nal line/si fold cable fold cable fold cable nce highly cha bl bL) n request length u EC 61511 . 25 mA	mm gnal line: gnal line: diameter diameter <i>rging proce</i>	1 μH/m esses are d	expected	compact p	product		
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend <b>Materials (media wette</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Miscellaneous</b> Option cable protection (on request) Option SIL 2 application Current consumption	led probes with ed)	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic or atmosph h an FEP c PP-HT FKM EPDM stainless POM-C PVC, PL prepared (standar accordin signal ou signal ou	-25 70 he/shield he/shield stallation application	0 °C) bla also sign also sign : 10- ion: 20- sure referen- ects due to 4435 (316 , others or unting with vith a total 61508 / II rent: max	ck Ø 7.4 nal line/si nal line/si fold cable fold cable fold cable nce highly cha SL) D PP-HT p length up EC 61511 . 25 mA . 7 mA	mm gnal line: gnal line: diameter diameter <i>rging proce</i>	1 μH/m esses are d	expected	compact p	product		
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend <b>Materials (media wette</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Miscellaneous</b> Option cable protection (on request) Option SIL 2 application Current consumption	led probes with ed)	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic or atmosph h an FEP c PP-HT FKM EPDM stainless POM-C PVC, PL prepared (standar accordin signal ou signal ou	-25 70 he/shield he/shield stallation application	2 °C) bla also sign also sign also sign : 10- ion: 20- sure referen- ects due to 4435 (316 , others or unting with vith a total 61508 / II rent: max tage: max	ck Ø 7.4 nal line/si nal line/si fold cable fold cable fold cable nce highly cha SL) D PP-HT p length up EC 61511 . 25 mA . 7 mA	mm gnal line: gnal line: diameter diameter <i>rging proce</i>	1 μH/m esses are d	expected	compact p	product		
Cable inductance Bending radius <sup>3</sup> shielded cable with integra <sup>4</sup> do not use freely suspend <b>Materials (media wette</b> Housing Seals Diaphragm Protection cap Cable sheath <b>Miscellaneous</b> Option cable protection (on request) Option SIL 2 application Current consumption Weight	led probes with ed)	FEP <sup>4</sup> ( signal lir signal lir static ins dynamic for atmosph h an FEP c PP-HT FKM EPDM stainless POM-C PVC, PL prepared (standar accordin signal ou signal ou approx. IP 68	-25 70 he/shield he/shield stallation application	2 °C) bla also sign also sign also sign : 10- ion: 20- sure referen- ects due to 4435 (316 , others or unting with vith a total 61508 / II rent: max tage: max	ck Ø 7.4 nal line/si nal line/si fold cable fold cable fold cable nce highly cha 6L) n request length u EC 6151 <sup>2</sup> . 25 mA . 7 mA le)	mm gnal line: gnal line: diameter diameter <i>rging proce</i>	1 μH/m esses are d	expected	compact p	product		

LMP 808 Technical Data



	Ordering code LMP 808	
LMP 808		
Pressure		
in bar	4 1 0 4 1 1	
in mH <sub>2</sub> O Input [mH <sub>2</sub> O] [bar]	4 1 1	
1.0 0.10		
1.6 0.16		
2.5 0.25		
4.0 0.40	4 0 0 0	
6.0 0.60		
10 1.0		
16 1.6 25 2.5		
40 4.0		
60 6.0		
100 10		
customer		nsult
Housing		
PP-HT	R	
Diaphrogram	9 Cor	nsult
Diaphragm stainless steel 1.4435 (316L)	1	
customer		nsult
Output		louit
4 20 mA / 2-wire	1	
0 20 mA / 3-wire	2	
0 10 V / 3-wire	3	
SIL2 4 20 mA / 2-wire	1S	
Seals	9 0 cor	nsult
FKM	1	
EPDM	3	
customer		nsult
Electrical connection		
PVC-cable (grey, Ø 7.4 mm) <sup>1</sup>		
PUR-cable (black, Ø 7.4 mm) <sup>1</sup>		
FEP-cable (black, Ø 7.4 mm) <sup>1</sup>	3	
customer Accuracy	9 0 cor	nsult
standard for $P_N \ge 0.4$ bar 0.35 % FSO	3	
standard for $P_N < 0.4$ bar $0.55\%$ FSO	5	
option for $P_N \ge 0.4$ bar $0.25 \%$ FSO	2	
customer		nsult
Cable length		
in m	9 9 9	
Special version		
standard prepared for mounting with PP-HT pipe <sup>2</sup>	2 0 0 0 1 0 cor	a a ult
customer		nsult nsult
Customer	3 3 3 3	Jun

<sup>1</sup> cable with integrated ventilation tube for atmospheric pressure reference

<sup>2</sup> pipe is not part of the supply

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## Plastic Probe for Aggressive Media

Ceramic Sensor

accuracy according to IEC 60770: 0.5 % FSO

#### Nominal pressure

from 0 ... 6 mH<sub>2</sub>O up to 0 ... 200 mH<sub>2</sub>O

#### **Output signals**

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

#### **Special characteristics**

- diameter 21 mm
- suitable for hydrostatic level measurement e. g. in 3/4" pipes
- good linearity
- good long term stability

#### **Optional versions**

- different cable materials
- customer specific versions
   e. g. special pressure ranges

The LMK 806 with ceramic sensor and diameter of only 21 mm has been especially designed for the continuous level measurement at confined space conditions. Permissible media are highly polluted and aggressive fluids.

Basic element of the plastic submersible probe is a flush mounted ceramic sensor, which makes cleaning easier when solid parts of the medium deposit on it. Different cable and elastomer materials are available in order to achieve maximum media compatibility.

#### Preferred areas of use are



<u>Sewage</u>

waste water treatment water recycling dumpsites



<u>Aggressive media</u> level measurement in most of acids and lyes



1											
Input pressure range		0.0	4	1.0	0.5		0	40	10		
1 00 1	par]	0.6	1	1.6	2.5	4	6	10	16	20	
Level [mH	<sub>2</sub> O]	6	10	16	25	40	60	100	160	200	
•	bar]	2	2	4	4	10	10	20	40	40	
Burst pressure ≥ [b	bar]	4	4	5	5	12	12	25	50	50	
Output signal / Supply											
2-wire	4	20 mA	V <sub>s</sub> = 12	32 Vpc							
Performance	1.4	20 111/	1 13 12	02 VDC							
Accuracy <sup>1</sup>		≤±0.5 %	580								
Permissible load				0.00.41.0							
Influence effects		R <sub>max</sub> = [(V <sub>S</sub> – V <sub>S min</sub> ) / 0.02 A] Ω supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ									
				10 V		1080	1: 0.05 % F3	50 / KΩ			
Response time <sup>1</sup> accuracy according to IEC 60770 –		10 msec		oority byoto	rania rananta	bility)					
			· · ·		esis, repeata	ointy)					
Thermal effects (Offset and S			-			• • •			70.00		
Thermal error			FSO / 10 K					d range -25	70 °C		
Permissible temperatures	m	nealum / e	electronics	/ environme	ent / storage	: -25	80 °C				
Electrical protection <sup>2</sup>	1										
Short-circuit protection		ermanen									
Reverse polarity protection		-	e, but also i								
Electromagnetic protection					g to EN 613						
<sup>2</sup> additional external overvoltage pro-	tection ι	unit in tern	ninal box KL	1 or KL 2 with	h atmospheric	pressure re	ference avail	able on reque	est		
Electrical connection											
Cable with sheath material <sup>3</sup>	P	VC (-t	5 70 °C)	grey	Ø 7.4 mm						
			25 70 °Ć		Ø 7.4 mm						
	FI	EP 4 (-2	25 70 °C	) black	Ø 7.4 mm						
	ot	thers on i	request								
Cable capacitance	si	ignal line/	shield also	signal line	e/signal line:	160 pF/m					
Cable inductance					e/signal line:						
Bending radius		tatic insta			able diamete						
<b>3</b>	dy	ynamic a	pplication:	20-fold ca	able diamete	er					
<sup>3</sup> shielded cable with integrated vent											
<sup>4</sup> do not use freely suspended probe	s with a	an FEP cab	ole if effects c	lue to highly	charging proc	esses are ex	pected				
Materials (media wetted)											
Housing	P	P-HT				othe	ers on reque	est			
Seals	FI	KM									
Diaphragm	Ce	eramics A	Al <sub>2</sub> O <sub>3</sub> 96 %								
Protection cap	P	OM-C									
Cable sheath	P	VC, PUR	, FEP								
Miscellaneous											
Current consumption	m	1ax. 25 m	A								
Weight			0 g (withou	it cable)							
Ingress protection		⊃ 68	- 3 (								
CE-conformity			tive: 2014/	30/EU							
Wiring diagram	ļ E		. 2014/	00.00							
2-wire-system (current)											
supply +											
	-0+										
	M										
	Vs										
supply _											
LL Y											
Pin configuration											
Electrical connection					cable co	olours (IEC	60757)				
Suppl	v +					WH (white)	,				
Suppl						BN (brown)					
Shi						E (green-ye					
	1						,				

## LMK 806 Technical Data



	Ordering code LMK 806	
LMK 806		-
Pressure in bar	3         7         5           3         7         6	
in mH <sub>2</sub> O Input [mH <sub>2</sub> O] [bar] 6 0.60 10 1.0 16 1.6	6       0       0         1       0       0         1       6       0	
25 2.5 40 4.0 60 6.0 100 10 160 16	2       5       0       1         4       0       0       1         6       0       0       1         1       0       0       2         1       6       0       2         2       0       0       2         9       9       9       9	
200 20 customer	2 0 0 2 9 9 9 9	consult
Housing PP-HT customer	R 9	consult
Diaphragm ceramics Al <sub>2</sub> O <sub>3</sub> 96%		
Output	2 9	consult
4 20 mA / 2-wire customer	1 9	consult
Seals FKM customer	1 9	consult
Accuracy 0.5 % FSO	5	
Electrical connection PVC-cable (grey, Ø 7.4 mm) PUR-cable (black, Ø 7.4 mm) FEP-cable (black, Ø 7.4 mm)	2	consult
Cable length	9	consult
in m Special version	9 9 9	
standard customer		0 0 0 9 9 9 consult

<sup>1</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference



## Plastic Probe for Aggressive Media

Ceramic Sensor

accuracy according to IEC 60770: 0.5 % FSO

### Nominal pressure

from 0 ... 4 mH<sub>2</sub>O up to 0 ... 100 mH<sub>2</sub>O

### **Output signals**

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

### **Special characteristics**

- diameter 35 mm
- good long term stability
- easy handling

### **Optional versions**

- SIL 2 (Safety Integrity Level) according to IEC 61508 / IEC 61511
- different kinds of cables and elastomers
- customer specific versions
   e. g. special pressure ranges

The plastic submersible probe LMK 807 is designed for continuous level measurement for highly polluted and aggressive media.

Basic element of the plastic submersible probe is the flush mounted ceramic sensor, which makes cleaning easier when solid parts of the medium deposit on it. Different cable and elastomer materials are available in order to achieve maximum media compatibility.

#### Preferred areas of use are



<u>Sewage</u> waste water treatment water recycling dumpsite



<u>Aggressive media</u> level measurement in most of acids and lyes



Input pressure range									
Nominal pressure gauge	[bar]	0.4	0.6	1	1.6	2.5	4	6	10
Level	[mH <sub>2</sub> O]	4	6	10	1.0	2.5	40	60	100
Overpressure	[hin [20]	1	2	2	4	4	10	10	20
Burst pressure ≥	[bar]	2	4	4	5	5	10	10	25
	[bai]	2	<b>– –</b>	<b>T</b>	5	5	12	12	20
Output signal / Supply									
2-wire		4 20 mA /	V <sub>S</sub> = 8 32	V <sub>DC</sub>		SIL-ver	sion: V <sub>s</sub> = 14	+ 28 V <sub>DC</sub>	
Performance									
Accuracy <sup>1</sup>		≤ ± 0.5 % FS	50						
Permissible load		$R_{max} = [(V_S -$	- V <sub>S min</sub> ) / 0.02	2 A] Ω					
Influence effects		supply: 0.05				load: 0.	05 % FSO /	kΩ	
Long term stability				reference con	ditions				
Response time		≤ 10 msec							
<sup>1</sup> accuracy according to IEC 60	770 — limi	t point adjustme	nt (non-lineari	ity, hysteresis, i	repeatability)				
Thermal effects (Offset an	nd Span)								
Thermal error		≤±0.2 % FS	SO / 10 K			in comp	ensated ran	ge -25 70	°C
Permissible temperatures	5								
Permissible temperatures		medium / ele	ectronic / env	/ironment / st	orage:	-25 8	30 °C		
Electrical protection <sup>2</sup>									
Short-circuit protection		permanent							
Reverse polarity protection		no damage,	but also no f	function					
Electromagnetic compatibil	ity	emission and	d immunity a	ccording to E	N 61326				
<sup>2</sup> additional external overvoltage	e protectio	on unit in termin	al box KL 1 or	KL 2 with atmo	spheric pressu	ure reference a	available on re	quest	
Electrical connection									
Cable with sheath material	3	PVC (-5	.70°C) g	rey Ø 7.4 i	nm				
		PUR (-25		lack Ø 7.4 i					
		FEP <sup>4</sup> (-25		lack Ø 7.4 i	nm				
Cable canacitance		others on rec			-1.1	<b>Г</b> /			
Cable capacitance		-		ignal line/sign					
Cable inductance		signal line/sr		gnal line/sign 0-fold cable d		m			
Bending radius		dynamic app		0-fold cable d					
<sup>3</sup> shielded cable with integrated	l ventilatio								
<sup>4</sup> do not use freely suspended p	probes wit	h an FEP cable	if effects due	to highly chargi	ng processes a	are expected			
Materials (media wetted)									
Housing		PP-HT							
Seals		FKM, EPDM							
Diaphragm		ceramics Al <sub>2</sub>	O₃ 96 %						
Protection cap		POM-C							
Cable sheath		PVC, PUR, F	EP						
Miscellaneous									
Option SIL 2 version		according to	IEC 61508 /	IEC 61511					
Current consumption		max. 25 mA	- (	-  -   - )					
Weight		approx. 200	g (without ca	able)					
Ingress protection		IP 68							
CE-conformity		EMC Directiv	/e: 2014/30/	EU					
Wiring diagram									
2-wire-system (current)									
supply +									
	Vs								
	*5								
supply –									
Γ Ŷ									
Din configuration									
Pin configuration					abla aslaur-				
Electrical connection	upply			C	able colours	, ,			
	Supply + Supply –				WH (w BN (br				
	Shield				GNYE (gre				
	Gineiu				Sinc (gib	Sir yonowy			


	Ordering code LMK 807	
LMK 807	$\Box \Box \Box =	
Pressure in bar in mH <sub>2</sub> O	3     9     0       3     9     1	
Input         [mH <sub>2</sub> O]         [bar]           4         0.4         6         0.6           10         1.0         1.0         16         1.6           25         2.5         10         1.0         1.0	4       0       0       0         6       0       0         1       0       0         2       5       0	
40 4.0 60 6.0 100 10 customer Housing	4       0       0       1	ılt
PP-HT customer	R 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ılt
Diaphragm ceramics Al <sub>2</sub> O <sub>3</sub> 96% customer	2 9 9	ilt
Output	1 1S 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ılt
Seals FKM EPDM FFKM	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Accuracy	9 consu	.lt
0.5 % FSO customer Electrical connection	5 9 9 consu	It
PVC-cable (grey, Ø 7.4 mm) <sup>1</sup> PUR-cable (black, Ø 7.4 mm) <sup>1</sup> FEP-cable (black, Ø 7.4 mm) <sup>1</sup> customer	2	.11
Cable length in m Special version	9 9 9	
standard customer	0 0 0 9 9 9 consu	ılt

<sup>1</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference



# LMK 808

# Separable Plastic Probe

Ceramic Sensor

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

## Nominal pressure

from 0  $\dots$  1 mH<sub>2</sub>O up to 0  $\dots$  100 mH<sub>2</sub>O

### **Output signals**

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

### **Special characteristics**

- diameter 35 mm
- diaphragm ceramics 99.9% Al<sub>2</sub>O<sub>3</sub>
- cable assembly and probe head separable
- good long-term stability
- especially for waste water

### **Optional versions**

- different kinds of elastomer
- customer specific versions
   e. g. special pressure ranges
- mounting accessories

The separable plastic submersible probe LMK 808 was developed for level measurement in water and wastewater. The basis of the probe is an extremely robust, almost maintenance-free capacitive ceramic sensor.

In addition, an overvoltage protection was integrated into the separable probe head and an effective protection against damage to the cable developed by rodents.

In order to facilitate stock-keeping and maintenance the probe head is plugged to the cable assembly with a connector and can be changed easily.

# Preferred areas of use



groundwater and level monitoring sea water



waste water treatment water recycling



Sewage

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	[Dar] [mH <sub>2</sub> O]	1	1.6	2.5	4	6	10	1.6	2.5	4	60	100
Overpressure	[hin 120] [bar]	3	4	5	5	7	7	10	20	20	20	20
Burst pressure ≥	[bar]	4	6	8	8	9	9	12	25	25	30	30
Permissible vacuum	[bar]	-0.2	-0.3		-	).5		10	20	-1	00	00
	[]			1				I		-		
Output signal / Supply												
2-wire		4 20 ı	mA / $V_s$ =	13 30	O V <sub>DC</sub>							
Performance												
Accuracy <sup>1</sup>		standar option:	d: ≤±0.3 ≤±0.3	35 % FS 25 % FS				others	s on reque	est		
Permissible load			$(V_{S} - V_{Sm})$		-							
Influence effects			0.05 % F					load:	0.05 % FS	SO / kΩ		
Long term stability				year at r	eference o	conditions						
Turn-on time		up to 1.										
Mean response time		≤ 20 ms	6									
Measuring rate	00770 line	200 Hz					114. A					
<sup>1</sup> accuracy according to IEC			istment (no	on-linearit	y, nysteres	is, repeatab	llity)					
Thermal effects (Offset Tolerance band	anu span			ominal					nonceted		20 00 %	<u>^</u>
		≤ 1.0%	FSU for n	iominai p	pressure r	anges		in con	ipensateo	range:	-20 80 °(	5
Permissible temperature			Lalasti	-i 1 -		/ stars -		05	00.00			
Permissible temperatures	3	medium	/ electror	nics / en	vironment	/ storage:		-25	2° 08			
Electrical protection <sup>2</sup>		i										
Short-circuit protection		perman										
Reverse polarity protection			age, but a				-					
Electromagnetic compatit						EN 6132		<i>,</i>				
<sup>2</sup> additional external overvolta	age protectio	on unit in te	erminal boy	KL 1 OF	KL 2 with a	tmospneric	bressure r	eference a	vallable on	request		
Overvoltage protection		0.4.0.6										
Series resistance	<u> </u>			sitive an	nd negativ	e wire						
Nominal discharge currer	11	8 kA (8/	20 µs)									
Max. rated current		30 mA										
Electrical connection												
Cable with sheath materia	al °					or drinking	. ,		on reque	st		
Cable capacitance						ignal line:		1				
Cable inductance						ignal line:	•					
Bending radius			stallation:			e diameter e diameter						
<sup>3</sup> shielded cable with integrat	ed air tube f											
Materials (media wetted		er annoop:	10/10 p. 000									
Housing	,	PP-HT						others	on reque	st		
Seals (O-rings)			d: FKM					ouncie	onreque	51		
		option:	EPDN	1				others	on reque	st		
Diaphragm		ceramic	s Al <sub>2</sub> O <sub>3</sub> 9	9.9%					· · ·			
Protection cap		POM-C										
Cable sheath		TPE-U										
Miscellaneous												
Current consumption		max. 22	mA									
Weight		approx.	300 g (wi	ithout ca	ble)							
Ingress protection		IP 68	<u> </u>									
CE-conformity		EMC Di	rective: 2	014/30/E	U							
Wiring diagram				P	in config	uration						
2-wire-system (current)					electrical			M12x1 (4	• •			
p supply + A o + Vs Vs					Unnection				B-B	3 0)2	cable co (IEC 60	
I supply -						Supply + Supply –		3 4			WH (wł BN (bro	
∑ I supply – y =				_						G		wn)

# LMK 808 Technical Data



	Ordering code LMK 808																
	LMK 808					-[	]-[	-[	]-[	-	- <u>[</u>	-[]		]-[			
Pressure		in bar															
		in mH <sub>2</sub> O	4 1 A 4 1 B														
Input	[mH₂O]																
	1.0	0.10		1 0	0 0												
	1.6	0.16		16	0 0												
	2.5 4.0	0.25 0.40		2 5 4 0	0 0 0 0 0 0												
	6.0	0.40		6 0	0 0												
	10	1.0		1 0	0 1												
	16	1.6		1 6	0 1												
	25	2.5		1 6 2 5 4 0 6 0 1 0 9 9	0 1												
	40	4.0		4 0	0 1												
	60 100	6.0 10		6 0	0 1												
	100	customer		99	99												consult
Housing		ouotonnoi		0 0	0 0												oonoun
		PP-HT				R											
		customer				9											consult
Diaphragm	ooromio Al	0.00.0.0/					0										
	ceramic Al <sub>2</sub>	203 99.9 % customer					C 9										consult
Output		cusiomer					9										Consult
Output	4 20 r	nA / 2-wire		_	_	_	_	1									
		customer						9									consult
Seals																	
		FKM							1								
		EPDM customer							3 9								consult
Electrical c	onnection	customer							9								consuit
	TPE-U-cable (blue,	Ø 7.4 mm) <sup>1</sup>		_	_	_	_	_	_	F							
		customer								9							consult
Accuracy																	
standard		.35 % FSO									3						
option	0.	.25 % FSO customer									2 9						consult
Cable lengt	th	Sustomer									9						Consult
culture long		in m										9	99	)			
Special ver	sion																
		standard												0	0	0	
		customer												9	9	9	consult

<sup>1</sup> shielded cable, drinking water suitable, with integrated ventilation tube for atmospheric pressure reference



# LMK 809

# Plastic Probe for Aggressive Media

High Purity Ceramic Sensor

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

## Nominal pressure

from 0 ... 0.4 mH<sub>2</sub>O up to 0 ... 100 mH<sub>2</sub>O

## **Output signals**

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

### **Special characteristics**

- diameter 45 mm
- chemical resistance
- high overpressure resistance
- especially for tank level measurement of viscous and aggressive media
- diaphragm 99.9 % Al<sub>2</sub>O<sub>3</sub>
- housing material PP-HT or PVDF

### **Optional versions**

- different kinds of cables and elastomers
- prepared for mounting with pipe

The plastic submersible probe LMK 809 is designed for continuous level measurement in highly polluted and most of aggressive media. Basic element is a capacitive ceramic sensor.

Basic element of the plastic probe is the flush mounted ceramic sensor, which makes cleaning easier when solid parts of the medium deposit on it. Different cable and seal materials are available in order to achieve maximum media compatibility.

# Preferred areas of use are



<u>Sewage</u> waste water treatment water recycling dumpsite



<u>Aggressive media</u> level measurement in most of acids and lyes



Nominal pressure	۲h1	0.04	0.00	0.4	0.40	0.05	0.4	0.0	4	4.0	0.5	4	6	40
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
Level	[mH <sub>2</sub> O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35
Output signal / Supply														
Standard		2-wire:	4	1 20	mA / V	s = 9	32 \							
Option		3-wire:				s = 12.5								
Performance						-								
Accuracy <sup>1</sup>		standa option:			% FSO % FSO									
Permissible load		· ·			0.02 A]									
Influence effects				6 FSO /				load	d: 0.05 9	% FSO	/ kΩ			
Long term stability		≤ ± 0.1	% FSC	) / year	at refer	ence co	nditions							
Turn-on time		700 m	sec											
Mean response time		< 200	msec					mea	asuring	rate: 5/	sec			
Max. response time		380 m	sec											
<sup>1</sup> accuracy according to IEC 607	70 – limit p	oint adjus	tment (r	on-linea	rity, hyste	eresis, re	peatabili	ty)						
Thermal effects (Offset an	d Span)													
Thermal error		≤±0.1	% FSC	) / 10 K				in c	ompens	ated ra	nge 0	70 °C		
Permissible temperatures														
Permissible temperatures		mediur	n / elec	tronic /	environi	ment / st	orage:	-25	80 °	С				
Electrical protection <sup>2</sup>														
Short-circuit protection		permar	nent											
Reverse polarity protection				ut also	no funct	ion								
Electromagnetic compatibilit	ty		<u> </u>			ding to E	EN 6132	26						
<sup>2</sup> additional external overvoltage									ference	available	e on requ	est		
Electrical connection														
Cable with sheath material <sup>3</sup>	;	PUR	(-25	5 70	°C)	black	Ø7	.4 mm						
		FEP <sup>4</sup>	(-25	5 70	°Ċ	black	Ø 7	.4 mm						
		TPE-U		5 100	°C)	blue	Ø 7	.4 mm						
0.11		others												
Cable capacitance						line/sig								
Cable inductance						line/sig								
Bending radius		static ir dynam				d cable o d cable o								
<sup>3</sup> shielded cable with integrated	ventilation t						lamete	1						
<sup>4</sup> do not use freely suspended p							proces	ses are e	xpected					
Materials (media wetted)														
Housing		standa												
0		option:												
Seals		FKM, E			1									
Diaphragm				3 99.9 9	/0									
Cable sheath		PUR, F	EP, IF	′E-U										
Miscellaneous														
Option pipe R1"						astic pip ngth up						est)		
Current consumption		max. 2								-	•	,		
Weight		approx	. 320 g	(withou	t cable)									
Ingress protection		IP 68												
CE-conformity		EMC D	irective	: 2014/	30/EU									
Wiring diagrams														
2-wire-system (current)						3-wire-	system (	voltage)						
p supply +	• + Vs					p U	supply +		v	vs	+			



LMK 809       Imput       <		Ordering code LMK 809	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	LMK 809		- []]]
Input         (mH_0)         (bar)         <	Pressure		
Input         (mH_0)         (bar)         <		3 9 5	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		3 9 6	
0.6 0.06 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0 4 0 0	
1.6       0.16       1       6       0 <td></td> <td>0 6 0 0</td> <td></td>		0 6 0 0	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		1 0 0 0	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
6.0       0.60       6       0       0       1 <td></td> <td></td> <td></td>			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		1 0 0 1	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		1 6 0 1	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			
Housing       PP-HT       R <t< td=""><td></td><td></td><td></td></t<>			
Housing       PP-HT       R <t< td=""><td></td><td>9 9 9 9</td><td>consult</td></t<>		9 9 9 9	consult
PVDF     B			
customer         9         6         7			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			consult
Ceramics Al <sub>2</sub> O <sub>3</sub> 99.9%         C         9         0 <td></td> <td></td> <td>Consult</td>			Consult
Output         4 20 mA / 2-wire         1         4 <td>ceramics Al<sub>2</sub>O<sub>3</sub> 99.9%</td> <td>C</td> <td></td>	ceramics Al <sub>2</sub> O <sub>3</sub> 99.9%	C	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		9	consult
010 V/3-wire       3       1		1	
customer       9       a<		3	
FKM       1			consult
EPDM       3       3       4       4       4       4         FFKM       7       7       5       4       4       6         customer       9       6       6       6       6       6         Accuracy       3       6       6       6       6       6         standard:       0.35 % FSO       2       6       6       6       6         option:       0.25 % FSO       2       6       6       6       6         customer       9       6       6       6       6       6         PUR-cable (black, Ø 7.4 mm) 1       2       6       6       6       6         FEP-cable (black, Ø 7.4 mm) 1       3       6       6       6       6         TPE-U-cable (black, Ø 7.4 mm) 1       3       6       6       6       6         Cable length       9       6       6       6       6       6       6         Special version       5       6       1       0       6       1       0			
FFKM       7       0			
customer9IIIConsultAccuracyIIIIIIstandard: $0.35 \%$ FSO3IIIIIoption: $0.25 \%$ FSO2IIIIIcustomer9IIIIIIElectrical connectionIIIIIIPUR-cable (black, Ø 7.4 mm) 12IIIIFEP-cable (black, Ø 7.4 mm) 13IIIITPE-U-cable (blue, Ø 7.4 mm) 13IIIICable lengthIn m99IIISpecial versionStandardIII <td< td=""><td></td><td>3</td><td></td></td<>		3	
Accuracy       Image: Standard:       0.35 % FSO       3       Image: Standard:       0.35 % FSO       2       Image: Standard:       0.35 % FSO       2       Image: Standard:       0.25 % FSO       2       Image: Standard:       Image: Standard:		9	consult
standard:       0.35 % FSO       3       3       4       4       5         option:       0.25 % FSO       2       2       4       6       6         customer       9       4       6       6       6       6         PUR-cable (black, Ø 7.4 mm) 1       2       4       6       6       6         FEP-cable (black, Ø 7.4 mm) 1       3       6       6       6       6         TPE-U-cable (blue, Ø 7.4 mm) 1       4       6       6       6       6         Cable length       9       9       9       6       1       0         Special version         Standard       9       9       9       9       7       7         pipe R1" 2       6       1       0       7       7       7			
Electrical connection         I		3	
Electrical connection       I       I       I       I       I       I         PUR-cable (black, Ø 7.4 mm) 1       2       I       I       I       I       I         FEP-cable (black, Ø 7.4 mm) 1       3       I       I       I       I       I         TPE-U-cable (blue, Ø 7.4 mm) 1       4       I       I       I       I       I         Cable length       9       9       I       I       I       I       I         Special version         Standard pipe R1" 2       0       0       0         O       0       0		2	
PUR-cable (black, Ø 7.4 mm) 1       2       1       1       1         FEP-cable (black, Ø 7.4 mm) 1       3       3       4<		9	consult
FEP-cable (black, Ø 7.4 mm) 1       3       3       4       5       5         TPE-U-cable (blue, Ø 7.4 mm) 1       4       4       5       6       6         customer       9       9       5       6       1       0         Cable length         Special version         Standard       9       9       9       5         O       0       0         Special version	PUR-cable (black, Ø 7.4 mm) <sup>1</sup>	2	
TPE-U-cable (blue, Ø 7.4 mm) 1       4       4       6       <	FEP-cable (black, Ø 7.4 mm) <sup>1</sup>	3	
Cable length     Image: Special version     Image: Special version       Standard     0       pipe R1" 2	TPE-U-cable (blue, Ø 7.4 mm) <sup>1</sup>	4	
in m 9 9 9 4 4 Special version 0 0 0 pipe R1" 2 6 1 0		9	consult
Special version     0     0       standard     0     0       pipe R1" 2     6     1			
standard 0 0 0 0 pipe R1" <sup>2</sup> 6 1 0		9 9 9	
pipe R1" $^{2}$ 6 1 0	standard		0 0 0
customer 9 9 9 9 consult			6 1 0
	customer		9 9 9 consult

 $^{\rm 1}$  shielded cable with integrated ventilation tube for atmospheric pressure reference  $^{\rm 2}$  pipe is not part of the supply



# LMK 858

# Separable **Plastic Probe**

Ceramic Sensor

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

## Nominal pressure

from 0 ... 40 cmH<sub>2</sub>O up to 0 ... 100 mH<sub>2</sub>O

### **Output signals**

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

#### **Special characteristics**

- diameter 45 mm ►
- cable assembly and ► probe head separable
- chemical resistance
- housing PP-HT

### **Optional versions**

- diaphragm 99.9 % Al<sub>2</sub>O<sub>3</sub> ►
- different kinds of cables and ► elastomers
- cable protection (on request)

The separable plastic probe LMK 858 is designed for level measurement in most aggressive media. Usage in more viscous media as for example sludge is possible because of the semi-flush diaphragm.

In order to facilitate stock-keeping and maintenance the probe head is plugged to the cable assembly with a connector and can be changed easily.

#### Preferred areas of use are



Sewage waste water treatment water recycling dumpsite



Aggressive media level measurement in most of acids and lyes



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
Level [mH <sub>2</sub> O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100
Overpressure [bar]	2	2	4	4	6	6	8	8	15	25	25	35	35
Output signal / Supply	1		1	1			1			1	1	1	1
Output signal / Supply Standard	Quuiro		20 4	/ )/ -	0	22.17							
Option 3-wire	2-wire 3-wire			$V_{\rm S} =$ / V_{\rm S} =		32 V <sub>DC</sub>							
•	- S-wire	0	. 10 v	/ V <sub>S</sub> =	12.5	32 V <sub>DC</sub>							
Performance Accuracy <sup>1</sup>	otondo	$rd \cdot < \pm 0$	) 25 0/ 1	- 20			ntion: <	+ 0.25.0/	680				
Permissible load		$\operatorname{ird} \leq \pm 0$		-30 .02 Α] Ω	<u> </u>	0	ption. ≤	± 0.25 %	0F3U				
Influence effects		<u>[(vs – v</u> : 0.05 %	. ,	-			ad: 0.0	5 % FSC	$\frac{1}{k0}$				
Long term stability				at refere	nce con		au. 0.0	J /0 F 3C	)/KS2				
Turn-on time	700 m		ycur (			aniono							
Mean response time	< 200					n	neasurin	g rate 5	/sec				
Max. response time	380 m					1	louounn	g late e	000				
<sup>1</sup> accuracy according to IEC 60770 – lim			(non-line	earity, hys	teresis, r	epeatabi	ility)						
Thermal effects (Offset and Spar					i		• /						
Thermal error	<u> </u>	% FSO	/ 10 K			ir	n compe	nsated r	ange 0	50 °C	;		
Permissible temperatures									<u> </u>				
Permissible temperatures	mediu	m / elect	ronic / e	environm	nent / sto	orage: -2	25 80	°C					
Electrical protection <sup>2</sup>				,		<u>.</u>							
Short-circuit protection	perma	nent											
Reverse polarity protection			it also r	o functio	on								
Electromagnetic compatibility		-		v accord		N 6132	6						
<sup>2</sup> additional external overvoltage protect								reference	availabl	e on requ	iest		
Electrical connection													
Cable with sheath material <sup>3</sup>		(-25	70 °C)	grey black black	Ø 7.4 m	m							
Cable capacitance	signal	line/shie	ld also	signal l	ine/sign	al line: <sup>·</sup>	160 pF/r	n					
Cable inductance	signal	line/shie	ld also	signal l	ine/sign	al line: <sup>·</sup>	1 µH/m						
Bending radius				old cable		er d	ynamic a	applicati	on: 20-f	old cabl	e diame	eter	
<sup>3</sup> shielded cable with integrated ventilati <sup>4</sup> do not use freely suspended probes with <sup>4</sup> do not use freely suspended probes with the freely suspended probes with <sup>4</sup> do not use freely suspended probes with the freely suspend	on tube fo th an FEF	r atmospi P cable if	heric pre effects d	ssure refe ue to high	erence Ily chargii	ng proce	sses are	expected	,				
Materials (media wetted)													
Housing	PP-HT	•											
Seals	FKM, I	EPDM, c	others o	n reques	st								
Diaphragm	standa	rd: cera	mics Al	<sub>2</sub> O <sub>3</sub> 96 %	Ď	0	ption: ce	eramics	Al <sub>2</sub> O <sub>3</sub> 99	9.9 %			
Cable sheath	PVC, I	PUR, FE	P, othe	rs on red	quest								
Miscellaneous													
Option cable protection (on request)				with PF total len					s compa	act produ	uct		
Current consumption	max. 2												
Weight	<u> </u>	. 400 g	(without	t cable)									
Ingress protection	IP 68												
CE-conformity	EMC	Directive	: 2014/3	30/EU									
Wiring diagram													
2-wire-system (current)					3-wi	ire-syste	m (voltag	e)					
p A A A A A A A A A A A A A A A A A A A	-• + Vs -• -				P	suppl suppl U signa	y —		v	-o + Vs -o -			
Pin configuration													
i in configuration	1		M12v	1 (4-pin)	5				cable o	olours (	IEC 607	(57)	
Electrical connection	-		101127	3						WH (wh		51)	
Electrical connection Supply +													
Electrical connection Supply + Supply –				4						BN (bro			
Supply +											wn)		
Supply + Supply –				4						BN (bro	wn) een)	()	



# Accessories

Terminal clamp			
		$\square$	
Technical data			
Suitable for	all probes with cable $\varnothing$ 5.5 $\uparrow$	10.5 mm	
Material of housing	standard: steel, zinc plated	optionally: stainless ste	el 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 pla	ted	Z100528	100 5
Terminal clamp, stainless steel	1 4301 (304)	Z100527	approx. 160 g

		Ord	lering c	ode L	MK	858				
LMK 858		-		- [] - []	1-П	-П-І	□-□	-	-	
Pressure										
Pressure	in bar in mH <sub>2</sub> O	4 1 5 4 1 6								
Input [mH <sub>2</sub> O] 0.4 0.6	[bar] 0.04 0.06		0 4 0 0 0 6 0 0							
1.0 1.6 2.5	0.10 0.16 0.25		1 0 0 0 1 6 0 0 2 5 0 0							
4.0 6.0 10 16	0.40 0.60 1.0 1.6		4       0       0       0         6       0       0       0         1       0       0       1         1       6       0       1							
25 40 60	2.5 4.0 6.0		2 5 0 1 4 0 0 1 6 0 0 1							
100	10 customer	_	1 0 0 2 9 9 9 9 9							consult
	PP-HT customer			R 9						consult
Diaphragm ceramics A ceramics Al <sub>2</sub>	O <sub>3</sub> 99.9%			2 C						
Output	customer	_	_	9		_	-			consult
4 20 m 0 10	A / 2-wire V / 3-wire customer				1 3 9					consult
Seals	FKM EPDM					1				
	customer					9				consult
Electrical connection PVC-cable (grey, Q PUR-cable (black, Q FEP-cable (black, Q	) 7.4 mm) <sup>1</sup>	_	_	_			1 2 3			
	customer						3 9			consult
option 0.2	5 % FSO 5 % FSO		_				3 2 9			
Cable length	customer						9			consult
Special version	in m							999		
prepared for mounting with PF	standard P-HT pipe <sup>2</sup> customer								0 0 0 1 0 6 9 9 9	consult consult

<sup>1</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference

<sup>2</sup> pipe is not part of the supply

# SCREW-IN TRANSMITTERS



# LMP 331

# **Screw-In Transmitter**

Stainless Steel Sensor

accuracy according to IEC 60770: standard: 0.35 % FSO option: 0.25 % / 0.1 % FSO

### **Nominal pressure**

from 0 ... 100 mbar up to 0 ... 40 bar

#### **Output signals**

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

### **Special characteristics**

- pressure port G 3/4" flush
- excellent accuracy
- small thermal effect
- excellent long term stability

#### **Optional versions**

- accuracy 0.1% FSO IEC 60770
- IS-version:
   Ex ia = intrinsically safe for gases and dusts
- SIL 2 application according to IEC 61508 / IEC 61511
- different electrical connections
- customer specific versions
   e. g. special pressure ranges

The screw-in transmitter LMP 331 has been designed for continuous level measurement and is characterized by an excellent performance and a robust construction. The modular construction allows the user the highest possible flexibility in the adaption of LMP 331.

Optional features like e.g. an intrinsically safe version or a functionally safe version (SIL 2) increase the advantages when launching and realizing projects for plants and systems.

## Preferred areas of use are

Energy industry



Plant and machine engineering



Environmental engineering (water – sewage – recycling)



Input pressure range															
Nominal pressure gauge	[bar]	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6	10	16	25	40
Level [	[mH <sub>2</sub> O]	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400
Overpressure	[bar]	0.5	1	1	2	5	5	10	10	20	40	40	80	80	105
Burst pressure ≥	[bar]	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50	50	120	120	210
Vacuum resistance		P <sub>N</sub> ≥ 1	bar: u	nlimited	vacuur	n resist	ance			P <sub>N</sub> < 1	bar: or	n reque	st		
Output signal / Supply															
Standard		2-wire	: 4	20 m	ιA / Ν	/ <sub>s</sub> = 8	32 V	DC		SIL-ve	rsion: \	/ <sub>s</sub> = 14	28 V <sub>1</sub>	oc	
Option IS-version		2-wire				/ <sub>s</sub> = 10				SIL-ve	rsion: \	/ <sub>s</sub> = 14	28 V <sub>1</sub>	oc	
Options 3-wire		3-wire	: 0	20 m	ιA / Ν	/ <sub>s</sub> = 14	30 V	DC		0 10	) V / V	′ <sub>s</sub> = 14 .	30 V <sub>D</sub>	С	
Performance															
Accuracy1		standa	ard: r	nominal	pressu	re < 0.4	bar:	≤ ±	0.5 % F	SO					
		· ·	nominal pressure $\geq 0.4$ bar: $\leq \pm 0.35$ % FSOption 1:nominal pressure $\geq 0.4$ bar: $\leq \pm 0.25$ % FSOption 2:for all nominal pressures: $\leq \pm 0.1$ % FSO												
Permissible load		curren	it 2-wire it 3-wire e 3-wire	e: R <sub>m</sub> e: R <sub>m</sub>		s — V <sub>S m</sub> Ο Ω		2 A] Ω							
Influence effects						K32				load:	0.05.%	ESO //	(0		
Long term stability			μpply:         0.05 % FSO / 10 V         load:         0.05 % FSO / kΩ           ±         0.1 % FSO / year at reference conditions         0.05 % FSO / kΩ												
Response time <sup>2</sup>			-wire: $\leq 10 \text{ msec}$ 3-wire: $\leq 3 \text{ msec}$												
<sup>1</sup> accuracy according to IEC 60 <sup>2</sup> with optional accuracy 0,1 %	770 – lim ESO the l	it point a	diustme	nt (non-	inearity,	hysteres	sis, repea	atability)		0-010	. <u> </u>	300			
Thermal effects (Offset ar				_00 ///30											
Nominal pressure P <sub>N</sub>	[bar]	<u> </u>			≤ 0.40							> 0.40			
• •	% FSO]				_ 0.40 ≤±1							≤ ± 0.75			
in compensated range	[001 10/ [00]				0 70							<u>10.73</u> 2085			
Permissible temperatures					5 70								,		
•	•	na a diu		105		alaatra	ning ( a		aanti 4	0 0	F ° C	ata		0 10	0.00
Permissible temperatures		meaiu	m: -40	125	C	electro	onics / e	nvironn	nent: -4	0 8	5 0	Sto	rage: -4	010	0.0
Electrical protection															
Short-circuit protection		perma													
Reverse polarity protection					no fun										
Electromagnetic compatibili	ity	emiss	ion and	immur	ity acco	ording to	5 EN 61	326							
Mechanical stability															
Vibration				5 200	0 Hz)						<u> </u>		60068-		
Shock			/ 1 mse							accor	ding to	DIN EN	60068-	2-27	
Explosion protection (onl	y for 4 .	20 m	A / 2-w	rire)											
Approvals DX19-LMP 331		IBExl zone zone	0: I	I 1G Ex	ia IIC 1	IECE> F4 Ga T 85°C		2.0027X							
Safety technical maximum	values	U <sub>i</sub> = 2	28 V, I <sub>i</sub> =	= 93 m/	A, P <sub>i</sub> = 6	60 mW 60 an ini	, C <sub>i</sub> ≈ 0i			7 nF op	posite	the hou	sing		
Permissible temperature for	r	in zor				60 °C w						-			
medium					-20 1	70 °C									
Connecting cables						line/shie						pF/m			
(by factory)		cable	inducta	ance:	signal	line /shi	eld also	signal	line / si	gnal lin	e: 1µ	H/m			
Materials															
Pressure port					4 (316L										
Housing		1			4 (316L	,						<u>, , , , , , , , , , , , , , , , , , , </u>			<u> </u>
Option compact field housin	ng				1 (304)	; cable	gland I	vi12x1.8	o, brass	, nickel	plated	(clampi	ng rang	e 2 8	ម mm)
Seals		option		DM						others	s on rec	uest			
Diaphragm					5 (316L										
Media wetted parts		pressu	ure port	, seals,	diaphra	agm									
Miscellaneous															
Optionally SIL 2 version <sup>3</sup>		accord	ding to	IEC 61	508 / IE	C 6151	1								
Current consumption		signal	output	current	: max. 2	25 mA				signal	output	voltage	: max. T	7 mA	
Weight			x. 200 g	3											
Installation position		any 4													
Operational life		100 m	illion lo	ad cycl	es										
CE-conformity		EMC	Directiv	e: 2014	/30/EU										
ATEX Directive		2014/3	34/EU												
<sup>3</sup> only for 420mA / 2-wire; not				oouroov	0 10/										



	Ordering code LMP 331	
LMP 331		
Pressure		
in bar in mH <sub>2</sub> O	4 3 0 4 3 1	
Input [mH <sub>2</sub> O] [bar] 1.0 0.10		
1.6 0.16	1 6 0 0	
2.5 0.25 4.0 0.40	2 5 0 0 4 0 0 0	
6.0 0.60 10 1.0	6 0 0 0 1 0 0 1	
16 1.6		
25 2.5 40 4.0	2 5 0 1 4 0 0 1	
60 6.0	6 0 0 1	
100 10 160 16		
250 25	1 6 0 2 2 5 0 2	
400 40 customer	4 0 0 2 9 9 9 9	consult
Pressure port		
stainless steel 1.4404 (316L) customer	9	consult
Diaphragm		
stainless steel 1.4435 (316L) customer	9	consult
Output		
4 20 mA / 2-wire 0 20 mA / 3-wire	1 2	
0 10 V / 3-wire	3	
intrinsic safety 4 20 mA / 2-wire SIL2 4 20 mA / 2-wire	E	
SIL2 with intrinsic safety 4 … 20 mA / 2-wire	ES	
customer	9	consult
Seals FKM		
EPDM		
Customer Electrical connection	9	consult
male and female plug ISO 4400	1 0 0	
male plug Binder series 723 (5-pin) cable outlet with PVC cable (IP67)	2 0 0	
cable outlet,		
cable with ventilation tube (IP68) male plug M12x1 (4-pin) / metal		
compact field housing	M 1 0 8 5 0	
stainless steel 1.4301 (304) customer	999	consult
Accuracy		Consult
standard for $P_N \ge 0.4$ bar:0.35 % FSOstandard for $P_N < 0.4$ bar:0.50 % FSO	3	
option 1 for $P_N \ge 0.4$ bar: 0.25 % FSO	2	
option 2: 0.10 % FSO customer	3 1 9	consult
Special version	3	
standard customer		0 0 0 9 9 9 consult
casioner		Consult

 $^1$  standard: 2 m PVC cable without ventilation tube (permissible temperature: -5  $\ldots$  70 °C), others on request

Statituard. 2 in FVC cable, without verniation table (pointionise temporation) of  $1.7 \pm 2$ ; code TR0 = PVC cable, cable with ventilation tube available in different types and lengths <sup>3</sup> not in combination with SIL

# SCREW-IN TRANSMITTERS



# LMK 331

# Screw-In Transmitter

Ceramic Sensor

accuracy according to IEC 60770: 0.5 % FSO

### Nominal pressure

from 0 ... 400 mbar up to 0 ... 60 bar

### **Output signals**

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

### **Special characteristics**

- pressure port G 3/4" flush for pasty and impurity media
- pressure port PVDF for aggressive media

#### **Optional versions**

- IS-version (only for 4 ... 20mA / 2-wire): Ex ia = intrinsically safe for gases and dusts
- SIL 2 application according to IEC 61508 / IEC 61511
- customer specific versions

The screw-in transmitter LMK 331 has been especially designed for level and process measurement and is suitable for pressure measurement of liquids, oils and gases. Usage in more viscous or polluted media is possible because of the semi-flush pressure sensor.

For the usage in aggressive media we recommended the version with PVDF pressure port. Additional features like e.g. an intrinsically safe version or a functionally safe version (SIL 2) complete the range of possibilities.

## Preferred areas of use are



Plant and machine engineering



Energy industry

Environmental engineering (water – sewage – recycling)



Medical technology



Input pressure range		
Nominal pressure gauge	$[ar] 0.4 0.6 1 1.6 2.5 4 6 10 16 25 40^{1}$	60 <sup>1</sup>
Level [m		600
Overpressure	ar] 1 2 2 4 4 10 20 20 40 40 100	200
Burst pressure	ar] 2 4 4 5 7,5 12 25 30 50 50 120	250
Vacuum resistance	ar] $P_N \ge 1$ bar: unlimited vacuum resistance $P_N < 1$ bar: on request	
<sup>1</sup> only possible with stainless stee		
Output signal / Supply		
Standard	2-wire: 4 20 mA / $V_s$ = 8 32 $V_{DC}$ SIL-version: $V_s$ = 14 28 $V_{DC}$	
Option IS-version <sup>2</sup>	2-wire: 4 20 mA / V <sub>S</sub> = 10 28 V <sub>DC</sub> SIL-version: V <sub>S</sub> = 14 28 V <sub>DC</sub>	
Options 3-wire	3-wire: $0 \dots 20 \text{ mA} / V_{\text{s}} = 14 \dots 30 V_{\text{DC}}$ $0 \dots 10 \text{ V} / V_{\text{s}} = 14 \dots 30 V_{\text{DC}}$	
<sup>2</sup> IS-version not possible with pla		
Performance		
Accuracy <sup>3</sup>	$\leq \pm 0.5$ % FSO	
Permissible load	$\begin{array}{ll} \mbox{current 2-wire:} & R_{max} = \left[ \left( V_{S} - V_{Smin} \right) / 0.02 \mbox{ A} \right] \Omega \\ \mbox{current 3-wire:} & R_{max} = 500 \ \Omega \\ \mbox{voltage 3-wire:} & R_{min} = 10 \ k\Omega \end{array}$	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec	
Long term stability	$\leq \pm 0.3 \%$ FSO / year at reference conditions	
<i>i</i>	- limit point adjustment (non-linearity, hysteresis, repeatability)	
· · · · · · · · · · · · · · · · · · ·	pan) / Permissible Temperatures	
Thermal error	$\leq \pm 0.2$ % FSO / 10 K	
	-25 85 °C	
in compensated range		
Permissible temperatures	medium: -40 125 °C	
	electronics / environment: -25 85 °C storage: -40 100 °C	
	storage: -40 100 °C	
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	10 g RMS (25 2000 Hz) according to DIN EN 60068-2-6	
Shock	500 g / 1 msec according to DIN EN 60068-2-27	
Materials		
	pressure port bousing	
Pressure port / housing	standard: pressure port housing stainless steel 1.4404 (316L) stainless steel 1.4404 (316L)	
		1
<u> </u>	options for $P_N \le 25$ bar: PVDF PVDF	
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 8	3 mm
Seals	standard: FKM	
<u> </u>	options: EPDM others on request	
Diaphragm	ceramics Al <sub>2</sub> O <sub>3</sub> 96 %	
Media wetted parts	pressure port, seals, diaphragm	
Explosion protection (only	r 4 20 mA / 2-wire)	
Approval DX19-LMK 331 onl	or   IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X	
stainless steel pressure port	zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T 85°C Da	
Safety technical maximum va	es $U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C_i \approx 0 \text{ nF}, L_i \approx 0 \mu\text{H},$ the supply connections have an inner capacity of max. 27 nF to the housing	
Permissible temperatures for environment	in Zone 0: -20 60 °C with p <sub>atm</sub> 0.8 bar up to 1.1 bar in Zone 1 or higher: -25 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	
Miscellaneous		
Option SIL 2 version <sup>4</sup>	according to IEC 61508 / IEC 61511	
	signal output current: max. 25 mA signal output voltage: max. 7 r	mA
Current consumption		
Current consumption Weight	approx. 150 g	
Current consumption Weight Installation position	any	
Current consumption Weight Installation position Operational life		
Current consumption Weight Installation position Operational life	any	
Current consumption Weight Installation position Operational life CE-conformity ATEX Directive	any 100 million load cycles	

LMK 331 Technical Data



	Ordering code LMK 331			
LMK 331		- 🔲		]
Pressure				
gauge in bar	4 6 0 4 6 1			
gauge in mH <sub>2</sub> O Input [mH <sub>2</sub> O] [bar]	4 6 1			
4 0.4	4 0 0 0			
6 0.6	6 0 0 0			
10 1.0 16 1.6		_		
16 1.6 25 2.5	1 6 0 1 2 5 0 1 4 0 0 1			
40 4.0				
60 6.0 100 10	6 0 0 1 1 0 0 2	_		
100 10 160 16	1 0 0 2 1 6 0 2			
250 25	1 6 0 2 2 5 0 2 4 0 0 2			
400 40 <sup>1</sup> 600 60 <sup>1</sup>				
600 60 <sup>1</sup> customer	1       0       0       2         1       6       0       2         2       5       0       2         4       0       0       2         6       0       0       2         9       9       9       9			consult
Analogue output				
4 20 mA / 2-wire				
0 … 20 mA / 3-wire 0 … 10 V / 3-wire	2 3			
intrinsic safety 4 20 mA / 2-wire 2	E			
SIL2 4 20 mA / 2-wire	1S			
SIL2 with intrinsic safety <sup>2</sup> 4 … 20 mA / 2-wire	ES			
customer	9			consult
Accuracy				
0.5 % FSO customer	5 5 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9			consult
Electrical connection				Conodit
male and female plug ISO 4400				
male plug Binder series 723 (5-pin) cable outlet with PVC cable (IP67) <sup>3</sup>	2 0 0 T A 0			
cable outlet,				
cable with ventilation tube (IP68) <sup>4</sup>				
male plug M12x1 (4-pin) / metal compact field housing	M 1 0			
stainless steel 1.4301 (304)	8 5 0			
customer	9 9 9			consult
Mechanical connection G3/4" DIN 3852 with				
flush sensor	К 0 0			
customer	9 9 9			consult
Seals FKM	1			
EPDM	3			
customer	9			consult
Pressure port stainless steel 1.4404 (316L)	1			
for $P_N \le 25$ bar PVDF <sup>5</sup>	B			
customer	9			consult
Diaphragm ceramics Al <sub>2</sub> O <sub>3</sub> 96%				
customer	2 9			consult
Special version				
standard		00	0 0	
customer		9 8	9 9	consult

<sup>1</sup> only possible for pressure port of stainless steel
 <sup>2</sup> intrinsic safety not possible with plastic pressure port
 <sup>3</sup> standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
 <sup>4</sup> code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
 <sup>5</sup> min. permissible temperature -30 °C

# SCREW-IN TRANSMITTERS



# LMK 351

# **Screw-in Transmitter**

Ceramic Sensor

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

## Nominal pressure

from 0 ... 40 mbar up to 0 ... 20 bar

### **Output signal**

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

### **Product characteristics**

- pressure port PVDF-version for aggressive media
- pressure port G 1 1/2" for pasty and polluted media

## **Optional versions**

- IS-version
   Ex ia = intrinsically safe for gases and dust
- diaphragm 99.9 % Al<sub>2</sub>O<sub>3</sub>
- customer specific versions

The screw-in transmitter LMK 351 has been designed for measuring small system pressure and level measurement in container. The LMK 351 is based on an own-developed capacitive ceramic sensor element. Usage in viscous and pasty media is possible because of the flush mounted sensor.

For the usage in aggressive media a pressure port in PVDF and the diaphragm in  $AI_2O_3$  99.9 % is available. An intrinsically safe version completes the range of possibilities.

## Preferred areas of use are



Plant and machine engineering

Environmental engineering (water – sewage – recycling)

# Preferred used for



Viscous and pasty media



Pressure ranges															
Nominal pressure [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 <sub>2</sub> O	-	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Overpressure [bar	-	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Permissible vacuum [bar	-	.2		0.3		-	.5	-				-1			
<b>.</b> .	• .														
Output signal / Supply															
Standard	2-wire	e: 4	20	mA / `	$V_s = g$	32	VDC								
Option IS-version	2-wire			mA /											
Option 3-wire	3-wir			V / '											
Performance					0										
Accuracy <sup>1</sup>	stand	ard: <	+ 0.35	5 % FS	0			or	otion fo	rP⊾≥	0.6 bar	: <+0	.25 %	-so	
Permissible load				<sub>ax</sub> = [(V		<sub>in</sub> )/0.0	2 Al Ω				R <sub>min</sub> =				
Influence effects				SO / 10							SO / kg				
Long term stability				ear at re		e cond	itions								
Turn-on time	700 n														
Mean measuring time	5/sec														
Response time			nse tim	ne: ≤ 20	)0 mse	2		m	ax. res	ponse	time: 3	80 mse	ес		
<sup>1</sup> accuracy according to IEC 60770 - lir							peatabili								
Thermal effects (Offset and Spa								• /							
Tolerance band		1 % FS				n comp	ensate	d range	e - 20 .	80 °C	2				
Permissible temperatures <sup>2</sup>		um: -40					ics / en					sto	orage: -	40 1	00 °C
<sup>2</sup> for pressure port of PVDF the minimu	ım permis	sible ter	mperati	ure is -3	0 °C										
Electrical protection															
Short-circuit protection	perm	anent													
Reverse polarity protection	no da	mage,	but als	so no fu	unction										
Electromagnetic compatibility	emiss	sion and	d immı	unity ac	cordin	g to EN	61326	i							
Mechanical stability															
Vibration	10 g l	RMS (2	20 2	000 Hz	.)			a	ccordin	iq to D	IN EN 6	60068-2	2-6		
Shock		/ 1 ms			,					-	IN EN 6				
Materials (media wetted)															
Pressure port	stand	ard: s	tainles	ss steel	1.4404	(316L	)	0	otion:	PVDF					
Housing				s steel					otion:						
Option compact field housing				301 (30							lated (c	lampin	g range	e 2 8	3 mm
Seals	FKM			25 °C	,.					· ·			0 0		
	FFKN	1 -	15 1	25 °C											
	EPD		40 1												
Diaphragm				cs Al <sub>2</sub> O		.,									
No dia suode dia anta	optior			cs Al <sub>2</sub> O		%									
Media wetted parts				s, diap	nragm										
Explosion protection (only for 4			,												
Approval DX14-LMK 351		J05ATE													
				ssure p											
		zone 0: zone 20			Ex ia I Ex ia II										
							C Da								
		c-press zone 0/		ort with	G Ex ia		CalCh								
				II 1/2											
Safety technical maximum values				$A, P_i =$					uH C	and = 27	7 nF				
Max. permissible temperature	in zor				. 60 °C										
for environment	zone	1 and h	nigher:	-25				•							
Connecting cables	capad	city:		signa	al line /	shield a	also sig	nal line	e / sign	al line:	160 pF	-/m			
(by factory)	induc	tance:		signa	I line /	shield a	also sig	nal line	e / sign	al line:	1 μH/r	n			
<sup>3</sup> The designation depends on the used <sup>4</sup> With nominal pressure ranges > 60 n															
Miscellaneous															
Current consumption	signa	l outpu	t curre	nt: max	(. 21 m	Ą		si	gnal o	utput v	oltage:	max. 5	mA		
Weight		x. 200							<b>.</b>		5	-			
Installation position	any		5												
Operational life		nillion le	oad cv	cles											
CE-conformity	_			14/30/E	U										
ATEX Directive		34/EU			-										
	1 = 0 + 1	J <b>L J</b>													



Seals         I <th></th> <th>Ordering code LMK 351</th> <th></th>		Ordering code LMK 351	
in back     4 [7] 0     a	LMK 351		]-[]-[]-[]-[]-[]]
input       (mH, 0)       (bar)       (ma)			
input       (mH, 0)       (bar)       (ma)	in mH <sub>2</sub> O	4 7 0	
0.6       0.6       0.6       0<			
1.0       0.10       1       0 </td <td></td> <td></td> <td></td>			
2.5       0.25       2.5       0.0       0 <td< td=""><td>1.0 0.10</td><td>1 0 0 0</td><td></td></td<>	1.0 0.10	1 0 0 0	
4.0       0.40       4       0 <td></td> <td></td> <td></td>			
6.0       0.60       6       0       0       1 </td <td></td> <td></td> <td></td>			
16       1.6       1	6.0 0.60	6 0 0 0	
25       2.5       2.5       2.5       0       1<			
40       4.0       4.0       0       1 <td></td> <td>2 5 0 1</td> <td></td>		2 5 0 1	
100       10       1       0       0       2       0       0       2       0 <td></td> <td>4 0 0 1</td> <td></td>		4 0 0 1	
Output         420 mA / 2-wire         1         0 <td></td> <td></td> <td></td>			
Output         420 mA / 2-wire         1         0 <td></td> <td>1 6 0 2</td> <td></td>		1 6 0 2	
Output         420 mA / 2-wire         1         0 <td></td> <td>2 0 0 2</td> <td></td>		2 0 0 2	
4 20 mA / 2-wire       1       0		9 9 9 9	consult
intrinsic safety 4 20 mA / 2-wire     E     B     <		1	
Customer         9         I		3	
Accuracy       standard:       0.35 % FSO       3       3       4       6		9	consult
option for PN ≥ 0.6 bar:       0.25 % FSO       2       0	Accuracy		
customer       9       1 <th1< th="">       1       <th1< th=""> <th1< t<="" td=""><td></td><td></td><td></td></th1<></th1<></th1<>			
Electrical connection         I <thi< th="">         I         I         <thi< th=""></thi<></thi<>		9	consult
male plug Binder series 723 (5-pin)       2 0       0       1	Electrical connection		
cable outlet, cable with ventilation tube (IP68)       T       R       0       I			
cable outlet, cable with ventilation tube (IP68)       T       R       0       I	cable outlet with PVC cable (IP67) <sup>1</sup>	T A 0	
Cable With Ventilation tube (IPOS)       I	cable outlet,		
compact field housing stainless steel 1.4301 (304)       8       5       0       1	male plug M12x1 (4-pin) / metal		
Stainless steel 1.430 (304)       0	compact field housing		
Mechanical connection       M       0			concult
flush sensor       M       U <t< td=""><td>Mechanical connection</td><td>3 3 3</td><td></td></t<>	Mechanical connection	3 3 3	
customer       9<		моо	
Seals         FKM         1         I </td <td></td> <td></td> <td></td>			
EPDM       3       I       I       I         FFKM       7       I       I       I         Customer       9       I       I       I         Pressure port       I       I       I       I         Stainless steel 1.4404 (316L)       1       I       I       I         PVDF <sup>3</sup> B       I       I       I       I         Customer       9       I       Consul       I       I       I         Diaphragm       9       I	Seals		
FFKM       7       7       6       6       6         Customer       9       9       6       6       6         Pressure port       1       1       6       6       6         Stainless steel 1.4404 (316L)       1       1       6       6       6         PVDF <sup>3</sup> 8       6       6       6       6       6         Customer       9       6       6       6       6       6       6         Diaphragm       2       2       6			
Pressure port         I         <			7
stainless steel 1.4404 (316L)       1 <t< td=""><td></td><td></td><td>9 consult</td></t<>			9 consult
PVDF <sup>3</sup> B         B         B         B         C         B         C<	Pressure port stainless steel 1 4404 (316L)		1
customer     9     Consul       Diaphragm     2     2       ceramics Al <sub>2</sub> O <sub>3</sub> 96%     2     2       ceramics Al <sub>2</sub> O <sub>3</sub> 99.9%     C     2       customer     9     2       Special version     9     2	PVDF <sup>3</sup>		В
ceramics Al <sub>2</sub> O <sub>3</sub> 96%         2         2           ceramics Al <sub>2</sub> O <sub>3</sub> 99.9%         C         2           customer         9         consul           Special version         4         4			9 consult
ceramics Al <sub>2</sub> O <sub>3</sub> 99.9%         C         C           customer         9         consul           Special version         9         C	ceramics Al <sub>2</sub> O <sub>2</sub> 96%		2
Special version	ceramics Al <sub>2</sub> O <sub>3</sub> 99.9%		C
Special Version 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			9 consult
			0 0 0
	customer		9 9 9 consult

 $^{1}$  standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70  $^{\circ}\text{C}$ ); others on request

<sup>2</sup> code TR0 = PVC cable, cable with ventilation tube available in different types and lengths

<sup>3</sup> not possible in combination with compact field housing; min. permissible temperature -30 °C

# SPECIAL VERSIONS



# **EP 500**

# **Pressure Transmitter**

Special application: Level Measurement via Air Bubbling

Characteristics:

- ► capacitive ceramic sensor
- nominal pressure ranges from 0 ... 60 mbar up to 0 ... 20 bar
- output signal 4 ... 20 mA / 2-wire
- ▶ hat rail housing
- programming via integrated interface



# **Technical Data**

Input pressure range									
Nominal pressure P <sub>N</sub> gauge [bar]	0.06	0.16	0.4	1	2	5	10	20	
Nominal pressure P <sub>N</sub> abs. [bar]		on request							
Permissible overpressure [bar]	2	4	6	8	15	25	35	40	
Permissible vacuum for P <sub>N</sub> gauge [bar]	-0.2	-0.3	-0.5		-1				

Output signal / Supply							
Standard	2-wire: 4 20 mA / V <sub>S</sub> = 12 32 V <sub>DC</sub> ; V <sub>S Nom.</sub> = 24 V <sub>DC</sub>						
Current consumption	max. 21 mA	max. 21 mA					
Performance							
Accuracy <sup>1</sup>	EC 60770 <sup>2</sup> : ≤ ± 0.2 % FSO BFSL: ≤ ± 0.1 % FSO						
Turn-on time	700 msec	700 msec					
Permissible load	$R_{max} = [(V_{S} - V_{S min}) / 0.02 A] \Omega$						
Long term stability	$\leq$ ± 0.1 % FSO / year at reference conditions						
Response time (10 90 %)	120 msec – without consideration of electronic damping						
Measuring rate	8/sec						
	r the accuracy is calculated as follows: ≤ ± [0.2 + 0.04 x (nom. imit point adjustment (non-linearity, hysteresis, repeatability)	inal pressure range / adjusted range)] % FSO					
Thermal errors (Offset and Spar	n)/ Permissible temperatures						
Thermal error	≤ ± (0.02 x nominal range / adjusted range) % FSO / 10 K in compensated range 0 80°C						
Permissible temperatures	medium: -40 125°C	electronics / environment / storage: -40 85°C					
Electrical protection	N						
Short-circuit protection	permanent						
Reverse polarity protection	no damage, but also no function						

Electrical connection					
Input	terminal clamps (3-pin)				
Communication connector	M12x1 (8-pin), metal				
Materials					
Pressure port	stainless steel 1.4301				
Housing	version EP 500: version EP 500-500:	PA6 (housing foot: PA ABS	66)		
Seals (media wetted)	FKM	ADO			
Diaphragm	ceramic Al <sub>2</sub> O <sub>3</sub> 96 %				
Media wetted parts	pressure port, seals of sensor,	dianhragm			
Category of the environment	pressure port, sears or sensor,	ulapillayili			
Lloyd's Register (LR)			number of certificate: 13/20056		
Det Norske Veritas	EMV1, EMV2, EMV3 temperature:	В	number of certificate: T3/20036		
Germanischer Lloyd (DNV•GL)	humidity:	B	number of certificate. TAA0000 TGM		
	vibration:	A			
	electromagnetic compatibility:	В			
	enclosure:	-			
Miscellaneous					
Ingress protection	IP 00				
Function display	green SMD-LED - lights by info	prmation flow through the	e transmitter		
Installation position	any				
Operational life	100 million load cycles				
Weight Adjustability	approx. 200 g configuration via programming kit CIS 700 <sup>3</sup> ; following configurations are possible:				
	<ul> <li>- electronic damping: 0 100 sec</li> <li>- offset: 0 67 % FSO</li> <li>- turn down of span: max. 1:20</li> <li>- configuration of pressure unit</li> <li>- calibration via connected pressure reference</li> </ul>				
<sup>3</sup> programming kit has to be ordered sep	parately (software appropriate for Wi	ndows®95, 98, 2000, NT Ve	ersion 4.0 or higher, and XP)		
Pin configuration					
Electrical connections	terminal clam	os	M12x1 (8-pin), metal		
Supply +1	1		-		
Supply +2	-		4		
Supply	2		2		
Tx	-		5		
Rx   GND	-		6		
U U U U U U U U U U U U U U U U U U U	-		1		
Shield	3		3		
Wiring diagram		I	ŭ		

Dimensions (in mm)

standard EP 500: optionally for  $P_N \leq 5$  bar: 16,5 -35,5 61,5 16,5 39 10 • 15 • Θ e 0 ġ ò 1000 G1/4" \$ ġ ଇଇଡ 0 <u>eéé</u> 0 ≙ M12x1 M12x1 n 30,5-12.5 12,5 -46,5 41 hose connection for flexible G1/4" hoses Ø4 mm optionally for  $P_N \le 5$  bar: option EP 500-500 20,5 🛏 -37,5-10 20,5 42 15 G1/4" 045 70,5-006 36,5 M12x1-M12x1 34,5 -12,5 - 12,5 31 -31 -50,5-

hose connection for flexible

hoses Ø4 mm

G1/4"

	Orderin	g code	EP	5	00						
EP 500		]-[]-[]	-		-	-□	-□	-□			
Pressure gauge	U P 5 U P 6										
absolute	U P 6		_			_					consult
Input [bar] 0.06	0 6 0 0										
0.16	1 6 0 0										
0.4	4 0 0 0										
1.0	1 0 0 1										
2.0	2 0 0 1										
5.0	5 0 0 1 1 0 0 2 2 0 0 2 9 9 9 9										
10	1 0 0 2										
20 customer	2002					_					
Output	9 9 9 9 9										consult
4 20 mA / 2-wire		1						_			
customer		9									consult
Accuracy											
0.2 % FSO		В									
customer		9				_					consult
Mechanical connection				0							
hose connection Ø 4.5 mm <sup>1</sup> G1/4" EN 837			Y 0 4 0	2							
customer			4 0 9 9	2 0 9							consult
Seal			9 9	9							Consult
FKM				_	1			_			
customer					9						consult
Pressure port											
stainless steel 1.4301 (304)						2 9					
customer						9					consult
Diaphragm ceramics Al <sub>2</sub> O <sub>3</sub> 96%							2				
customer							2 9				consult
Special version							3				
standard								0	0	0	
option								5	0 0 9	0	consult
customer								9	9	9	consult

-

<sup>1</sup> hose connection only up to 5 bar

# ACCESSORIES



# **KL 1**

# **Terminal Box**

Aluminium

# **Product characteristics**

- ► aluminium die cast case
- for connecting 2-wire submersible transmitters
- ▶ integrated pressure balance item
- overvoltage protection with nominal discharge current of 10 kA

The terminal box KL 1 is intended for the professional electrical connection of 2-wire transmitters.

It offers integrated atmospheric pressure compensation also overvoltage protection and can be used for BD|SENSORS transmitters.

The terminal box KL 1 is equipped with a pressure balance item for equalization of atmospheric reference, therefore a cable without ventilation tube can be used on the supply side.

Vertical terminal clamps enable easy connection of cables inside. The terminal box has to be mounted with two fastening screws.



General specifications						
Number of signal lines	2-wire: 4 20 mA					
Housing	aluminium die cast case, grey powder-coating					
Ingress protection	IP 66					
Cable entries	cable gland: M16x1.5 Polyamide, seal NBR, IP 68,					
	diameter range: standard Ø 5 10 mm (others on request)					
Atmospheric pressure compensation	pressure balance item with PTFE filter					
Terminal clamps	vertical clamps for stranded and solid wires up to 2.5 mm <sup>2</sup>					
Weight	approx. 550 g					
Overvoltage protection						
Series resistance	10 $\Omega$ for each wire					
Nominal discharge current	20 kA (8/20 μs)					
Max. rated current	30 mA					
Wiring diagram						
P Supply -	The ground wires of all components have to be connected!					
Dimensions (mm / in)						
GND VS- VS+						
GO CI	A-A (1:1)					

Ordering code KL 1						
KL 1 - ZB.60	01 -					
Version						
standa	ard 1 0 0					
custon	ner 999		consult			
Special version						
standa	ard	0 0 0				
custon	ner	999	consult			



# **KL 2**

# **Terminal Box**

**Plastics** 

# **Product characteristics**

- cost-efficient ABS case
- for connecting 2-wire submersible transmitters
- integrated pressure balance item
- ▶ 2 signal lines

## **Optional versions**

- Version for two independent 2 wire circuits
- overvoltage protection
- ► HART<sup>®</sup> connection

The terminal box KL 2 is intended for the professional electrical connection of submersible level transmitters. Thus, it is a cost-effective alternative to our well proven aluminium terminal box KL 1.

A pressure balance item is responsible for the compensation of atmospheric pressure variations. On the supply side a cable without ventilation tube can be used.

Vertical terminal clamps enable easy connection of cables inside the case.

The KL 2 with optional overvoltage protection is additionally equipped with surge arresters with a nominal discharge current of 10 kA.

As a further option the KL 2 is available with a  $HART^{\odot}$  connection.



General specifications				
Number of signal lines	2-wire (4 20 mA)			
Housing material	lastic ABS, grey			
Ingress protection	IP 66			
Cable entries	cable gland M16x1.5 Polyamide, seals NBR, IP 68, diameter range: standard 5 10 mm others on request			
Atmospheric pressure compensation	pressure balance item with PTFE filter			
Terminal clamps	vertical clamps for stranded and solid wires up to 2.5 mm <sup>2</sup>			
Weight	approx. 220 g			
Optional overvoltage protection				
Series resistance	10 $\Omega$ for each wire			
Nominal discharge current	10 kA (8/20 μs)			
Max. rated current	30 mA			
Optional HART <sup>®</sup> connection				
Connections	terminal clamp connection			
Wiring diagram				





Version with 2 channels, eg. LMK 307T, LMP 307T

 $^{\ast}~$  The supply  $V_{\rm S}$  has to be chosen according to needs of the used transmitter. The ground wires of all components have to be connected!

#### Dimensions (in mm)



	Ordering code KL 2	
KL 2 - ZB.601		
Version		
standard		
over voltage protection		
version with 2 channels <sup>1</sup>		
version with 2 channels and over voltage protection <sup>1</sup>		
HART <sup>®</sup> communication interface	2 H 0	
HART <sup>®</sup> communication interface and over voltage protection	2 H 1	
Special version		
standard	0 0 0	
customer	9 9 9 cons	sult

<sup>1</sup> Version for 2 independent 2 wire circuits

HART<sup>®</sup> is a registered trade mark of HART Communication Foundation

# NOTES

# 146 ACCESSORIES

Product		Description	Display
PA 430	Ex	Plug-on Display with Contacts and Ex-approval	4-digit LED-display 4 x 7 mm, rotatable
PA 440	(Ex)	Field Display with Contacts and Ex-approval	4-digit LED-display 4 x 10 mm 4-digit LCD-display 4 x 18 mm
CIT 200	1648 Modbus	Process Display	4-digit LED-display 4 x 13 mm
CIT 250	Modbus	Process Display with Contacts	4-digit LED-display 4 x 13 mm 4-digit LED-display 5 x 9 mm
CIT 300	Modbus'	Process Display with Contacts and Analogue Output	4-digit LED-display 4 x 20 mm
CIT 350	Modbus	Process Display / Field Display with Bargraph, Contacts and Analogue Output	4-digit LED-display 4 x 9 mm + 20-segment-Bargraph
CIT 400		Process Display with Contacts, Analogue Output and Ex-approval	4-digit LED-display 4 x 10 mm
CIT 600	Modbus	Multichannel Process Display (LCD)	graphic LCD-display 128 x 64 pixel
CIT 650	Modbus	Multichannel Process Display (LCD) with Datalogger	graphic LCD-display 128 x 64 pixel
CIT 700/750	Modbus	Multichannel Process Display (TFT) with Contacts, Analogue Outputs and Datalogger	graphic 3,5 " TFT-monitor graphic 5,7 " TFT-monitor, touchscreen 320 x 240 pixel

# ACCESSORIES

Input	Output	Housing Dimensions (w x h x d) in mm	Interface
4 20 mA 0 10 V	0 / 1 / 2 PNP 4 20 mA, 0 10 V	plastic housing rotatable 47 x 47 x 68	-
4 20 mA	0 / 1 / 2 PNP 4 20 mA	wall panel 120 x 80 x 57	-
0/4 20 mA 0/1 5 V, 0/2 10 V PT100 / PT500 / PT1000		front panel 72 x 36 x 103 (86)	RS 485 Modbus RTU
0/4 20 mA 0/1 5 V, 0/2 10 V PT100 / PT500 / PT1000 thermocouple	0 / 1 / 2 relay 0 / 1 / 2 OC	front panel 72 x 36 x 107	RS 485 Modbus RTU
0/4 20 mA 0/1 5 V, 0/2 10 V PT100 / PT500 / PT1000 universal entry thermocouple	0 / 2 / 4 relay 0 / 2 / 4 OC 0/4 20 mA, 0 10 V	front panel 96 x 48 x 107 wall panel 110 x 80 x 67	RS 485 Modbus RTU
0/4 20 mA 0/1 5 V, 0/2 10 V	0 / 2 / 4 relay 0/4 20 mA	front panel 48 x 96 x 107	RS 485 Modbus RTU
4 20 mA	2 / 4 relay 0/4 20 mA	front panel 72 x 72 x 110 hat rail 70 x 75 x 110	-
2 / 4 / 8 inputs 0/4 20 mA 0/1 5V, 0/2 10 V PT100 / PT500 / PT1000 thermocouple	2 OC	front panel 96 x 96 x 110	RS 485 Modbus RTU USB Device
1 / 4 / 8 inputs 0/4 20 mA 0/1 5 V, 0/20 V PT100 / PT500 / PT1000 thermocouple	2 relay 2 OC	front panel 96 x 96 x 110 wall panel 166 x 161 x 103	RS 485 Modbus RTU USB-Host Port USB Device
max. 72 inputs 0 20 mA, 0 10 V binary max. 18 inputs PT 100 / PT 500 / PT 1000 max. 36 inputs thermocouple (mV) max. 12 inputs counter/ ratemeter/ flowmeter	max. 36 relay-outputs max. 72 SSR-outputs max. 24 outputs 4 20 mA	front panel 96 x 96 x 110 front panel 144 x 144 x 110 wall panel 166 x 161 x 103	RS 485 Modbus RTU, RS 232, Ethernet, Modbus TCP USB-Host Port

# COMPETENCE

trial pressure measurement technology

 pressure transmitters, electronic pressure switches or hydrostatic level probes

- > OEM or high-end products
- > standard products or customized solutions

BDISENSORS has the right pressure measuring device at the right price.

# PRICE / PERFORMANCE

pressure measurement at the highest level

The concentration on electronic pressure transmitter has led to extraordinary efficiency and economical pricing.

BDISENSORS is certain to be one of the most economical suppliers on the world market, given equal technical and commercial conditions.

# RELIABILITY

projectable delivery times and strict observance of deadlines

Short delivery times and firm deadlines, even for special designs, make BDISENSORS a reliable partner for our customers.

BDISENSORS reduces the level of your stock-keeping and increases your profitability.

# FLEXIBILITY

We have special solutions for your individual requirement.

We solve your problem in industrial pressure measurement quickly and economically, not only with large-scale production lines, but also for smaller requirements.

BDISENSORS is especially flexible when technical support and quick assistance are required in service case as well as for rush orders.

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	plant and machine engineering
	chemical and biochemical industry
Ø	energy industry
	renewable energy
<b>Control</b>	semiconducter industry / cleanroom technology
138	HVAC
	hydraulics
	refrigeration
CAL	calibration techniques
K	laboratory techniques
0	medical technology
	food and beverage
<b>7</b> 0	vehicles and mobile hydraulics
A	oil and gas industry
8	pharmaceutical industry
	marine / shipbuilding / offshore
	heavy industry
0	environmental industry
	packaging and paper industry

# MEDIA

0	sewage
0	aggressive media
	colours
C02 N2	gases
	fuels and oils
	pasty and viscous media
02	oxygen
0	water



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