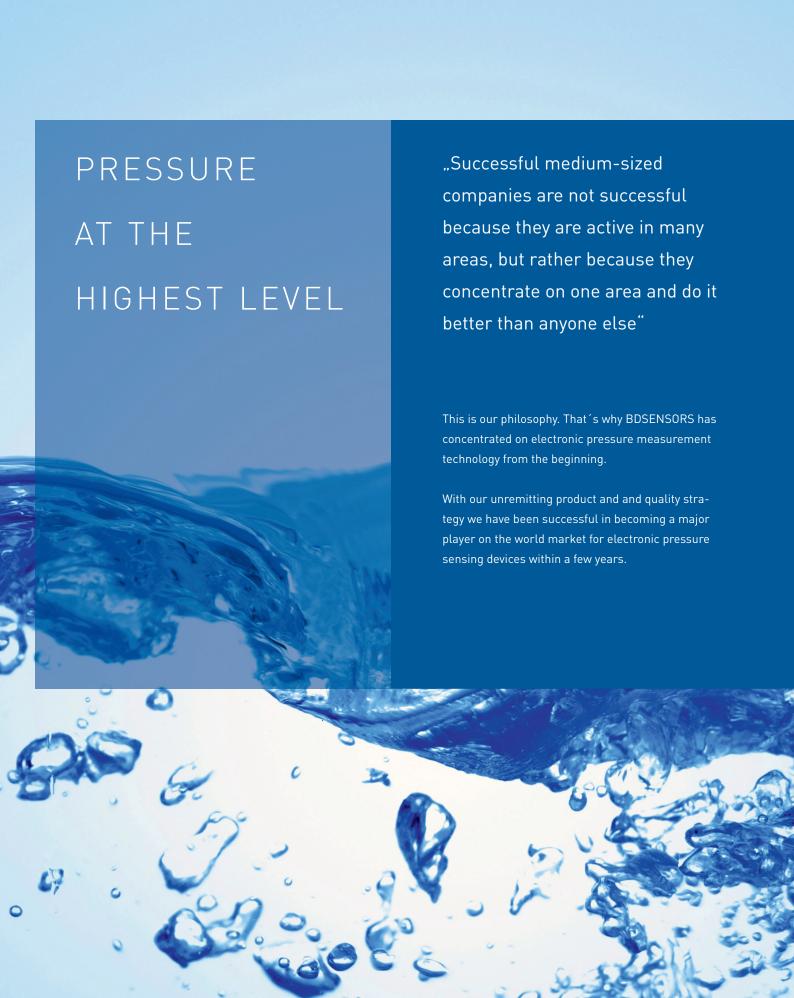
PRODUCT CATALOGUE HYDROSTATIC PROBES SCREW-IN TRANSMITTER









With 260 employees at 4 locations in Germany, the Czech Republic, Russia and China BD|SENSORS 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® communication or field bus interface.

In addition we have developed hundreds of customerspecific 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.

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precision	stainless steel	plastic	CuNiFe	[mm] ø	stainless steel sensor	ceramic sensor	pressure range / level [mH ₂ 0]	water	sewage	fuel and oil	aggressive media	not separable	separable	certificates	page
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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 mH₂O up to 0 ... 200 mH₂O

Output signals

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

Special characteristics

- diameter 35 mm
- cable and sensor section separable
- excellent accuracy
- communication connection
- thermal error in compensated range -20 ... 70 °C: 0.2 % FSO TC 0.02 % FSO / 10K

Optional versions

- IS-version zone 0
- cable protection via corrugated pipe
- mounting accessories as cable gland and terminal clamp in stainless steel
- different kinds of cables
- different kinds of seal materials

The separable precision stainless steel probe LMP 308i is designed for continuous fill level and level measurement of water and liquid mediums. The signal processing of sensor signal is done by digital electronics with 16-bit analog digital converter. Consequently it is possible to conduct an active compensation of sensor intrinsic deviations from normal condions like nonlinearity and thermal error.

In order to facilitate stock-keeping and maintenance the transmitter body 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





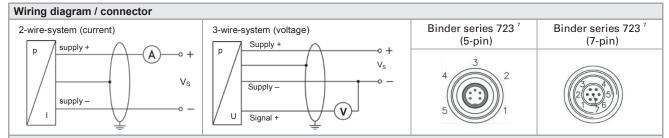




6 LMP 308i

Input pressure range 1	FI- 3	0.40	4	^	4	40			
Nominal pressure gauge	[bar]	0.40	1	2	4	10	20		
Level	[mH ₂ O]	4	10	20	40	100	200		
Overpressure	[bar]	2	5	10	20	40	80		
Burst pressure	[bar]	3	3 7.5 15 25 50						
¹ On customer request we adj	iust the device	e within the turn-down	-possibility by soft	ware on the require	ed pressure range.				
Output signal / Supply									
Standard		2-wire: 4 20	$0 \text{ mA} / V_S = 1$	12 36 V _{DC}	with RS-232 co	mmunication int	erface		
Option IS-protection			mA / V _S = 14						
Options		3-wire: 0 10) V / V _S = 14	1 36 V _{DC}					
Performance									
Accuracy		IEC 60770 ² : ≤ ±	0.1 % FSO						
Performance after turn-do	wn (TD)	120 00770 .31	0.1 /0130						
- TD ≤ 1:5	···· (12)	no change of acc	uracy 3						
- TD > 1:5		formula for accur		for nominal pres	sure gauge ≤ 0.	40 bar see note	3):		
		$\leq \pm [0.1 + 0.015)$			31.31		-,		
		with turn-down =	nominal pressur	re range / adjust	ed range				
		e.g. follwing accu	racy can be cal	culated for turn-o	lown 1:10:				
		≤ ± (0.1 + 0.015)	(10) % FSO viz	. the accuracy is	≤ ± 0.25 % FSC)			
Permissible load		current 2-wire:	$R_{max} = [(\$	$V_{\rm S} - V_{\rm S min} / 0.02$	Α] Ω				
		voltage 3-wire:	R _{min} = 10						
Influence effects		supply: 0.05	% FSO / 10 V	load:	0.05 % FSO / I	cΩ			
Long term stability		≤ ± (0.1 x turn-do		ear					
Response time		ca. 200 msec	, ,						
		following parame	ters can be adi	usted (interface /	software neede	d ⁴)			
Adjustability		electronic dampii				,			
•		offset: 0 90 %	FSO tur	n-down of span:	max. 1:10				
² accuracy according to IEC 6	0770 – limit p	oint adjustment (non-	linearity, hysteresi	s, repeatability)					
³ nominal pressure gauges ≤ (0,40 bar are e	excluded; for these the	e calculation of acc	curacy is as follows					
$\leq \pm (0.1 + 0.02 \text{ x turn-down}) \%$							(1)(5)		
software, interface and cable		ate be ordered (softwa	ire is compatible w	ith vvindows 95, s	98, 2000, NT from	version 4.0 or nign	er ana XP)		
Thermal effects (Offset a									
Tolerance band	[% FSO]	≤ ± (0.2 x turn-do	wn) in co	ompensated rang	ne-20 70°C				
			,		•				
TC [% FS	SO / 10 K]	± (0.2 x turn-dow	,	ompensated ran	•				
TC [% FS Permissible temperatures		± (0.2 x turn-dow medium: -20 7	n) in co		ge -20 70 °C	enviroment: -25	5 65 °C		
Permissible temperatures		,	n) in co	ompensated ran	ge -20 70 °C	enviroment: -25	5 65 °C		
Permissible temperatures Electrical protection ⁵		medium: -20 7	n) in co	ompensated ran	ge -20 70 °C	enviroment: -25	i 65 °C		
Permissible temperatures Electrical protection ⁵ Short-circuit protection		medium: -20 7	n) in co 0 °C stor	ompensated ran	ge -20 70 °C	enviroment: -25	5 65 °C		
Permissible temperatures Electrical protection ⁵ Short-circuit protection Reverse polarity protection	n	medium: -20 7 permanent no damage, but a	n) in co 0 °C stora	ompensated ran age: -25 70 °C	ge -20 70 °C	enviroment: -25	5 65 °C		
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Permissible temperatures Electrical protection 5 Short-circuit protection Reverse polarity protection Electromagnetic compatib 5 additional external overvoltage Electrical connection Cable with sheath materia 6 cable with integrated air tube Materials (media wetted) Housing Seals Diaphragm Protection cap Explosion protection (or Approvals DX19-LMP 308 i Safety technical maximum Permissible media temper Connecting cables (by factory) Miscellaneous	n illity ge protection	permanent no damage, but a emission and imr unit in terminal box K PVC (-5 70 °C PUR (-20 70 ° FEP (-20 70 ° eric pressure reference stainless steel 1.4 FKM, EPDM, oth stainless steel 1.4 POM 20 mA / 2-wire) IBEXU 10 ATEX zone 0: II 10 zone 20: II 10 U _i = 28 V, I _i = 93 the supply conne in zone 0: in zone 1 or highe cable capacitance	n) in co 0 °C store also no function munity according L 1 or KL 2 with at L) grey C) black C) black C) black es 4404 (316L) ers on request 4435 (316L) 1068 X / IECE Ex ia IIC T4 Ga Ex ia IIIC T85° mA, P _i = 660 m\ ctions have an i -20 60 er: -20 70 er: signal line/shiel	age: -25 70 °C g to EN 61326 tmospheric pressur Ex IBE 12.0027) C Da N, C _i ≈ 0 nF, L _i ≈ nner capacity of °C with p _{atm} 0.8 t °C ield also signal line	ge -20 70 °C C electronics n The reference availa (C 0 μH, The max. 27 nF to the par up to 1.1 bar ine/signal line: 1	others or others or he housing			
Permissible temperatures Electrical protection 5 Short-circuit protection Reverse polarity protection Electromagnetic compatib 5 additional external overvolta; Electrical connection Cable with sheath materia 6 cable with integrated air tube Materials (media wetted) Housing Seals Diaphragm Protection cap Explosion protection (or Approvals DX19-LMP 308 i Safety technical maximum Permissible media temper Connecting cables (by factory) Miscellaneous Current consumption	n illity ge protection	permanent no damage, but a emission and imr unit in terminal box K PVC (-5 70 °C PUR (-20 70 °C PUR (-20 70 °C eric pressure reference stainless steel 1.4 FKM, EPDM, oth stainless steel 1.4 POM 20 mA / 2-wire) IBEXU 10 ATEX zone 0: II 10 zone 20: II 1D U _i = 28 V, I _i = 93 the supply conne in zone 0: in zone 1 or highe cable capacitance signal output curre	n) in co 0 °C store also no function munity according L 1 or KL 2 with at L) grey C) black C) black C) black ee 4404 (316L) ers on request 4435 (316L) 1068 X / IECE Ex ia IIC T4 Ga Ex ia IIIC T 85° mA, P _i = 660 m ctions have an i -20 60 er: -20 70 e: signal line/shiel rent: max. 25 m/	age: -25 70 °C g to EN 61326 tmospheric pressur Ex IBE 12.0027) C Da N, C _i ≈ 0 nF, L _i ≈ nner capacity of °C with p _{atm} 0.8 t °C ield also signal line	ge -20 70 °C C electronics n The reference availa (C 0 μH, The max. 27 nF to the par up to 1.1 bar ine/signal line: 1	others or others or he housing			
Permissible temperatures Electrical protection 5 Short-circuit protection Reverse polarity protection Electromagnetic compatib 5 additional external overvolta; Electrical connection Cable with sheath materia 6 cable with integrated air tube Materials (media wetted) Housing Seals Diaphragm Protection cap Explosion protection (or Approvals DX19-LMP 308 i Safety technical maximum Permissible media temper Connecting cables (by factory) Miscellaneous Current consumption Weight	n illity ge protection	permanent no damage, but a emission and imr unit in terminal box K PVC (-5 70 °C PUR (-20 70 °C PUR (-20 70 °C eric pressure reference stainless steel 1.4 FKM, EPDM, oth stainless steel 1.4 POM 20 mA / 2-wire) IBEXU 10 ATEX zone 0: II 10 zone 20: II 1D U _i = 28 V, I _i = 93 the supply conne in zone 0: in zone 1 or highe cable capacitance cable inductance signal output curr approx. 250 g (wi	n) in co 0 °C store also no function munity according L 1 or KL 2 with at L) grey C) black C) black C) black ee 4404 (316L) ers on request 4435 (316L) 1068 X / IECE Ex ia IIC T4 Ga Ex ia IIIC T 85° mA, P _i = 660 m ctions have an i -20 60 er: -20 70 e: signal line/shiel rent: max. 25 m/	age: -25 70 °C g to EN 61326 tmospheric pressur Ex IBE 12.0027) C Da N, C _i ≈ 0 nF, L _i ≈ nner capacity of °C with p _{atm} 0.8 t °C ield also signal line	ge -20 70 °C C electronics n The reference availa (C 0 μH, The max. 27 nF to the par up to 1.1 bar ine/signal line: 1	others or others or he housing			
Permissible temperatures Electrical protection 5 Short-circuit protection Reverse polarity protection Electromagnetic compatib 5 additional external overvoltag Electrical connection Cable with sheath materia 6 cable with integrated air tube Materials (media wetted) Housing Seals Diaphragm Protection cap Explosion protection (or Approvals DX19-LMP 308 i Safety technical maximum Permissible media temper	n illity ge protection	permanent no damage, but a emission and imr unit in terminal box K PVC (-5 70 °C PUR (-20 70 °C PUR (-20 70 °C eric pressure reference stainless steel 1.4 FKM, EPDM, oth stainless steel 1.4 POM 20 mA / 2-wire) IBEXU 10 ATEX zone 0: II 10 zone 20: II 1D U _i = 28 V, I _i = 93 the supply conne in zone 0: in zone 1 or highe cable capacitance signal output curre	n) in co 0 °C store also no function munity according L 1 or KL 2 with at C) grey C) black C) black C) black ee 4404 (316L) ers on request 4435 (316L) 1068 X / IECE E xia IIC T4 Ga Ex ia IIC T4 Ga Ex ia IIC T 85° mA, P _i = 660 m ctions have an i -20 60 er: -20 70 e: signal line/shiel rent: max. 25 mA thout cable)	age: -25 70 °C g to EN 61326 tmospheric pressur Ex IBE 12.0027) C Da N, C _i ≈ 0 nF, L _i ≈ nner capacity of °C with p _{atm} 0.8 t °C ield also signal line	ge -20 70 °C C electronics n The reference availa (C 0 μH, The max. 27 nF to the par up to 1.1 bar ine/signal line: 1	others or others or he housing			

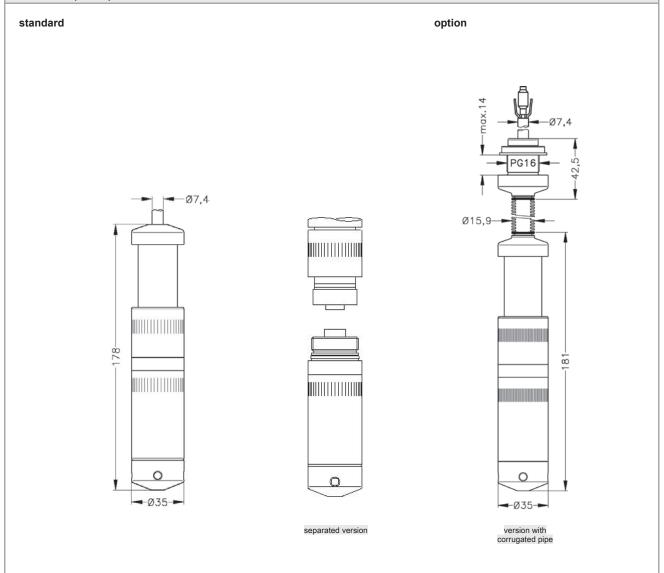
Technical Data



Pin configuration				
Electrical connection	Binder series 723 ⁷ (5-pin) / 2-wire	Binder series 723 ⁷ (5-pin) / 3-wire	Binder series 723 ⁷ (7-pin) / 2-wire with communication interface	cable colours (DIN 47100)
Supply +	3	3	3	wh (white)
Supply –	1	4	1	bn (brown)
Signal + (for 3-wire)	-	1	(6)	gn (green)
RxD	-	-	4	-
TxD	-	-	5	-
GND	-	-	7	-
Shield	5	5	2	gn/ye (green / yellow)

⁷ in separated version

Dimensions (in mm)



LMP 308i

Ordering code

LMP 308i	ш-ш-п-п-п-п-ш-ш-ш-ш-ш-ш-ш-ш-ш-ш-ш-ш-ш-ш	
Pressure in bar	4 4 0 4 4 1	
in mH ₂ O Input [mH ₂ O] [bar]		
4.0 0.40 10 1.0	4 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
20 2.0 40 4.0	2 0 0 1 4 0 0 1	
100 10 200 20	1 0 0 2 2 0 0 2 9 9 9 9	
customer	9 9 9 9	consult
Housing Stainless steel 1.4404 (316L)	1	
Diaphragm	9	consult
Stainless steel 1.4435 (316L) customer	1 9	consult
Output		Consuit
4 20 mA / 2-wire Intrinsic safety 4 20 mA / 2-wire	1 E 3	
0 10 V / 3-wire customer	3 9	consult
Seals		
FKM EPDM	1	
customer	3 9	consult
Electrical connection		Consult
PVC-cable ¹	1	
PUR-cable ¹ FEP-cable ¹	2 3	
customer	9	consult
Accuracy		Consuit
0.1 % 2	1	
customer	9	consult
Cable length		
Version in m	9 9 9	consult
standard	1 1 1	
with communication interface 3	1 1 1 1 2 1	
prepared for mounting ⁴ with stainless steel pipe	1 2 6	consult
cable protection with stainless steel corrugated pipe with pipe length in m	1 2 3 9 9 9	consult
with pipe length in m customer	9 9 9	consult

¹ cable with integrated air tube for atmospheric pressure reference

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

³ Software, interface and cable have to be order separately (Ordering code: CIS-Set 510; Software appropriate for Windows^â 95, 98, 2000, NT Version 4.0 or newer and XP)

⁴ stainless steel pipe is not part of the supply



LMK 382H

Stainless Steel Probe with HART®-communication

Ceramic Sensor

accuracy according to IEC 60770: 0.1 % FSO

Nominal pressure

from 0 ... 60 cmH₂O up to 0 ... 200 mH₂O

Output signals

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

Special characteristics

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

Optional versions

- ► IS-version zone 0
- mounting with stainless steel pipe
- ▶ flange version
- diaphragm 99.9 % Al₂O₃
- accessories e.g. assembling and probe flange, mounting clamp

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

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>

ground water level measurement rain spillway basin



<u>Sewage</u>

waste water treatment water recycling





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







Pressure ranges ¹									
Nominal pressure	[bar]	0.06	0.16	0.4	1	2	5	10	20
Level	[mH ₂ O]	0.6	1.6	4	10	20	50	100	200
Overpressure	[bar]	2	4	6	8	15	25	35	45
¹ On customer request we	adjust the device	ces by softwar	e on the requir	ed pressure ra	nges, within the	e turn-down po	ssibility (startin	g at 0.02 bar).	

Output signal / Supply							
Standard			6 V _{DC} with HART® commu		_{S rated} = 24 V _{DC}		
Option IS- protection	2-wire: 4 20 mA / V	s = 14 28	3 V _{DC} with HART [®] commu	nication V _s	s rated = 24 V _{DC}		
Performance							
Accuracy ²	P _N ≥ 160 mbar	TD ≤ 1:5	≤ ± 0.2 % FSO		TD _{max} = 1:10		
-		TD > 1:5 $\leq \pm [0.2 + 0.03 \times TD] \%$ FSO					
	P _N < 160 mbar		≤ ± [0.2 + 0.1 x TD] %		TD _{max} = 1:3		
	P _N ≥ 1 bar	TD ≤ 1:5	≤ ± 0.1 % FSO		TD _{max} = 1:10		
		TD > 1:5	$\leq \pm [0.1 + 0.02 \times TD]$	% FSO	· = max ·····		
Permissible load	$R_{\text{max}} = [(V_{\text{S}} - V_{\text{S min}}) / ($		load at HART®-co		_{in} = 250 Ω		
Long term stability			at reference conditions				
Influence effects	supply: 0.05 % FSO			ble load: 0.05 %	FSO / kΩ		
Turn-on time	850 msec						
Mean response time	140 msec without con	sideration of	electronic damping	mean m	neasuring rate 7/sec		
Max. response time	380 msec		, , , , , , , , , , , , , , , , , , ,		<u> </u>		
Adjustability	configuration of follow	ing paramete	rs possible (interface / so	ftware necessary	³):		
² accuracy according to IEC 60770 – lim	- electronic damping - offset: - turn down of span	g: 0 100 0 80 : max. 1:) sec % FSO 10				
³ software, interface, and cable have to	be ordered separately (softv	vare appropriate	e for Windows [®] 95, 98, 2000,	NT Version 4.0 or h	nigher, and XP)		
Thermal effects (Offset and Spar	1)						
Tolerance band	$\leq \pm (0.2 \text{ x turn-down})$						
TC, average	± (0.02 x turn-down) ^c	% FSO / 10 K					
in compensated range	-20 80 °C						
Permissible temperatures	medium: electronics / environm storage:	nent: -25	. 85 °C . 85 °C . 85 °C				
Electrical protection ⁴							
Short-circuit protection	permanent						
Reverse polarity protection	no damage, but also r	no function					
Electromagnetic compatibility	emission and immunit		FN 61326				
⁴ additional external overvoltage protecti		<u>, </u>		available on reque	oct		
Mechanical stability	ion anii in terminar box NE T	OF INE 2 WILLIAM	nospitette pressure reference	available off reque	.ot		
•	4 / DIN		0)				
Vibration	4 g (according to: DIN	EN 60068-2-	·o)				
Electrical connection							
Cable outlet with sheat material ⁵	PVC (-5 70 °C) gre						
	PUR (-25 70 °C) bl						
	FEP (-25 70 °C) bla						
5 shiplded cable with integrated air total	TPE (-25 85 °C) bl						
shielded cable with integrated air tube	ioi atmosprieric pressure re	rererice					
Materials							
Housing	stainless steel 1.4404						
Seals	FKM FFKM						
	EPDM						
	others on request						
Dianhragm		الم 96 M					
Diaphragm	standard: ceramics A						
	standard: ceramics A option: ceramics A	Al ₂ O ₃ 96 % Al ₂ O ₃ 99.9 %					
Protection cap	standard: ceramics A						
Protection cap Miscellaneous	standard: ceramics A option: ceramics A	Al ₂ O ₃ 99.9 %	nlass staal: available as o	romnact product ((etandard: etainloss		
Protection cap Miscellaneous	standard: ceramics A option: ceramics A POM stainless steel pipe fo	Al ₂ O ₃ 99.9 %	nless steel: available as o		(standard: stainless		
Protection cap Miscellaneous Option cable protection	standard: ceramics A option: ceramics A POM stainless steel pipe fo steel pipe with a total	Al ₂ O ₃ 99.9 %	nless steel: available as c ! m possible; other lengths		(standard: stainless		
Diaphragm Protection cap Miscellaneous Option cable protection Ingress protection Current consumption	standard: ceramics A option: ceramics A POM stainless steel pipe fo steel pipe with a total IP 68	Al ₂ O ₃ 99.9 %			(standard: stainless		
Protection cap Miscellaneous Option cable protection	standard: ceramics A option: ceramics A POM stainless steel pipe fo steel pipe with a total	Al_2O_3 99.9 % r probe in stailength up to 2			(standard: stainless		

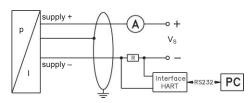
LMK 382 H

Technical Data

IS-protection	
Approval DX15A-LMK 382H	IBExU 10 ATEX 1186 X zone 0 ⁶ : II 1G Ex ia IIB T4 zone 20: II 1D Ex iaD 20 T85°C
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 0 nF, L_i = 0 μ H, the supply connections have an inner capacity of max. 27 nF opposite the enclosure
Permissible media temperature	in zone 0: -10 60 °C with p _{atm} 0.8 bar up to 1.1 bar
	zone 1 or higher: -25 70 °C
Connecting cables	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m
(by factory)	cable inductance: signal line/shield also signal line/signal line: 1μH/m
⁶ for ontional stainless steel nine following	g designation is valid: "II 1G Fx ia IIC T4" (zone 0)

Wiring diagram

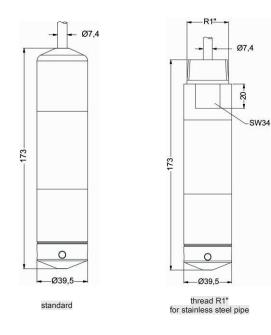
2-wire-system (current) HART®

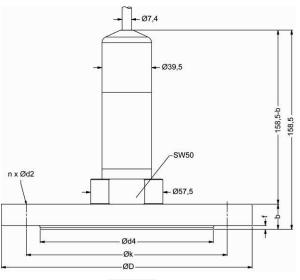


Pin configuration

· ··· comgaration	
Electrical connection	cable colours (DIN 47100)
	wh (white)
Supply –	bn (brown)
Shield	gn/ye (green / yellow)

Dimensions (in mm)





flange version

	dir	mensions in	mm	
dimen-	DN25 /	DN40/	DN50 /	DN80 /
sions	PN40	PN40	PN40	PN16
D	115	150	165	200
K	85	110	125	160
d4	68	88	102	138
b	18	18	20	20
f	2	3	3	3
n	4	4	4	8
d2	14	18	18	18

HART® is a registered trade mark of HART Communication Foundation; Windows® is a registered trade mark of Microsoft Corporation

12 LMK 382 H Ordering code

LMK 382H	Ш-П	<u> </u>]-□-□]-[]-		Ш	-Щ]
Pressure								
in bar	5 6 5							
in mH ₂ O	5 6 5 5 6 6							
Input [mH ₂ O] [bar]								
0.60 0.06	0	6 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0						
1.60 0.16	1	6 0 0						
4.00 0.40	1	0 0 0						
10 1.0	1	0 0 1						
20 2.0	2	0 0 1						
50 5.0	5	0 0 1						
100 10	1	0 0 1						
200 20	1	0 0 2						
customer	2	0 0 2						consult
Housing	3	[9]9]9]						Consuit
Stainless steel 1.4404 (316L)		1						
customer		9						consult
Diaphragm		9						Consuit
Ceramics Al ₂ O ₃ 96%			2					
Ceramics Al ₂ O ₃ 99.9%								
customer			C 9					consult
Output			9			_		Consult
HART®-communication								
4 20 mA / 2-wire			Н					
HART®-communication								
Intrinsic safety 4 20 mA / 2-wire			I					
customer			9					consult
Seals								33113311
FKM				1		$\overline{}$		
EPDM				3				
FFKM				7				
customer				9				consult
Electrical connection								
PVC-cable ¹					1			
PUR-cable ¹					2			
FEP-cable ¹					2 3			
TPE-cable ¹					4			
customer					9			consult
Accuracy								
0.1 % 2					1			
customer					9			consult
Cable length								
in m						9 9 9		
Special version								
standard							0 0 0	
prepared for mounting ³								
with stainless steel pipe							5 0 2	
flange version							5 1 0	
customer							9 9 9	consult
							1 - 1 -	•

 $^{^1}$ cable with integrated $\,$ air tube for atmospheric pressure reference 2 only possible for $P_N \ge 1$ bar 3 stainless steel pipe is not part of the supply

HART® is a registered trade mark of HART Communication Foundation



LMK 458H

Probe with HART®-communication for Marine and Offshore

Ceramic Sensor

accuracy according to IEC 60770: 0.1 % FSO

Nominal pressure

from 0 ... 60 cmH₂O up to 0 ... 200 mH₂O

Output signals

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

Special characteristics

- diameter 39.5 mm
- HART® communication (setting of offset, span and damping)
- high overpressure resistance
- high long-term stability

Optional versions

- IS-version Ex ia = intrinsically safe for gases and dusts
- diaphragm Al₂O₃ 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 as a consequence of the certification by Germanischer Lloyd predestined for shipbuilding and offshore applications.

A permissible operating temperature of 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 capacitive ceramic sensor element, which offers a high overload resistance and medium compatibility.

Preferred areas of use are



Water

Drinking water abstraction Desalinization plant

Shipbuilding / Offshore



Ballast tanks Draught monitoring Level measurement in ballast and storage tanks











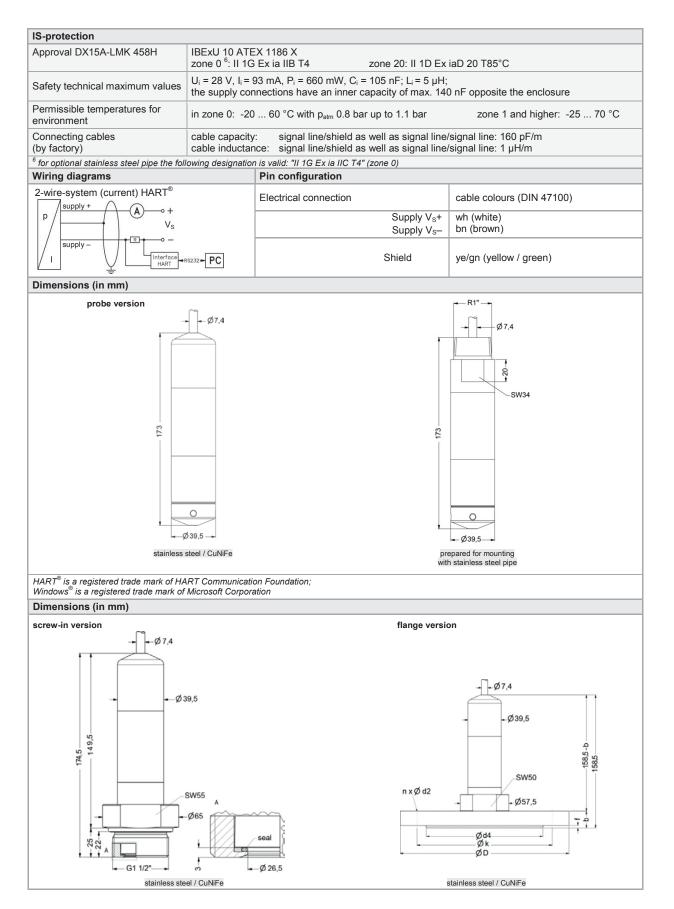


¹⁴ LMK 458 H

Pressure ranges									
Nominal pressure 1	[bar]	0.06	0.16	0.4	1	2	5	10	20
Level	[mH ₂ O]	0.6	1.6	4	10	20	50	100	200
Overpressure	[bar]	2	4	6	8	15	25	35	45
On customer request we	adjust the de	evices by softwa	re on the requ	ired pressure ra	inges, within the	turn-down po	ssibility (startin	g at 0.02 bar).
Output signal / Suppl		-	·						
Standard		2-wire: 4 2	20 mA / V _S =	12 36 V _{DC}	with HART®	communica	ation V _s	rated = 24 V _D	С
Option IS-version		2-wire: 4 2			with HART®			rated = 24 V _D	
Performance		2 WII C. 7 2	-0111/17/05	14 20 VDC	WIGHTINGT	Oommanioc	1011 V S	rated Z-T V D	iC .
Accuracy ²		I		TD ≤ 1:5	< 1.0	2 % FSO		T	
Accuracy		P _N ≥ 160 mb	ar	TD ≥ 1.5 TD > 1:5	≤ ± [0	.2 + 0.03 x T		$TD_{max} = 1$	
		P_N < 160 mb	ar		≤ ± [0	.2 + 0.1 x T[D] % FSO	$TD_{max} = 1$:3
		P _N ≥ 1 bar		TD ≤ 1:5 TD > 1:5		1 % FSO .1 + 0.02 x 1	TDI % FSO	TD _{max} = 1	: 10
Permissible load		$R_{max} = [(V_S -$	V _{S min}) / 0.02	ΑΙΩ			unication: R _m	_{in} = 250 Ω	
Long term stability				O / year at refe					
Influence effects		supply: 0.05					oad: 0.05 % I	ESO / kO	
Turn-on time		850 msec	70 1 00 7 10	·		CITIIOOIDIC I	0.00 /0 1	0071022	
Mean response time			thout consid	eration of elec	tronic dampir	α	mean r	neasuring ra	ate 7/sec
Max. response time		380 msec		2.2.3 01 0100	campii	5		22.2019 10	
Adjustability		- electronic - offset: 0 . - turn dow	damping: 0 80 % FSO n of span: m	ax. 1:10	`	ace / softwa	ire necessary	³):	
² accuracy according to IE ³ software, interface, and c						, 98, 2000, N	T Version 4.0 o	r higher, and .	XP)
Thermal effects (Offse	et and Spa	n) / Permissik	ole temperat	tures					
Tolerance band		≤ ± [0.2 x tur	n-down] % F	SO					
TC, average		≤ ± [0.02 x tı	urn-down] %	FSO / 10 K					
in compensated range		-20 80 °C							
Permissible temperatur	res	medium: -25	85 °C	electronics	s / environmei	nt: -25 85	°C stora	ge: -25 8	35 °C
Electrical protection 4	ı								
Short-circuit protection		permanent							
Reverse polarity protect	ction	no damage,	but also no f	unction					
Electromagnetic compa	atibility	emission and	326	· ·					
			anischer Lloy orske Veritas	' '					
⁴ additional external overve	oltage protec	- Det N	orske Veritas	s (DNV)	ospheric pressu	re reference a	vailable		
	oltage protec	- Det N	orske Veritas	s (DNV)	ospheric pressu	re reference a	vailable		
Mechanical stability	oltage protec	- Det No tion unit in termi	orske Veritas Inal box KL 1 o	s (DNV) or KL 2 with atmo				0068-2-6)	
Mechanical stability Vibration		- Det No tion unit in termi	orske Veritas Inal box KL 1 o	s (DNV)				0068-2-6)	
⁴ additional external overvolumechanical stability Vibration Electrical connection		- Det Notion unit in termi	orske Veritas nal box KL 1 o	s (DNV) or KL 2 with atmo	ng to DNV: Cl			0068-2-6)	
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵		- Det Notion unit in termi 4 g (accordin	orske Veritas Inal box KL 1 or Ing to GL: cur (-25 70 (-25 70 (-25 85 quest	s (DNV) or KL 2 with atmo ve 2 / accordin O °C) bla O °C) bla 5 °C) bla				0068-2-6)	
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ shielded cable with integr	: rated air tube	- Det Notion unit in termi 4 g (accordin	orske Veritas Inal box KL 1 or Ing to GL: cur (-25 70 (-25 70 (-25 85 quest	s (DNV) or KL 2 with atmo ve 2 / accordin O °C) bla O °C) bla 5 °C) bla	ng to DNV: Cl ack ack			0068-2-6)	
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ shielded cable with integr	: rated air tube	- Det Notion unit in termi 4 g (accordin	orske Veritas Inal box KL 1 or Ing to GL: cur (-25 70 (-25 70 (-25 85 quest	s (DNV) or KL 2 with atmo ve 2 / accordin O °C) bla O °C) bla 5 °C) bla	ng to DNV: Cl ack ack lue	ass B / bas	is: DIN EN 60	,	
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ shielded cable with integral Materials (media wett	: rated air tube	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on refor atmospheric	orske Veritas inal box KL 1 or ng to GL: cur (-25 70 (-25 70 (-25 80 quest appressure references	s (DNV) or KL 2 with atmo ve 2 / accordin O °C) bla O °C) bla 5 °C) bla	ng to DNV: Cl ack ack lue	ass B / bas		,	ea water)
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ *shielded cable with integr Materials (media wett) Housing	: rated air tube	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on refor atmospheric standard: sta	orske Veritas inal box KL 1 or ng to GL: cur (-25 70 (-25 80 quest c pressure refer ainless steel quest c EPDM	s (DNV) or KL 2 with atmo ove 2 / accordin o °C) bla o °C) bla o °C) bla o °C) bla orence	ng to DNV: Cl ack ack lue	ass B / bas	is: DIN EN 60	,	ea water)
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ *shielded cable with integr Materials (media wett Housing Seals	: rated air tube	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on refor atmospheric standard: st	orske Veritas nal box KL 1 or ng to GL: cur (-25 70 (-25 85 quest e pressure refer ainless steel quest EPDM quest	s (DNV) or KL 2 with atmo ove 2 / accordin O °C) bla O °C) bla O °C) bla orence 1.4404 (316L)	ng to DNV: Cl ack ack lue	ass B / bas	is: DIN EN 60	,	ea water)
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ shielded cable with integraterials (media wetter Housing Seals Diaphragm	: rated air tube	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on refor atmospheric standard: sta	orske Veritas nal box KL 1 or ng to GL: cur (-25 70 (-25 85 quest e pressure refer ainless steel quest EPDM quest	s (DNV) or KL 2 with atmo ove 2 / accordin O °C) bla O °C) bla O °C) bla orence 1.4404 (316L)	ng to DNV: Cl ack ack lue	ass B / bas	is: DIN EN 60	,	ea water)
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ *shielded cable with integr Materials (media wett) Housing Seals Diaphragm Nose cone	rated air tube	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on refor atmospheric standard: state others on reform refo	orske Veritas nal box KL 1 or ng to GL: cur (-25 70 (-25 85 quest e pressure refer ainless steel quest EPDM quest	s (DNV) or KL 2 with atmo ove 2 / accordin O °C) bla O °C) bla O °C) bla orence 1.4404 (316L)	ng to DNV: Cl ack ack lue	ass B / bas	is: DIN EN 60	,	ea water)
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ * shielded cable with integr Materials (media wett) Housing Seals Diaphragm Nose cone Category of the environe	rated air tube ed) onment	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on refor atmospheric standard: state others on reform refo	orske Veritas nal box KL 1 or ng to GL: cur (-25 70 (-25 85 quest e pressure refer ainless steel quest EPDM quest	s (DNV) or KL 2 with atmo ove 2 / accordin O °C) bla O °C) bla O °C) bla orence 1.4404 (316L)	ng to DNV: Cl ack ack lue option	ass B / bas	is: DIN EN 60	nt against se	ea water)
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ *shielded cable with integr Materials (media wett) Housing Seals Diaphragm Nose cone Category of the environ Germanischer Lloyd (G	rated air tube ed) onment GL)	- Det Notion unit in termi 4 g (according PUR FEP TPE others on rection atmospheric standard: state others on rection for terminal standard: ceepom D, EMC 1 temperature	orske Veritas nal box KL 1 or ng to GL: cur (-25 70 (-25 85 quest c pressure refer quest c EPDM quest ramics Al ₂ O ₃	s (DNV) or KL 2 with atmo ove 2 / accordin o °C) bla orence 1.4404 (316L)	ng to DNV: Clack ack lue option	ass B / bas : CuNi10Fe : ceramics /	1Mn (resistar Al ₂ O ₃ 99.9 %	nt against se	ea water)
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ ** shielded cable with integr Materials (media wett Housing Seals Diaphragm Nose cone Category of the environ Germanischer Lloyd (G Det Norske Veritas (DN	rated air tube ed) onment GL)	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on refor atmospheric standard: standard: standard: standard: others on reference standard: cepOM D, EMC 1	orske Veritas nal box KL 1 or ng to GL: cur (-25 70 (-25 85 quest c pressure refer quest c EPDM quest ramics Al ₂ O ₃	s (DNV) or KL 2 with atmo ove 2 / accordin o °C) bla orence 1.4404 (316L)	ng to DNV: Clack ack lue option	ass B / bas : CuNi10Fe : ceramics /	1Mn (resistar Al ₂ O ₃ 99.9 % ertificate: 19 7	nt against se	ea water)
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ **shielded cable with integrated wetter Housing Seals Diaphragm Nose cone Category of the envirage Germanischer Lloyd (G Det Norske Veritas (DN Miscellaneous	rated air tube ed) onment GL)	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on red standard: sta others on red standard: ce POM D, EMC 1 temperature electromagn	orske Veritas nal box KL 1 or ng to GL: cur (-25 70 (-25 70 (-25 85 quest c pressure refe sinless steel quest ; EPDM quest ramics Al ₂ O ₃	s (DNV) or KL 2 with atmost ve 2 / according ve 2 / acco	ng to DNV: Clack ack lue option	ass B / bas : CuNi10Fe : ceramics A	1Mn (resistar Al ₂ O ₃ 99.9 % ertificate: 19 7	nt against se 777 - 11 HH	
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ **shielded cable with integraterials (media wett) Housing Seals Diaphragm Nose cone Category of the enviragem Det Norske Veritas (DN Miscellaneous	rated air tube ed) onment GL)	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on recording standard: standard: standard: standard: ce POM D, EMC 1 temperature electromagn	orske Veritas nal box KL 1 or ng to GL: cur (-25 70 (-25 70 (-25 85 quest pressure refe ainless steel quest ; EPDM quest ramics Al ₂ O ₃	s (DNV) or KL 2 with atmost ve 2 / according ve 2 / acco	ng to DNV: Clack ack lue option option	ass B / bas : CuNi10Fe : ceramics /	1Mn (resistar Al ₂ O ₃ 99.9 % ertificate: 19 7	nt against se 777 - 11 HH	
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ Shielded cable with integr Materials (media wett Housing Seals Diaphragm Nose cone Category of the environ Germanischer Lloyd (G Det Norske Veritas (DN Miscellaneous Cable protection	rated air tube ed) onment GL)	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on recording standard: standard: standard: standard: ce POM D, EMC 1 temperature electromagn stainless stesteel pipe wi	orske Veritas nal box KL 1 or ng to GL: cur (-25 70 (-25 70 (-25 85 quest pressure refe ainless steel quest ; EPDM quest ramics Al ₂ O ₃	s (DNV) or KL 2 with atmost ve 2 / according ve 2 / acco	ng to DNV: Clack ack lue option option	ass B / bas : CuNi10Fe : ceramics /	1Mn (resistar Al ₂ O ₃ 99.9 % ertificate: 19 7	nt against se 777 - 11 HH	
Mechanical stability Vibration Electrical connection Cable outlet with sheat material ⁵ Shielded cable with integrent Materials (media wette Housing Seals Diaphragm Nose cone Category of the environ Germanischer Lloyd (G Det Norske Veritas (DN Miscellaneous Cable protection Ingress protection	rated air tube ed) onment GL)	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on received and standard: standard: standard: standard: standard: ce POM D, EMC 1 temperature electromagn stainless steel pipe wii IP 68	orske Veritas nal box KL 1 or ng to GL: cur (-25 70 (-25 70 (-25 80 quest c pressure references steel quest c EPDM quest ramics Al ₂ O ₃ : D the tic compatile	s (DNV) or KL 2 with atmost ve 2 / according ve 2 / acco	ng to DNV: Clack ack lue option option	ass B / bas : CuNi10Fe : ceramics /	1Mn (resistar Al ₂ O ₃ 99.9 % ertificate: 19 7	nt against se 777 - 11 HH	
Mechanical stability Vibration	rated air tube ed) onment GL)	- Det Notion unit in termi 4 g (accordin PUR FEP TPE others on recording standard: standard: standard: standard: ce POM D, EMC 1 temperature electromagn stainless stesteel pipe wi	orske Veritas nal box KL 1 or ng to GL: cur (-25 70 (-25 70 (-25 80 quest repressure references steel quest ramics Al ₂ O ₃ : D retic compatile el pipe for proth a total len	s (DNV) or KL 2 with atmo ove 2 / according ove 3 / according ove 4 / according ove	ng to DNV: Clack ack lue option option	ass B / bas : CuNi10Fe : ceramics /	1Mn (resistar Al ₂ O ₃ 99.9 % ertificate: 19 7	nt against se 777 - 11 HH	

LMK 458 H

Technical Data



This document contains product specifications; properties are not guaranteed. Subject to change without notice.

¹⁶ LMK 458 H

Ordering code

LMK 458H	Щ]-[-[- 🗌	-[- <u> </u>	-	-	-[- [П]-		П	
Pressure																	
in bar, gauge	7 6 E																
in bar, sealed gauge ¹	7 6 G	i															consult
in bar, absolute ¹	7 6 H																
in mH₂O	7 6 F																
Input [mH ₂ O] [bar]																	
0.60 0.06		0		0 0													
1.60 0.16 4.00 0.40		1	6 0	0 0													
10 1.0		1	0	0 1													
20 2.0		2	0	0 1													
50 5.0		5	0	1													
100 10		1	0) 2													
200 20		2	0 () 2													
customer		9	0 0 0 0 0 0 9 9	9 9													consult
Housing																	
Stainless steel 1.4404 (316L)					1												
Copper-Nickel-alloy (CuNi10Fe1Mn)					K												
customer					9												consult
Design																	
Submersible transmitter ²						1											
Flange transmitter ² Screw-in transmitter ²						3											
		_	-	-	_	5	-				-		_	_	_		
Diaphragm Ceramics Al ₂ O ₃ 96%		_	_	_	_	_	2				_		_	_	_		
Ceramics Al ₂ O ₃ 99.9%							Č										
customer							9										consult
Output																	00110011
HART [®] -communication													П			П	
4 20 mA / 2-wire								Н									
HART®-communication																	
Intrinsic safety 4 20 mA / 2-wire								I									
customer								9									consult
Seals																	00110011
FKM									1								
EPDM									3								
FFKM									7								
customer									9								consult
Electrical connection																	
PUR-cable ³ FEP-cable ³										2							
TPE-cable ³										3							
customer										4 9							
Accuracy										9							
0.1 % ⁵											1						
customer											9						consult
Cable length																	22.100.10
in m												9	9	9			
Special version																	
standard															0 0	0	
prepared for mounting with st. steel pipe 4															5 0	9	
customer															9 9	9	consult

 $^{^{\}rm 1}$ nominal pressure ranges sealed gauge and absolute from 1 bar

 HART^{\otimes} is a registered trade mark of HART Communication Foundation

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

² mounting accessories are not part of supply and have to be ordered separately ³ shielded cable with integrated air tube for atmospheric reference

 $^{^4}$ stainless steel pipe is not part of the supply 5 only possible for $P_N \ge 1$ bar

LMK 358H



Separable
Stainless Steel Probe
with HART®-communication

Ceramic Sensor

accuracy according to IEC 60770: 0.1 % FSO

Nominal pressure

from 0 ... 60 cmH₂O up to 0 ... 100 mH₂O

Output signals

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

Special characteristics

- ▶ diameter 39.5 mm
- cable and sensor section separable
- HART[®] communication (setting of offset, span and damping)
- permissible temperatures up to 85 °C
- high long-term stability

Optional versions

- IS-version zone 0
- cable protection via corrugated pipe
- diaphragm 99.9 % Al₂O₃

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 transmitter 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



<u>Sewage</u>

waste water treatment water recycling

Fuel / Oil



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





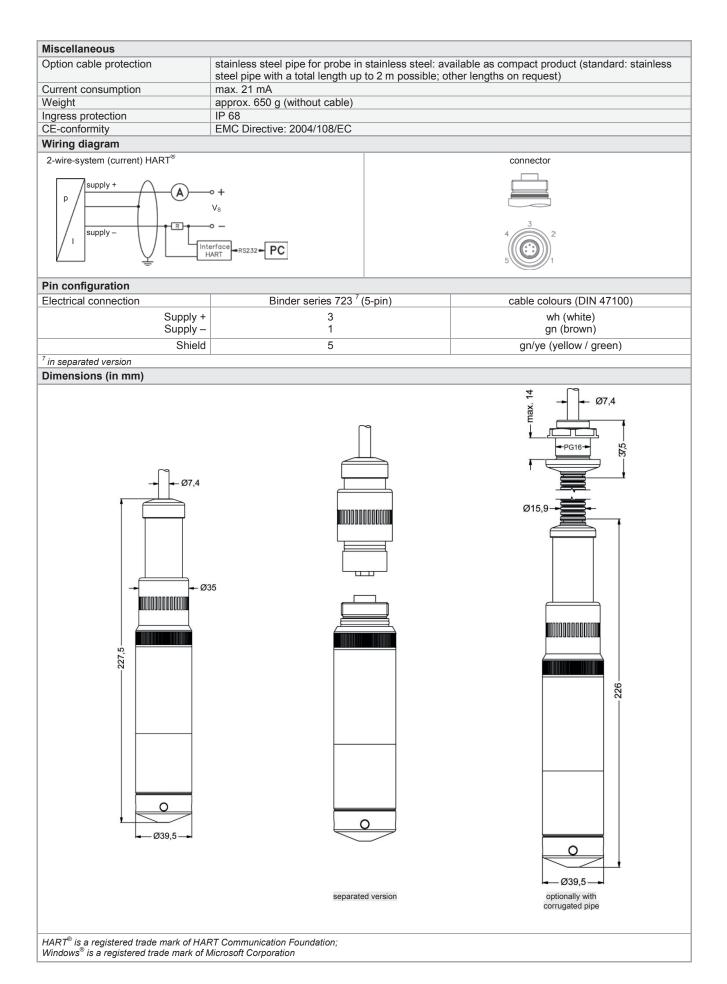


LMK 358 H

Input pressure range 1								
Nominal pressure gauge	[bar]	0.06	0.16	0.4	1	2	5	10
Level	[mH ₂ O]	0.6	1.6	4	10	20	50	100
Overpressure	[bar]	2	4	6	8	15	25	35
¹ On customer request we adj	iust the devi	ces by software	on the required p	oressure ranges,	within the turn-d	own-possibility (s	starting at 0.02 ba	ar)

Output signal / Supply				
Standard	2-wire: 4 20 mA	/ V _S = 12	36 V _{DC} with HART communication	on $V_{S rated} = 24 V_{DC}$
Option IS-protection	2-wire: 4 20 mA	/ V _S = 12	28 V _{DC} with HART communication	on $V_{S rated} = 24 V_{DC}$
Performance				
Accuracy ²	P _N ≥ 160 mbar	TD ≤ 1:5	≤ ± 0.2 % FSO	TD _{max} = 1:10
,	N	TD > 1:5	≤ ± [0.2 + 0.03 x TD] % FSO	1 Dillax 1.10
	P _N < 160 mbar		≤ ± [0.2 + 0.1 x TD] % FSO	TD _{max} = 1:3
	P _N ≥ 1 bar	TD ≤ 1:5	≤± 0.1 % FSO	TD _{max} = 1:10
	I N = I Dai	TD > 1:5	≤ ± [0.1 + 0.02 x TD] % FSO	1D _{max} - 1.10
Permissible load	D = [(\/_ \/_ \/_ \/_		load at HART®-communicat	tion: P . = 250 O
Long term stability	$R_{\text{max}} = [(V_{\text{S}} - V_{\text{S} \text{ min}}) / $		r at reference conditions	IIOII. R _{min} – 230 12
Influence effects			load: 0.05 % FSO / kΩ	
Turn-on time	supply: 0.05 % FSO 850 msec	77 10 V	10au. 0.05 % FSO / K12	
		annidaration (of algebranic domains	magaziring rata 7/ac
Mean response time	140 msec – without o	consideration	or electronic damping	measuring rate 7/se
Max. response time	380 msec			3\
Adjustability	- electronic damping - offset: 0 80 % F - turn-down of span	g 0 100 sec SO	rs possible (interface / software nec	essaly)
² accuracy according to IEC 60770 – lii ³ software, interface, and cable have to	mit point adjustment (non-lir b be ordered separately (sof	nearity, hysteres ftware appropria	is, repeatability) e for Windows [®] 95, 98, 2000, NT Versior	a 4.0 or higher, and XP)
Thermal effects (Offset and Spa	n) / - permissible temp	peratures		
Tolerance band	≤ ± (0.2 x turn-down)			
TC, average	± (0.02 x turn-down)	% FSO / 10 K		
in compensated range	-20 80 °C			
Permissible temperatures	medium:	-25	85 °C	
	electronic / environm storage:		85 °C 85 °C	
Electrical protection 4				
Short-circuit protection	permanent			
Reverse polarity protection	no damage, but also	no function		
Electromagnetic compatibility	emission and immuni		EN 61326	
⁴ additional external overvoltage protection u				
Mechanical stability			·	
Vibration	4 g (according to: DII	N EN GOOGS 2	6)	
	4 9 (according to. Di	N LIN 00000-2	-0)	
Electrical connection				
Cable with sheath material ⁵	PVC (-5 70 °C) gra PUR (-25 70 °C) b FEP (-25 70 °C) b TPE (-2585 °C) bla	olack lack ue		
⁵ shielded cable with integrated air tube	e for atmospheric pressure i	reference		
Materials (media wetted)				
Housing	stainless steel 1.4404	4 (316L)		
Seals	FKM EPDM others on request			
Diaphragm	standard: ceramics	Al ₂ O ₃ 96 % Al ₂ O ₃ 99.9 %		
Protection cap	POM			
Explosion protection				
Approval DX15A-LMK 358H	IBExU 10 ATEX 1180 Zone 0 ⁶ : II 1G Ex ia		zone 20: II 1D Ex iaD 20 T85°0	2
Safety technical maximum values	U _i = 28 V, I _i = 93 mA,	, P _i = 660 mW	$C_i = 0 \text{ nF}$, $L_i = 0 \mu\text{H}$, ler capacity of max. 27 nF opposite	
Permissible media temperature		-20 60 °C w -25 70 °C	th p _{atm} 0.8 bar up to 1.1 bar	
Connecting cables	and a semantaneous		ld also signal line/signal line: 160 pF	-/m

LMK 358 H



LMK 358 H

Ordering code

LMK 358	ш-ш	
Pressure		
in bar	4 4 5 4 4 6	
in mH ₂ O	4 4 6	
Input [mH ₂ O] [bar]		
0.40 0.04	0 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
0.60 0.06	0 6 0 0	
1.0 0.10	1 0 0 0	
1.6 0.16	1 0 0 0 1 6 0 0 2 5 0 0	
2.5 0.25	2 5 0 0	
4.0 0.40	4 0 0 0 0 6 0 0 0	
6.0 0.60	6 0 0 0 1	
10 1.0 16 1.6	1 6 0 1	
25 2.5	2 5 0 1	
40 4.0	4 0 0 1	
60 6.0	6 0 0 1	
100 10	1 0 0 2	
customer	1 6 0 1 2 5 0 1 4 0 0 1 6 0 0 1 1 0 0 2 9 9 9 9	consult
Housing	3 3 3 3	Consult
Stainless steel 1.4404 (316L)	1	
customer	9	consult
Diaphragm		55.154.1
Ceramics Al ₂ O ₃ 96%	2	
Ceramics Al ₂ O ₃ 99.9%	C	
customer	9	consult
Output		
4 20 mA / 2-wire	1	
0 10 V / 3-wire	3	
Intrinsic safety 4 20 mA / 2-wire	E	
customer	9	consult
Seals		
FKM	1	
EPDM	3	
customer	9	consult
Electrical connection		
PVC-cable ¹	1	
PUR-cable ¹	2 3	
FEP-cable 1	3	
TPE-cable ¹	4	
customer	9	consult
Accuracy		
standard 0.35 %	3	
option 0.25 %	2 9	05.77.14
Cable length	9	consult
Cable length		
in m Special version	9 9 9	
standard		0 0 0
prepared for mounting 2		
with stainless steel pipe		1 0 6
cable protection with		
stainless steel corrugated pipe		1 0 3 9 9 9 consult
with pipe length in m		3,5,5,6
customer		9 9 9 consult
		- 1 - 1 - 1

¹ cable with integrated air tube for atmospheric pressure reference

² stainless steel pipe is not part of the supply





Slimline Probe

Stainless Steel Sensor

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

Nominal pressure

from $0 \dots 1 \text{ mH}_2\text{O}$ up to $0 \dots 250 \text{ mH}_2\text{O}$

Output signals

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

Special characteristics

- diameter 19 mm for cramped areas
- small thermal effect
- excellent 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 continuous level measurement in confined space conditions. Permissible media are clean or waste 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



LMP 305

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 ₂ 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										
Standard	2-wire:	4 20 n	nA / V _S = 12 36 V _D	c						
Performance	'									
Accuracy										
Permissible load	R _{max} =	$[(V_S - V_{S min})]/$	' 0,02 A] Ω							
Influence effects	supply: load:	0.05 % FSO / kΩ								
Long term stability	≤ ± 0.1	% FSO / yea	ır							
Response time	< 10 m	sec								
¹ accuracy according to IEC 6077	70 – limit point adj	ustment (non-li	nearity, hysteresis, repe	eatability)						
Thermal effects (Offset and	d Span)									
Nominal pressure P _N	[bar]	≤ 0.1	≤ 0.25	≤ 0.4	≤ 1	> 1				
Tolerance band [%	FSO] :	≤ ± 2	≤ ± 1.5	≤ ± 1	≤ ± 1	≤ ± 0.75				
TC, average [% FSO /	10 K] :	± 0.3	± 0.2	± 0.14	± 0.1	± 0.07				
in compensated range	[°C]		0 50		0	70				
Permissible temperatures										
Permissible temperatures	medium	n: -10 70	°C							
r chinissible temperatures	storage									
Electrical protection ²	, ,									
Short-circuit protection	permar	ent								
Reverse polarity protection	'	age, but also	no function							
Electromagnetic compatibility			nity according to EN 6	31326						
	<u> </u>		, ,							
² additional external overvoltage	protection unit in	erminai box KL	_ 1 or KL 2 with atmospr	ieric pressure reference	e avaliable on reques	τ				
Electrical connection	D) (0 (
Cable with sheath material ³	PUR (- FEP (-	5 70°C) gr 10 70°C) l 10 70°C) b on request	black							
³ cable with integrated air tube fo	r atmospheric pre	ssure reference	е							
Materials (media wetted)										
Housing	stainles	s steel 1.440	14 (316L)							
Seals	FKM /		, ,							
Diaphragm	stainles	s steel 1.443	35 (316L)							
Protection cap	POM									
Cable sheath	PVC / I	PUR / FEP								
Miscellaneous										
Connecting cables			signal line/shield als							
(by factory)			signal line/shield als	so signai line/signal l	ine: 1 μH/m					
Current consumption Weight		. 100 g (witho	t: max. 25 mA							
Ingress protection	IP 68	100 g (WILIIO	at dable)							
CE-conformity		irective: 2004	1/108/FC							
Wiring diagram	LIVIO	11 COUVE. 2004	,, 100/LO							
2-wire-system (current) p supply +	Â)∘ +									
	Vs									

Din configuration	
Pin configuration Electrical connection	cable colours (DIN 47100)
Supply +	wh (white)
Supply + Supply –	wh (white) bn (brown)
Shield	gn/ye (green / yellow)
Dimensions (in mm)	
Ø7,4	219 Protection cap removable

 $\textit{This document contains product specifications; properties are not guaranteed. Subject to change \textit{without notice}. \\$

24 LMP 305 Ordering code

LMP 305]-0-0-0-0-]-[]	
Pressure				
in bar	4 0 0 4 0 1			
in mH ₂ O	4 0 1			
Input [mH ₂ O] [bar]				
1.0 0.10 1.6 0.16	1 0 0 0 1 6 0 0 2 5 0 0 4 0 0 0 6 0 0 0			
2.5 0.25	2 5 0 0			
4.0 0.40	4 0 0 0			
6.0 0.60	6 0 0 0			
10 1.0	1 0 0 1			
16 1.6	1 6 0 1			
25 2.5	2 5 0 1			
40 4.0	4 0 0 1			
60 6.0	6 0 0 1			
100 10	1 0 0 2			
160 16	1 6 0 2 2 5 0 2			
250 25 customer	6 0 0 1 1 0 0 2 1 6 0 2 2 5 0 2 9 9 9 9			a a may lit
	9 9 9 9			consult
Housing Stainless steel 1.4404 (316L)		1		
customer		1 9		consult
Diaphragm				Consult
Stainless steel 1.4435 (316L)		1		
customer		9		consult
Output				
4 20 mA / 2-wire		1		
customer		9		consult
Seals				
FKM		1		
EPDM		3		
customer		9		consult
Accuracy				
standard for $P_N > 0.4$ bar 0.35% standard for $P_N \le 0.4$ bar 0.5%		3 5		
option for $P_N > 0.4$ bar 0.5%		2		
customer		9		consult
Electrical connection		ŭ		Consult
PVC-cable ¹			1	
PUR-cable ¹			2	
FEP-cable ¹			3	
customer			9	consult
Cable length				
in m			9 9 9	
Special version				
standard			0 0 0	
customer			9 9 9	consult

¹ cable with integrated air tube for atmospheric pressure reference



LMP 307

Stainless Steel Probe

Stainless Steel Sensor

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

Nominal pressure

from 0 ... 1 mH₂O up to 0 ... 250 mH₂O

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

others on request

Special characteristics

- diameter 27 mm
- small thermal effect
- excellent accuracy
- excellent long term stability

Optional versions

- IS-protection zone 0
- SIL 2 (Safety Integrity Level)
- cable protection via corrugated pipe
- different kinds of cables
- different kinds of seal materials

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

Basic element is a high quality stainless steel sensor with high requirements for exact measurement with excellent 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



Fuel / Oil

fuel storage tank farm









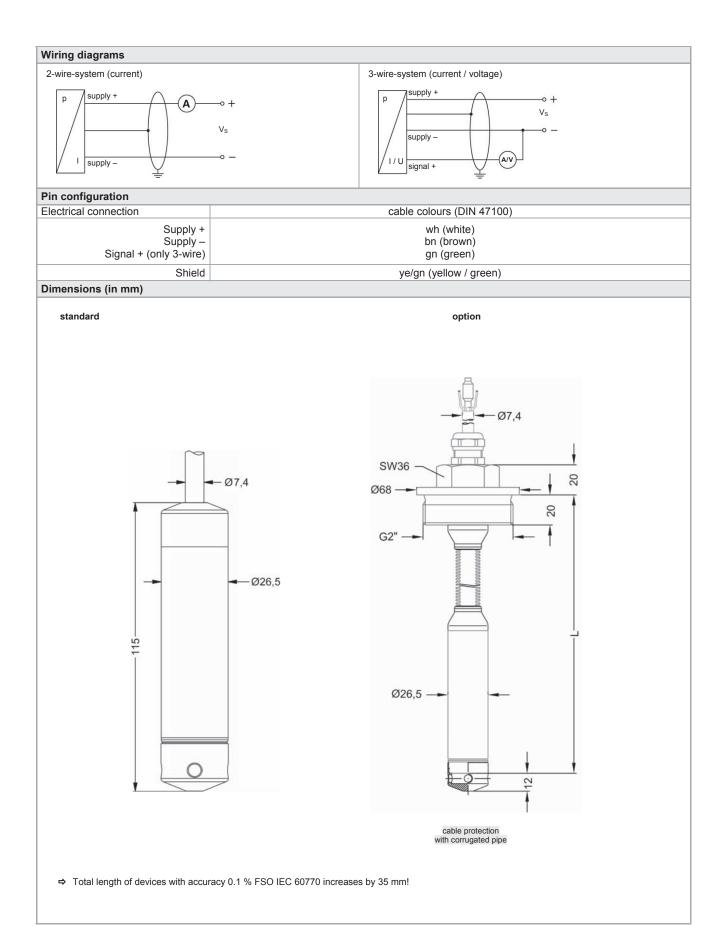


²⁶ LMP 307

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 ₂ 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

2-wire: 4 20 mA / V _S = 8 32 V _{DC}
2-wire: 4 20 mA / $V_s = 10$ 28 V_{DC}
3-wire: 0 20 mA / V _S = 14 30 V _{DC}
0 10 V / V _S = 14 30 V _{DC}
standard: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO
nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO
option 1: nominal pressure ≥ 0.4 bar: $\leq \pm 0.25 \%$ FSO
option 2: for all nominal pressures: $\leq \pm 0.1 \%$ FSO current 2-wire: $R_{max} = [(V_S - V_S \min) / 0.02 A] \Omega$
current 3-wire: $R_{max} = \frac{1}{3} (\sqrt{s} - \sqrt{s})^{1/3} (\sqrt{s} - $
voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$
supply: 0.05 % FSO / 10 V
load: 0.05 % FSO / kΩ
≤±0.1 % FSO / year
2-wire: ≤ 10 msec; 3-wire: ≤ 3 msec
it point adjustment (non-linearity, hysteresis, repeatability)
n)
< 0.40 ≥ 0.40
≤±1 ≤±0.75
0 70
medium: -10 70 °C storage: -25 70 °C
permanent
no damage, but also no function
emission and immunity according to EN 61326
tion unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request
PVC (-5 70 °C) grey PUR (-10 70 °C) black FEP (-10 70 °C) black
spheric pressure reference
stainless steel 1.4404 (316L)
FKM
others on request
stainless steel 1.4435 (316L)
POM
20 mA / 2-wire)
IBEXU 10 ATEX 1068 X / IECEX IBE 12.0027X
zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T 85°C Da
U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 0 μ H, the supply connections have an inner capacity of max. 27 nF to the housing
in zone 0: -10 60 °C with p _{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -10 70 °C
cable capacitance: signal line/shield also signal line/signal line: 160 pF/m
cable inductance: signal line/shield also signal line/signal line: 1µH/m
according to IEC 61508 / IEC 61511
signal output current: max. 25 mA / signal output voltage: max. 7 mA
approx. 200 g (without cable)
<u> </u>
IP 68
<u> </u>
h)

LMP 307



LMP 307

Ordering code

LMP 307	ш-ш	
Pressure in bar	4.5.0	
in mH₂O	4 5 0 4 5 1	
Input [mH ₂ O] [bar] 1.0 0.10	1 0 0 0	
1.6 0.16 2.5 0.25	1 6 0 0 2 5 0 0	
4.0 0.40	4 0 0 0 0	
6.0 0.60 10 1.0	6 0 0 0 1 1	
16 1.6	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	1 6 0 2 2 5 0 2 9 9 9 9	
Housing	9 9 9 9	consult
Stainless steel 1.4404 (316L)	1	
Diaphragm	9	consult
Stainless steel 1.4435 (316L)	1	
Output	9	consult
4 20 mA / 2-wire	1	
0 20 mA / 3-wire 0 10 V / 3-wire	2 3	
Intrinsic safety 4 20 mA / 2-wire	E	
SIL2 4 20 mA / 2-wire SIL2 with Intrinsic safety	1S	
4 20 mA / 2-wire customer	9	consult
Seals	9	Corisuit
FKM customer	1 9	consult
Accuracy	9	Corisuit
standard for $P_N \ge 0.4$ bar 0.35% standard for $P_N < 0.4$ bar 0.5%	3 5	
option 1 for $P_N \ge 0.4$ bar 0.25 %	2	
option 2 0.1 % ¹ customer	1 9	consult
Electrical connection		Soriouit
PVC-cable ² PUR-cable ²	1 2	
FEP-cable ²	3	
Cable length customer	9	consult
in m		
standard: 3 m PVC standard: 5 m PVC	0 0 3 0 0 5 0 1 0	
standard: 10 m PVC	0 1 0	
standard: 15 m PVC standard: 20 m PVC	0 1 5 0 2 0	
special length PVC	0 2 0 9 9 9	
standard: 3 m PUR	0 0 3	
standard: 5 m PUR	0 0 5	
standard: 10 m PUR standard: 15 m PUR	0 1 0 0 1 5	
standard: 20 m PUR	0 2 0	
special length PUR	9 9 9	
standard: 5 m FEP	0 0 5	
standard: 10 m FEP special length FEP	0 1 0 9 9 9	
Special version	9 9 9	
standard cable protection with		0 0 0
stainless steel corrugated pipe		1 0 3 9 9 9 consult
with pipe length in m customer		9 9 9 consult
customer		J J J J CONSUIT

¹ not in combination with SIL

 $^{^{\}rm 2}$ cable with integrated $\,$ air tube for atmospheric pressure reference





Stainless Steel Probe

Stainless Steel Sensor and Temperature Sensor

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

Nominal pressure

from 0 ... 1 mH₂O up to 0 ... 250 mH₂O

Output signals

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

Special characteristics

- diameter 27 mm
- separate output signals
 for pressure and temperature ranges
- ▶ integrated Pt 100 thermal element
- small thermal effect
- high accuracy
- easy handling

Optional versions

- different kinds of cables
- different kinds of seal materials
- 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 to lightly-soiled liquids.

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 rainwater overflow basins and river courses, in addition to level measurement in containers or tank batteries.

Preferred areas of use are



Water / filtrated sewage e.g. drinking water system

water recycling



Fuel / Oil e.g. tank farm



LMP 307 T

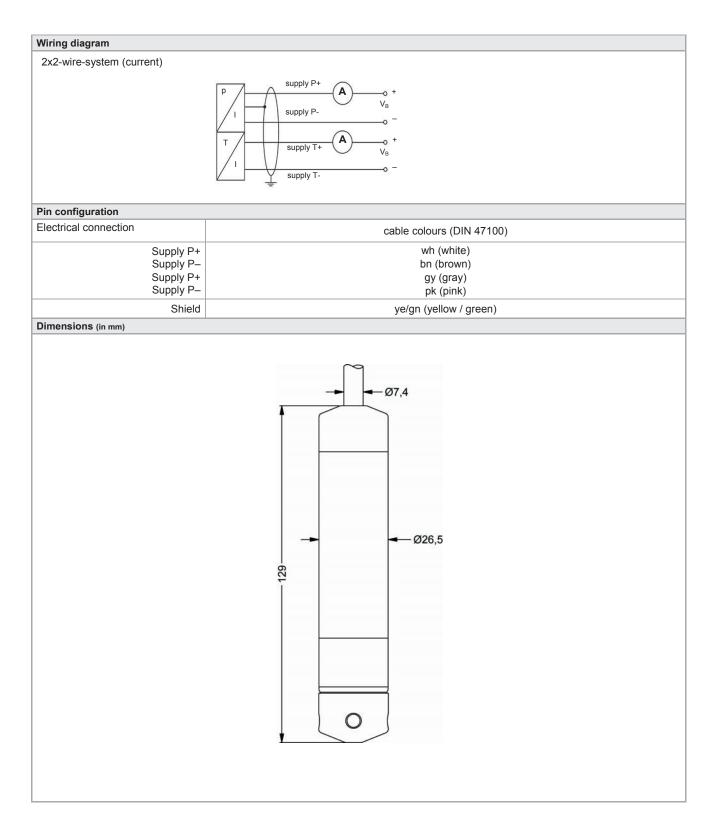
Technical Data

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 ₂ 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			
	[]					1											
Input temperature range																	
Temperature measuring r	ange	standa				0 3	0 °C		0	50 °C		-10	50 °	С			
		others	on requ	est ¹													
¹ max. temperature range + 7	70 °C																
Output signal / Supply																	
2-wire (pressure) ²				s = 10													
2-Leiter (temperature) ²				s = 10	. 30 V _D												
² the circuits are galvanically	isolated fror	n each o	ther														
Performance																	
Accuracy (pressure) 3		standa				< 0.4 ba			0.5 % F								
		option				$0.4 \text{ bases} \ge 0.4 \text{ bases}$			0.35 % I 0,25 % I								
Accuracy (temperature)		≤±1°		Jillilai p	1633016	= 0,4 00	ai.		0,25 /0 1								
, , ,				/ min) /	0.02.4	1.0											
Permissible load				/ _s min) /			,										
Influence effects		supply load:	·:		15 % FS 15 % FS	0 / 10 V											
Long term stability			% FSC		0 /0 0	O / K12											
Response time		_			nal 2-w	ire (pres	cure))										
³ accuracy according to IEC 6	30770 — limi		`	, ,		\I		lity)									
Thermal effects (Offset ar		t point ac	ijustinent	(11011-11116	anty, my	Sieresis, i	ереатаы	шу)									
Nominal pressure P _N	[bar]				0.40						<u>≥</u> 0.4	0					
•	[% FSO]				± 1						≥ ± 0.						
in compensated range	[°C]				3 T I			0 70)		<u> </u>	7.5					
Permissible temperatures								0 70	<u>'</u>								
Permissible temperatures		mediu	m·			-10 70	°C.										
		storag				-25 70											
Electrical protection 4																	
Short-circuit protection		perma	nent														
Reverse polarity protection	n	no dar	nage, bi	ut also n	o functi	on											
Electromagnetic compatib		emissi	on and i	mmunity	y accord	ding to E	N 61326	3									
⁴ additional external overvolta	age protecti	on unit in	terminal	box KL 1	or KL 2	with atm	ospheric	pressure	reference	e availabi	le on req	uest					
Electrical connection																	
Cable with sheath materia	al ⁵	PVC	(-5	. 70 °C)		grey											
		PUR		70 °C		black											
		FEP		70 °C	;)	black											
5			on requ														
5 cable with integrated air tub	e tor atmos _i	pneric pr	essure re	rerence													
Materials (media wetted)				4 4 4 0 4	(0.4.01.)												
Housing			ss steel	1.4404	(316L)												
Seals		FKM	on roal	oot													
Dianharan			on requ		(2401)												
Diaphragm			ss steel	1.4435	(310L)												
Protection cap		POM) ID 55	·D													
Cable sheath		PVC, I	PUR, FE	۲.													
Miscellaneous					iana - LP		ala : -'		/=:=:==!!		 □						
Connecting cables (by factory)			capacita nductar		_	ne/shield ne/shield	•	•	•								
						25 mA /											
Current consumption			output o			25 IIIA /	signal C	σιραί ν	onaye. I	пах. / П	II/A						
Weight		IP 68	. 200 g	(without	(dble)												
Ingress protection				. 2004/4	100/50												

CE-conformity

EMC Directive: 2004/108/EC

LMP 307 T



LMP 307 T

Ordering code

LMP 307T	ш-ш-п-п-п-п-п-п-п-п-п-п-п-п-п-п-п-п-п-п	- П - П - П - П - П - П - П - П - П - П
Pressure in bar in mH ₂ O	4 5 5 4 5 6	
Input [mH ₂ O] [bar] 1.0 0.10	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 10 1.0	6 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
10 1.0 16 1.6	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	2 5 0 2	
customer Input temperature °C	9 9 9 9	consult
0 30	0 0 0 x 3 0	
0 50 -10 50	0 0 0 x 3 0 0 0 0 x 5 0 M 1 0 x 5 0 9 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	consult
Output pressure 4 20 mA / 2-wire	1	
customer	9	consult
Output temperature 4 20 mA / 2-wire	1	
customer	9	consult
FKM	1	
Accuracy	9	consult
standard for P _N ≥ 0.4 bar 0.35 %	3	
standard for $P_N < 0.4$ bar 0.5 % option 1 for $P_N \ge 0.4$ bar 0.25 %	5 2	
customer	9	consult
Electrical connection PVC-cable		1
PUR-cable		2
FEP-cable customer		3 consult
Cable length		Cornodit
in m standard: 3 m PVC		0 0 3
standard: 5 m PVC		0 0 3 0 5
standard: 10 m PVC standard: 15 m PVC		0 1 0 0 1 5
standard: 20 m PVC		0 2 0 9 9
special length PVC standard: 3 m PUR		9 9 9 0 0 3
standard: 5 m PUR		0 0 5
standard: 10 m PUR standard: 15 m PUR		0 1 0 0 1 5
standard: 20 m PUR		0 2 0
special length PUR		9 9 9
standard: 5 m FEP standard: 10 m FEP		0 1 0
special length FEP		9 9 9
Special version standard		0 0 0 9 9 9 consult
customer		9 9 9 consult

¹ cable with integrated air tube for atmospheric pressure reference

Standard lengths 3 / 5 / 10 / 15 / 20 m are available from stock, special lengths are manufactured order-related, price per meter (see above).

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.



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 mH₂O up to 0 ... 250 mH₂O

Output signals

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

Special characteristics

- diameter 35 mm
- cable and sensor section separable
- excellent accuracy
- excellent long term stability

Optional versions

- IS-version zone 0
- SIL 2 (Safety Integrity Level)
- cable protection via corrugated pipe
- mounting accessories as cable gland and terminal clamp of stainless steel
- different kinds of cables
- different kinds of seal materials

The separable stainless steel probe LMP 308 is designed for the continually level measurement of water and thin fluids.

In order to facilitate stock-keeping and maintenance the transmitter 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







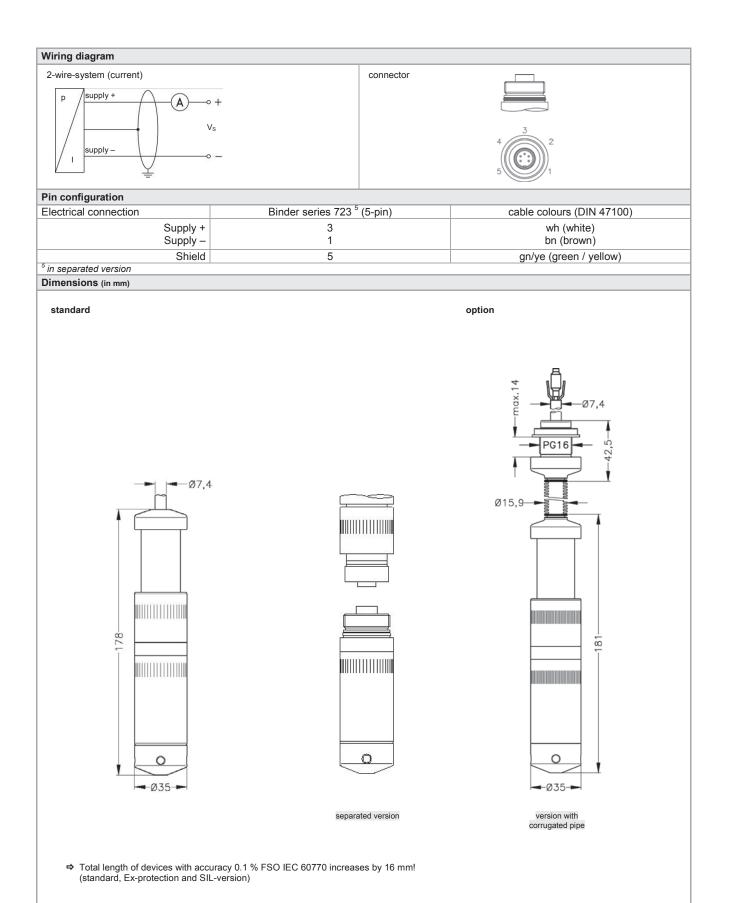




34 LMP 308

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 ₂ 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

Output signal / Supply							
Standard	2-wire: 4 20 mA / V _S = 8 32 V _{DC}						
Option IS-protection	2-wire: 4 20 mA / V _S = 10 28 V _{DC}						
Performance	2 WHO. 4 20 HBY VS 10 20 VDC						
	-tdd						
Accuracy 1	standard: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO						
	option 1: nominal pressure ≥ 0.4 bar: ≤ ± 0.25 % FSO						
	option 2: for all nominal pressures: $\leq \pm 0.1 \%$ FSO						
Permissible load	$R_{\text{max}} = [(V_{\text{S}} - V_{\text{S min}}) / 0.02 \text{ A}] \Omega$						
Influence effects	supply: 0.05 % FSO / 10 V						
	load: $0.05 \% FSO / k\Omega$						
Long term stability	≤ ± 0.1 % FSO / year						
Response time	< 10 msec						
¹ accuracy according to IEC 60770 – lim	it point adjustment (non-linearity, hysteresis, repeatability)						
Thermal effects (Offset and Span)							
Nominal pressure P _N [bar]	< 0.40 ≥ 0.40						
Tolerance band [% FSO]							
in compensated range [°C]							
Permissible temperatures							
Permissible temperatures	medium: -20 70 °C storage: -25 70 °C						
Electrical protection ²	3.518351 25 111 70 5						
Short-circuit protection	permanent						
Reverse polarity protection	no damage, but also no function						
Electromagnetic compatibility	emission and immunity according to EN 61326						
	on unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request						
Electrical connection	STATIL III COMMINICAL DONNE DE TOUR LE MAIT AUTOOPTION DE PROCESSA DE CONTROL						
Cable with sheath material ³	PVC (-5 70 °C) grey						
Cable with sheath matchai	PUR (-20 70 °C) black						
	FEP (-20 70 °C) black						
	others on request						
³ cable with integrated air tube for atmos	pheric pressure reference						
Materials (media wetted)							
Housing	stainless steel 1.4404 (316L)						
Seals	FKM						
	EPDM						
	others on request						
Diaphragm	stainless steel 1.4435 (316L)						
Protection cap	POM						
Explosion protection							
Approvals	IBEXU 10 ATEX 1068 X / IECEx IBE 12.0027X						
DX19-LMP 308	zone 0: II 1G Ex ia IIC T4 Ga						
0-5-1-1-1-1-1-1	zone 20: II 1D Ex ia IIIC T 85°C Da						
Safety technical maximum values	$U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C_i \approx 0 \text{nF}, L_i \approx 0 \mu\text{H},$						
Dermissible media tamanantu	the supply connections have an inner capacity of max. 27 nF to the housing						
Permissible media temperature	in zone 0: -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar						
Connecting cables	in zone 1 or higher: -20 70 °C cable capacitance: signal line/shield also signal line/signal line: 160 pF/m						
(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: 1µH/m						
Miscellaneous	The second secon						
Option SIL ⁴ 2 application	according to IEC 61508 / IEC 61511						
Current consumption	signal output current: max. 25 mA						
Weight	approx. 250 g (without cable)						
Ingress protection	IP 68						
CE-conformity	EMC Directive: 2004/108/EC						
ATEX Directive	94/4/EG						
⁴ not in combination with the accuracy 0.							
not in combination with the accuracy 0.	179						



³⁶ LMP 308

Ordering code

LMP 308	ш-ш-a-a-a-a-a-]-[П]-[]
Pressure						
in bar	4 4 0		П			
in mH₂O	4 4 0 4 1		П			
Input [mH ₂ O] [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					
4.0 0.40	4 0 0 0					
6.0 0.60	6 0 0 0					
10 1.0	1 0 0 1					
16 1.6	1 6 0 1					
25 2.5	2 5 0 1					
40 4.0	4 0 0 1					
60 6.0	6 0 0 1					
100 10	1 0 0 2					
160 16	1 6 0 2					
250 25	2 5 0 2					
customer	9 9 9 9					consult
Housing Chairless start 4 4404 (2401)						
Stainless steel 1.4404 (316L)	1					
customer	9					consult
Diaphragm			_			
Stainless steel 1.4435 (316L) customer	1 9					oo noult
Output	9					consult
4 20 mA / 2-wire	1					
Intrinsic safety 4 20 mA / 2-wire	Ė					
SIL2 4 20 mA / 2-wire	15					
SIL2 with Intrinsic safety						
4 20 mA / 2-wire	ES					
customer	9					consult
Seals						
FKM	1					
EPDM	3					
customer	9					consult
Electrical connection						
PVC-cable ¹	1					
PUR-cable ¹	2 3					
FEP-cable ¹	3					
customer	9					consult
Accuracy						
standard for $P_N \ge 0.4$ bar 0.35 %	3					
standard for $P_N < 0.4$ bar 0.5%	5					
option 1 for $P_N \ge 0.4$ bar 0.25%	2					
option 2 0.1 % ²	1					
customer	9					consult
Cable length		0				
in m	9 9	9				
Version standard		0		0		
prepared for mounting 3				0		
with stainless steel pipe		1	0	6		
cable protection with						
stainless steel corrugated pipe		1	0	3	9 9 9	consult
with pipe length in m					0 0 0	CONSUIT
customer		9	9	9		consult
			1 - 1	. 1		

¹ cable with integrated air tube for atmospheric pressure reference

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² not in combination with SIL

³ stainless steel pipe is not part of the supply



Stainless Steel Probe

Ceramic Sensor

accuracy according to IEC 60770: 0.5 % FSO

Nominal pressure

from 0 ... 6 mH₂O up to 0 ... 200 mH₂O

Output signals

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

Special characteristics

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

Optional versions

- different cable materials
- customer specific versionse.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

Water



level measurement at confined space conditions ground water monitoring depth or level measurement in wells drinking water abstraction level measurement in open tanks



Input pressure range										
Nominal pressure gauge	[bar]	0.6	1	1.6	2.5	4	6	10	16	20
Level	[mH ₂ O]	6	10	16	25	40	60	100	160	200
Overpressure	[bar]	2	2	4	4	10	10	20	40	40
Burst pressure ≥	[bar]	4	4	5	5	12	12	25	50	50

Output signal / Supply							
Standard	2-wire: 4 20 mA / V _S = 12 36 V _{DC}						
Performance							
Accuracy	$\leq \pm 0.5 \%$ FSO						
Permissible load	$R_{\text{max}} = [(V_{\text{S}} - V_{\text{S min}}) / 0.02 \text{ A}] \Omega$						
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ						
Response time	≤ 10 msec						
¹ accuracy according to IEC 60770 – lii	mit point adjustment (non-linearity, hysteresis, repeatability)						
Thermal effects (Offset and Spa	nn) / Permissible temperatures						
Thermal error	≤ ± 0.2 % FSO / 10 K in compensated range -25 70 °C						
Permissible temperatures medium: -10 70 °C storage: -25 70 °C							
Electrical protection ²							
Short-circuit protection	permanent						
Reverse polarity protection	no damage, but also no function						
Electromagnetic protection	emission and immunity according to EN 61326						
<u> </u>	ction unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request						
Electrical connection							
Cable with sheath material ³	PVC (-5 70 °C) grey PUR (-10 70 °C) black FEP (-10 70 °C) black						
³ shielded cable with integrated air tube	e for atmospheric pressure reference						
Materials (media wetted)							
Housing	stainless steel 1.4404 (316L)						
Seals	FKM						
Diaphragm	ceramics Al ₂ O ₃ 96 %						
Protection cap	POM						
Miscellaneous							
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						
Current consumption	max. 25 mA						
Weight	approx. 100 g (without cable)						
Ingress protection	IP 68						
CE-conformity	EMC Directive: 2004/108/EC						
Wiring diagram							
2-wire-system (current)							
p supply + A supply -	-∘ + Vs -∘ -						

Pin configuration	
Electrical connection	cable colours (DIN 47100)
Supply + Supply –	wh (white) bn (brown)
Shield	gn/ye (green / yellow)
Dimensions (in mm)	
132	97,4 100 100 100 100 100 100 100 1

LMK 306 Ordering code

LMK 306	<u> </u>]-[]-[]-[]-[]-Ш	Ш]
Pressure						
in bar	3 7 0					
in mH ₂ O	3 7 0 3 7 1					
Input [mH ₂ O] [bar]	U 7 1 1					
6 0.60	6 0 0	0				
10 1.0		1				
16 1.6	1 6 0	1				
25 2.5	1 0 0 1 1 6 0 2 5 0 4	1				
40 4.0	2 5 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				
200 20	2 0 0 2	2				
customer	1 0 0 2 1 6 0 2 2 0 0 2 9 9 9 9	9				consult
Housing						
Stainless steel 1.4404 (316L)		1				
customer		9				consult
Diaphragm						
Ceramics Al ₂ O ₃ 96%		2				
customer		9				consult
Output						
4 20 mA / 2-wire			1			
customer			9			consult
Seals						
FKM			1			
customer			9			consult
Accuracy						
0.5 %			5			
customer			9			consult
Electrical connection						
PVC-cable ¹			1	1		
PUR-cable ¹			2	2		
FEP-cable ¹			3	3		
customer				9		consult
Cable length						
in m				9 9 9		
Special version						
standard					0 0 0 9 9 9	
customer					9 9 9	consult

¹ cable with integrated air tube for atmospheric pressure reference



Stainless Steel Probe

Ceramic Sensor

accuracy according to IEC 60770: 0.5 % FSO

Nominal pressure

from 0 ... 4 mH₂O up to 0 ... 250 mH₂O

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
- good long term stability
- easy handling

Optional versions

- IS-protection
- SIL 2 (Safety Integrity Level) according to IEC 61508 / IEC 61511
- different kinds of cables and elastomeres
- 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 matierals can be offered according to the customer-specific operating conditions.

Preferred areas of use are

Water



drinking water system ground water monitoring storm water systems

Sewage



waste water treatment water recycling dumpsite

Fuel / Oil



fuel storage tank farm biogas plants





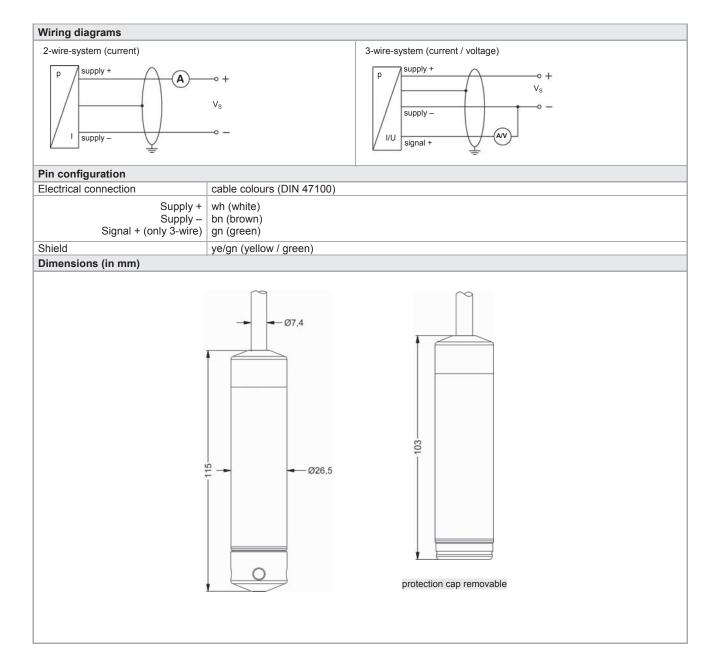






Input pressure range											
Nominal pressure gauge	[bar]	0.4	0.6	1	1.6	2.5	4	6	10	16	25
Level	[mH ₂ O]	4	6	10	16	25	40	60	100	160	250
Overpressure	[bar]	2	2	2	4	4	10	10	20	40	40
Burst pressure	[bar]	4	4	4	5	5	12	12	25	50	50

Output signal / Supply	
Standard	2-wire: 4 20 mA / V _S = 8 32 V _{DC}
Option IS-protection	2-wire: $4 \dots 20 \text{ mA} / V_S = 10 \dots 28 V_{DC}$
Options 3-wire	3-wire: 0 20 mA / $V_s = 14$ 30 V_{DC}
Sphone o Mile	0 10 V / V _S = 14 30 V _{DC}
Performance	
Accuracy	≤±0.5 % FSO
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 A] \Omega$
T Officerior	current 3-wire: $R_{\text{max}} = 500 \Omega$
	voltage 3-wire: $R_{min} = 10 \text{ k }\Omega$
Influence effects	supply: 0.05 % FSO / 10 V
	load: 0.05% FSO / $k\Omega$
Response time	≤ 10 msec
¹ accuracy according to IEC 60770 – lim	it point adjustment (non-linearity, hysteresis, repeatability)
Thermal effects (Offset and Span	
Thermal error	≤±0.2 % FSO / 10 K
	in compensated range -25 70 °C
Permissible temperatures	
Permissible temperatures	medium: -10 70 °C
<u> </u>	storage: -25 70 °C
Electrical protection ²	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic protection	emission and immunity according to EN 61326
² additional external overvoltage protecti	on unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request
Electrical connection	
Cable with sheath material ³	PVC (-5 70 °C) grey
	PUR (-10 70 °C) black
3	FEP (-10 70 °C) black
shielded cable with integrated air tube	for atmospheric pressure reference
Materials (media wetted)	
Housing	stainless steel 1.4404 (316L)
Seals	FKM
Dianhraam	EPDM
Diaphragm Protection cap	ceramics Al ₂ O ₃ 96 % POM
Explosion protection (only for 4.	1 -
Approvals DX19-LMK 307	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga
DX 19-LIVIN 307	zone 20: II 1D Ex ia IIIC T 85°C Da
Safety technical maximum values	$U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C_i \approx 0 \text{ pH},$
carety teermined maximum values	the supply connections have an inner capacity of max. 27 nF to the housing
Permissible media temperature	in zone 0: -10 60 °C with p _{atm} 0.8 bar up to 1.1 bar
	in zone 1: -10 70 °C
Connecting cables	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m
(by factory)	cable inductance: signal line/shield also signal line/signal line: 1µH/m
Miscellaneous	
Option SIL ⁴ 2 application	according to IEC 61508 / IEC 61511
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 250 g (without cable)
Ingress protection	IP 68
CE-conformity	EMC Directive: 2004/108/EC
ATEX Directive	94/4/EG
⁴ only for 420mA / 2-wire	
only for 420mA / 2-wire	



LMK 307 Ordering code

LMK 307		Д-Щ
Pressure		
in bar in mH ₂ O Input [mH ₂ O] [bar] 4.0 0.40 6.0 0.60	3 8 0 3 8 1 4 0 0 0 6 0 0 0	
10 1.0 16 1.6 25 2.5 40 4.0	1 0 0 1 1 6 0 1 2 5 0 1	
60 6.0 100 10 160 16 250 25	4 0 0 1 6 0 0 1 1 0 0 2 1 6 0 2 2 5 0 2 9 9 9 9	
Housing	9 9 9 9 9	consult
Stainless steel 1.4404 (316L) customer	1 9	consult
Diaphragm Ceramics Al ₂ O ₃ 96%	2 9	conquit
Customer Output	9	consult
4 20 mA / 2-wire 0 20 mA / 3-wire	1 2	
0 10 V / 3-wire Intrinsic safety 4 20 mA / 2-wire	3 E	
SIL2 4 20 mA / 2-wire SIL2 with Intrinsic safety	18	
4 20 mA / 2-wire	ES	
Seals	9	consult
FKM EPDM	1 3	
customer	9	consult
Accuracy 0.5 %	5	
customer	9	consult
Electrical connection PVC-cable ¹	1	
PUR-cable ¹	2	
FEP-cable ¹ customer	3 9	consult
Cable length	31	Consuit
in m standard: 3 m PVC	0	0 3
standard: 3 m PVC standard: 5 m PVC		0 5
standard: 10 m PVC	0	1 0
standard: 15 m PVC standard: 20 m PVC	0	1 5 2 0
special length PVC	9	9 9
standard: 3 m PUR	0	0 3
standard: 5 m PUR	0	0 3 0 5 1 0
standard: 10 m PUR	0	1 0
standard: 15 m PUR standard: 20 m PUR	0	1 5 2 0
standard: 20 m POR special length PUR	0 9	2 0 9 9
standard: 5 m FEP standard: 10 m FEP	0	0 5
special length FEP	9	0 5 1 0 9 9
Special version		
standard		0 0 0 9 9 9 consult
customer		9 9 9 consult

¹ cable with integrated air tube for atmospheric pressure reference

Standard lengths 3 / 5 / 10 / 15 / 20 m are available from stock, special lengths are manufactured order-related, price per meter (see above).

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.



Stainless Steel Probe

Ceramic Sensor

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

Nominal pressure

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

Output signals

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

Special characteristics

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

Optional versions

- ▶ IS-protection zone 0
- mounting with stainless steel pipe
- flange version
- ▶ diaphragm 99.9 % Al₂O₃
- different kinds of cables
- different kinds of elastomers

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

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

Preferred areas of use are



Water

drinking water abstraction



Sewage

waste water treatment water recycling

Fuel / Oil



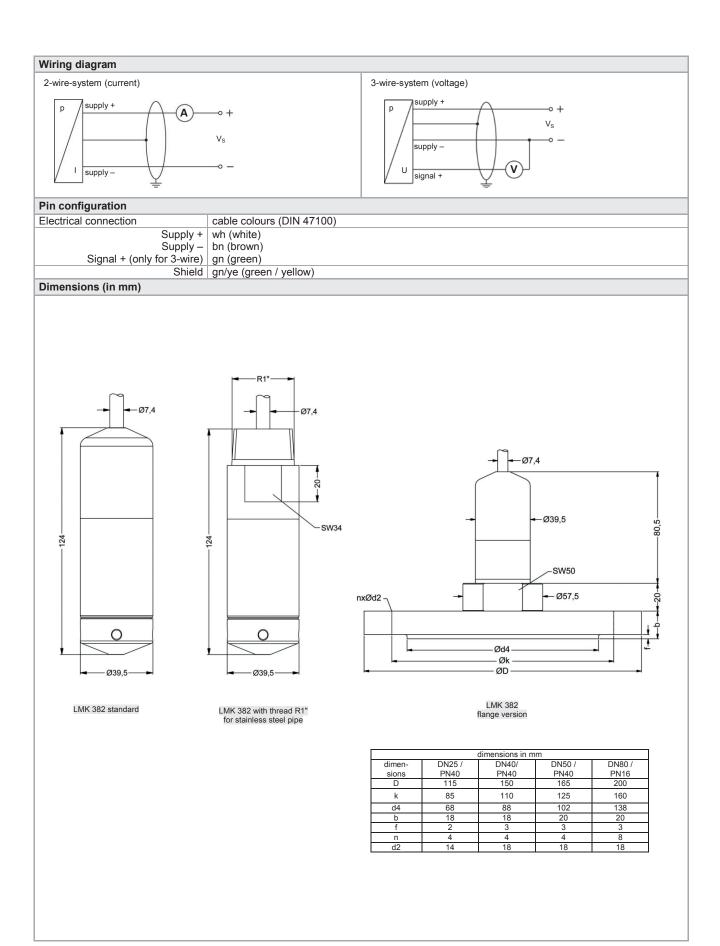
level monitoring in open tanks with low filling heights fuel storage tank farms / biogas plants





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

Output signal / Supply								
Standard	2-wire: 4 20 mA / V _S = 9 32 V _{DC}							
Option IS-protection								
	2-wire: 4 20 mA / V _S = 14 28 V _{DC}							
Option 3-wire	3-wire: 0 10 V / V _S = 12.5 32 V _{DC}							
Performance								
Accuracy ¹	standard: ≤± 0.35 % FSO							
	option: ≤ ± 0.25 % FSO							
Permissible load	$R_{\text{max}} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}] \Omega$							
Influence effects	supply: 0.05 % FSO / 10 V							
	load: 0.05 % FSO / kΩ							
Long term stability	≤± 0.1 % FSO / year							
Turn-on time	700 msec							
Mean response time	< 200 msec	measuring rate 5/sec						
Max. response time	380 msec							
	nit point adjustment (non-linearity, hysteresis, repeatabilit	у)						
Thermal effects (Offset and Span								
Thermal error	≤±0.1 % FSO / 10 K							
B	in compensated range 0 70 °C							
Permissible temperatures								
Permissible temperatures	medium: -25 125 °C							
	electronics / environment: -25 125 °C storage: -25 125 °C							
Electrical protection ²	storage25 125 C							
-								
Short-circuit protection	permanent							
Reverse polarity protection	no damage, but also no function							
Electromagnetic compatibility	emission and immunity according to EN 61326							
<u> </u>	on unit in terminal box KL 1 or KL 2 with atmospheric pre	essure reterence available on request						
Electrical connection (only for 4								
Cable with sheath material ³	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
	PUR (-25 70 °C) black FEP (-25 70 °C) black							
	TPE (-25 125 °C) blue							
³ shielded cable with integrated air tube	, ,							
Materials (media wetted)	or almospheric pressure reference							
Housing	stainless steel 1.4404 (316 L)							
Seals	FKM							
Geals	FFKM							
	EPDM							
	others on request							
Diaphragm	standard: ceramics Al ₂ O ₃ 96 %							
	Option: ceramics Al ₂ O ₃ 99.9 %							
Nose cone	POM							
Explosion protection								
Approval DX14-LMK 382	zone 0 ⁴ : II 1G Ex ia IIB T4 Ga							
	zone 20: II 1D Ex iaD 20 T 85°C							
Safety technical maximum values	$U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C_i = 27 \text{ nF},$							
Permissible media temperature	in zone 0: -10 60 °C with p _{atm} 0.8 b	par up to 1.1 bar						
	zone 1 and higher: -10 70 °C							
Connecting cables		al line/signal line: 160 pF/m						
(by factory)	cable inductance: signal line/shield also sign	al line/signal line: 1μH/m						
	g designation is valid: "Il 1G Ex ia IIC T4 Ga" (zone 0)							
Miscellaneous								
Current consumption	max. 21 mA							
Weight	approx. 400 g (without cable)							
Ingress protection CE-conformity	IP 68 EMC Directive: 2004/108/EC							



Ordering code

LMK 382		
Pressure in bar in mH ₂ O	5 6 5 5 6 6	
Input [mH ₂ O] [bar]		
0.40 0.04 0.60 0.06	0 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
1.0 0.10 1.6 0.16	1 0 0 0 1 6 0 0	
2.5 0.25	2 5 0 0	
4.0 0.40 6.0 0.60	4 0 0 0 0 6 0 0 0	
10 1.0 16 1.6	1 0 0 1 1 6 0 1	
25 2.5	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 16 200 20	1 6 0 2 2 0 0 2	
customer	9 9 9 9	consult
Housing Stainless steel 1.4404 (316L)	1	
customer Diaphragm	9	consult
Ceramics Al ₂ O ₃ 96%	2	
Ceramics Al ₂ O ₃ 99.9% customer	C 9	consult
Output		Conodit
4 20 mA / 2-wire 0 10 V / 3-wire	1 3	
Intrinsic safety 4 20 mA / 2-wire	E	a a manufit
Seals	9	consult
FKM EPDM	1 3	
FFKM	7	
customer Electrical connection	9	consult
PVC-cable ¹	1	
PUR-cable ¹ FEP-cable ¹	2 3	
TPE-cable	4	
Accuracy	9	consult
standard 0.35 % option 0.25 %	3	
option 0.25 % customer	2 9	consult
Cable length 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 0 5 0 1 0 0 1 5 0 1 5 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	0 1 0	
standard: 15 m PUR standard: 20 m PUR	0 2 0	
special length PUR	9 9 9	
standard: 5 m FEP	0 0 5	
standard: 10 m FEP special length FEP	0 0 5 0 1 0 9 9 9	
special length TPE Special version	9 9 9	
standard	0 0 0	
prepared for mounting ² with stainless steel pipe	5 0 2	
flange version	5 1 0 9 9 9	
customer	9 9 9	consult

¹ cable with integrated air tube for atmospheric pressure reference

² stainless steel pipe is not part of the supply



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 cmH₂O up to 0 ... 200 mH₂O

Output signals

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

Special characteristics

- diameter 39.5 mm
- permissible temperatures up to 125 °C
- high overpressure resistance
- high long-term stability

Optional versions

- diaphragm Al₂O₃ 99.9 %
- different housing materials (stainless steel, CuNiFe)
- IS-version zone 0
- 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 as a consequence of the certification by Germanischer Lloyd predestined for shipbuilding and offshore applications.

A permissible operating temperature of 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



Water

drinking water abstraction desalinization plant

Shipbuilding / Offshore ballast tanks



monitoring of a ship's position and draught

level measurement in ballast and storage tanks



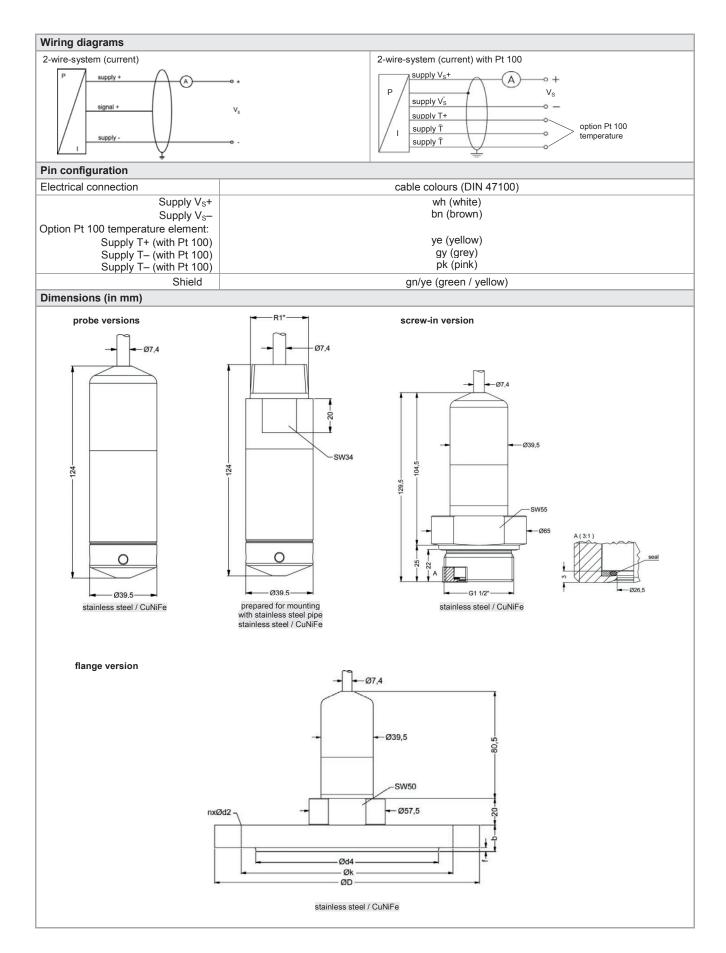








Pressure ranges Nominal pressure 1	[bar] 0.0	и	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
· · · · · · · · · · · · · · · · · · ·		_	0.06	1	1.6	2.5	0.4	0.6	10	1.6	2.5	40	60	100	160	_
	$1H_2O]$ 0.	-		-	-	-		_	-	-	-	-				200
Overpressure	[bar] 2		2	4	4	6	6	8	8	15	25	25	35	35	45	45
Permissible vacuum	[bar]	-0.2).3		-0			4 6 .			-1			
¹ available in gauge, sealed gaug	ge and absol	ute; n	ominal	pressu	re range	s sealed	gauge	and ab	solute fr	om 1 ba	r					
Output signal / Supply	٥		4 20	A / \	/ - 0	22.17		\ /		24.17						
Standard Option IS-version						32 V _D 28 V			S rated =							
Performance	Z-VI	II C	+ 20	IIIA /	v _S - 14	20 V	DC	V ;	S rated -	Z4 VDC						
Accuracy ²	oto	dore	1) OF 0/	FCO				ontic	n, for I	2 > 0	C bor 3	0	1 0/ [20	
Permissible load		randard: $\leq \pm 0.25$ % FSO option: for $P_N \geq 0.6$ bar 3 : $\leq \pm 0.1$ % FSO $R_{\text{max}} = \left[\left(V_S - V_{S \text{ min}} \right) / 0.02 \text{ A} \right] \Omega$														
Long term stability) / yea] 12										
Influence effects					/ 10 V				ner	missibl	e load	0.05	% FSC) / kO		
Turn-on time) ms		0100	, 10 t				POI	111100101	o load	0.00	70 1 00	7 1122		
Mean response time	< 2	00 m	nsec						me	an mea	suring	rate 5	/sec			
Max. response time	380) ms	ес													
accuracy according to IEC 6077	70 – limit poir	t adju	ustment	t (non-li	nearity, l	hysteresi	s, repea	atability	<i>'</i>)							
³ Under the influence of disturban				1 61000	-4-4 (200	04) +2 k\	/ accura	cy dec	reased t	$to \leq \pm 0$.	25 % F	SO.				
Thermal effects / Permissib				. ,	,						00.15					
Thermal error				D / 10 I					l range			-ll	-41- /	1		
Permissible temperatures				tronics . 125 °		onment	: -25	. 125	C (dep	ending	on cal	ole she	eatn / s	seal)		
Electrical protection ⁴	Sio	aye	40	. 125	U											
· · · · · · · · · · · · · · · · · · ·		mar	on t													
Short-circuit protection Reverse polarity protection		man dam		ut alea	no fun	ction										
Electromagnetic compatibility						ording to	<u> </u>									
	,		61326		my door			cher L	oyd (G	L)		- De	t Nors	ke Verit	tas (DN	۱V)
⁴ additional external overvoltage _l	protection ur	it in t	erminal	box KL	. 1 or KL	2 with a	tmosph	eric pre	ssure re	eference	availal	ole				
Mechanical stability																
Vibration	4 g	(acc	cording	to GL	: curve	2 / acco	ording t	to DN	/: Clas	sB/b	asis: D	IN EN	60068	3-2-6)		
Electrical connection																
Cable outlet						ed air tu the air				referen	ce (for	nomin	al pre	ssure ra	anges	
Materials																
Housing						404 (31 tant ag		ea wat	er)				(others o	on requ	ıest
Seals (media wetted)		ndar ions:	d: Fk		FKM (r	nin. per	missib	le tem	peratur	e from	-15 °C	;)	(others o	n requ	ıest
Diaphragm	sta	ndar			Al ₂ O ₃ 96				on: cer							
Cable sheath		ndard ion:	F	EP (-2	25 12 25 70 25 70	°C)		(resis	esistan tant ag				J	en free	,	ıpet
Miscellaneous				J (Z	10	-,	21401									.550
Optionally cable protection						e in stai up to 2							ct (sta	ndard:	stainle	SS
Ingress protection	IP															
Current consumption			mA													
Weight				thout												
CE-conformity		C Di	rective	e: 2004	//108/E	j										
Option Pt 100 temperature			05.00													
Temperature range			25 °C													
Connection temperature elen Resistance			+ 0 ° 0													
Resistance Temperature coefficient			nt 0 °C om/K													
Supply I _S			.0 mA	DC												
IS-protection	0.0	1	.5 111/	DC												
Approval DX14A-LMK 458	70	ne 0	. 11	1G Fy	ia IIB T	4										
Safety technical maximum va	Jues Ui	= 28	3 V, I _i =	93 m/	A, P _i = 6	660 mW				μΗ; the	e supp	ly conr	nection	s have	an inn	ier
Pormissible temperatures for				iax. 14		•				211h	or					
Permissible temperatures for ronment		in zone 0 ⁶ : -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar zone 1 and higher: -25 70 °C														
Connecting cables			capacit			ine/shie										



⁵² LMK 458

Ordering code

LMK 458		Щ-Ш
Pressure		
in bar, gauge	7 6 5 7 6 8	
in bar, absolute ¹	7 6 8	
in bar, sealed gauge	7 6 7	consult
in mH₂O Input [mH₂O] [bar]	7 6 6	
Input [mH ₂ O] [bar] 0.40 0.04	0 4 0 0	
0.60 0.06	0 6 0 0	
1.0 0.10	1 0 0 0	
1.6 0.16	1 6 0 0	
2.5 0.25	2 5 0 0	
4.0 0.40	4 0 0 0	
6.0 0.60	6 0 0 0	
10 1.0	1 0 0 1	
16 1.6	1 6 0 1 2 5 0 1	
25 2.5 40 4.0	2 5 0 1 4 0 0 1	
	4 0 0 1 6 0 0 1	
60 6.0 100 10	1 0 0 2	
160 16	1 6 0 2	
200 20	2 0 0 2	
customer	1 6 0 2 2 0 0 2 9 9 9 9	consult
Housing		
Stainless steel 1.4404 (316L)	1	
Copper-Nickel-alloy (CuNi10Fe1Mn)	K	
customer	9	consult
Design		
Probe	1	
Flange version ² Screw-in version	3	
Diaphragm	5	
Ceramics Al ₂ O ₃ 96%	2	
Ceramics Al ₂ O ₃ 99.9%	c c	
customer	9	consult
Output		
4 20 mA / 2-wire	1	
Intrinsic safety 4 20 mA / 2-wire	E	
customer	9	consult
Seals		
FKM EPDM	1	
FFKM ³	3 7	
customer	9	consult
Electrical connection		Consult
PUR-cable	2	
FEP-cable	3	
TPE-cable	4	
customer	9	consult
Accuracy		
standard 0.25 %	2	
option für P _N ≥0.6 bar: 0.1 %	1	
Cable length customer	9	consult
Cable length in m		9 9 9
Special version		
standard		0 0 0
with temperature sensor Pt 100		0 1 3
prepared for mounting with st. steel pipe 4		0 0 0 0 1 3 5 0 2 9 9 9 consult
customer		9 9 9 consult

 $^{^{\}rm 1}$ nominal pressure ranges sealed gauge and absolute from 1 bar

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

² mounting accessories are not part of supply and have to be ordered separately

 $^{^3}$ min. permissible temperature from -15 $^{\circ}\text{C}$

⁴ 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 $0 \dots 40 \text{ cmH}_2\text{O}$ up to $0 \dots 100 \text{ mH}_2\text{O}$

Output signals

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

Special characteristics

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

Optional versions

- IS-protection zone 0
- cable protection via corrugated pipe
- diaphragm 99.9 % Al₂O₃
- different kinds of cable
- different kinds of 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 transmitter 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





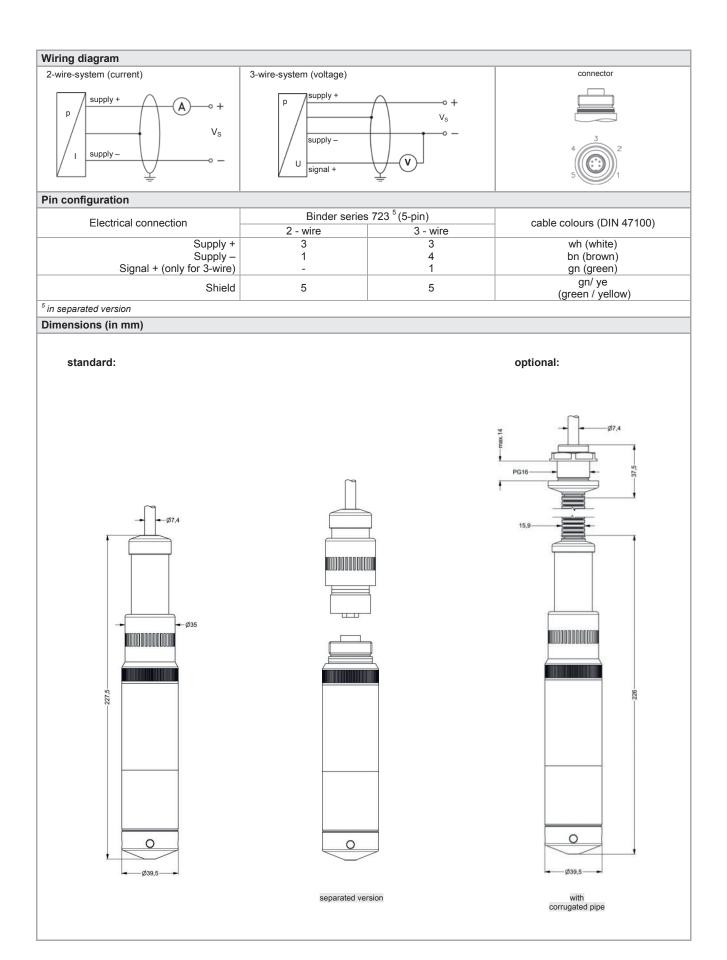
level monitoring in open tanks with low filling heights fuel storage tank farms / biogas plants





Input pressure range														
Nominal pressure gauge	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10
Level	[mH ₂ 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

Option IS-protection 2-wire: 4 20 mA / V _s = 14 28 V _{DC} Option S-wire 3-wire: 0 10 V / V _s = 12.5 32 V _{DC} Performance Accuracy 1 Accuracy 2 standard: ≤ ± 0.35 % FSO Permissible load R _{ms} = [(V _s - V _{S-m}) 1.002 A) Ω Influence effects supply: 0.05 % FSO I/ V _D Influence effects supply: 0.05 % FSO I/ C _D Long term stability ± ± 0.1 % FSO I/ Sear Turn-on time 700 msec Mean response time 380 msec **accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability) **Thermal effects (Offset and Span) <	Output signal / Supply									
Option 3-wire 3-wire: 0 10 V	Standard	2-wire: 4 20 mA / V _S = 9 32 V _{DC}								
Performance	Option IS-protection									
Performance Accuracy ' standard: ≤ ± 0.35 % FSO option: s ± 0.25 % FSO option: option: s ± 0.25 % FSO option: optio	Option 3-wire									
Standard: \$ ± 0.3 % FSO Standard: \$ ± 0.3 % FSO Standard: \$ ± 0.25 % FSO Standard: \$ ± 0.25 % FSO 10 V Standard: \$ ± 0.25 % FSO 10 V Standard: \$ ± 0.25 % FSO 10 V Standard: \$ ± 0.1 % FSO 10 K Standard: \$ ±										
Option: \$ ± 0.25 % FSO	1 1 1 1	standard: < + 0.35 % FSO								
Permissible load Remain = [(Vs - Vs min) / 0.02 Å] Ω	Nocaracy									
Influence effects supply: 0.65 % FSO / 10 V load: 0.05 % FSO / 10 V Turn-on time 700 msec Mean response time 4 200 msec Mean response time 4 200 msec Mean response time 5 80 msec Mean response time 5 2.01 % FSO / 10 K in compensated range 0 70 °C Permissible temperatures Permissible temperature Permissible temperature Permissible temperature Permissible temperature 25 125 °C 10 black TPM PPM Seals FRM PPM Others on request PPM PPM PPM PPM Seals PPM PPM PPM PPM PPM PPM PPM P	Permissible load									
Long term stability	Influence effects									
Turn-on time		11 7								
Mean response time	Long term stability	· · · · · · · · · · · · · · · · · · ·								
Max. response time 380 msec 360 msec 380 msec 360 msec										
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) Thermal effects (Offset and Span) Thermal error ≤ ± 0.1 % FSO / 10 K in compensated range 0 70 °C Permissible temperatures medium: -25 125 °C electronic / environment: -25 125 °C electroic / environment: -25 125 °C electroic / environment: -25 125 °C Electrical protection 2 permanent Short-circuit protection no damage, but also no function permanent Reverse polarity protection no damage, but also no function permanent Electronagnetic compatibility emission and immunity according to EN 61326 permanent 2 additional external overvoltage protection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request Electrical connection Electrical connection Cable with sheath material 3 PVC (-5 70 °C) black EFP (-25 70 °C) black TFP (-25 70 °C) black TFP (-25 125 °C) blue 3 shielded cable with integrated air tube for atmospheric pressure reference Materials (media wetted) Housing standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 % Nose cone POM Explosion protection (only for 4 20 mA / 2-wire) Approval DX14-LMK 358 IBEXU05ATEX1070 X Zone 0°: II 10 Ex is all IB T4										
Thermal error \$\frac{\sharpmantleffects (Offset and Span)}{\text{In compensated range 0 70 °C}}{\text{Permissible temperatures}}{\text{Permissible temperature}}{\text{Permissible temperature}}{Permissi										
Thermal error S ± 0.1 % FSO / 10 K in compensated range 0 70 °C Permissible temperatures medium:										
in compensated range 0 70 °C Permissible temperatures medium: 25 125 °C electronic / environment: 25 125 °C storage: 40 125 °C Electrical protection 2 Short-circuit protection permanent Reverse polarity protection no damage, but also no function Electromagnetic compatibility emission and immunity according to EN 61326 **additional external overvoltage protection unit in terminal box Kt. 1 or Kt. 2 with atmospheric pressure reference available on request Electrical connection Cable with sheath material PVC (-5 70 °C) grey PUR (-25 70 °C) black FEP (-25 70 °C) blac	<u> </u>									
Permissible temperatures Permissible temperatures medium:	Thermal error									
Permissible temperatures medium:	Parmissible temperatures	in compensated range o 70 C								
electronic / environment: -25 125 °C storage: -40 125 °C	-	modium: 25 125 °C								
Storage: 40 125 °C	Fermissible temperatures									
Short-circuit protection permanent Reverse potarity protection no damage, but also no function										
Reverse polarity protection no damage, but also no function Electromagnetic compatibility emission and immunity according to EN 61326 *additional external overvoltage protection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request **Electrical connection** Cable with sheath material ** PVC (-5 70 °C) grey PUR (-25 70 °C) black FEP (-25 70 °C) black FEP (-25 70 °C) black TEP (-25 125 °C) blue **shielded cable with integrated air tube for atmospheric pressure reference** **Materials (media wetted)** Housing stainless steel 1.4404 (316L) Seals FKM EPDM others on request Diaphragm standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 % Nose cone POM Explosion protection (only for 4 20 mA / 2-wire) Approval DX14-LMK 358 IBEXU05ATEX1070 X Zone 0 *1.1 1G Ex ia IIB T4 Ga Zone 20: II 1D Ex iaD 20 T 85°C Safety technical maximum values U = 28 V. I, = 93 mA, P, = 660 mW, C, = 27 nF, L, = 5 µH Permissible temperature -25 70 °C cable capacitance: signal line/shield also signal line/signal line: 1 µH/m *for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4 Ga* (zone 0) Miscellaneous Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 68	Electrical protection ²	•								
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Electrical connection Cable with sheath material ³ PVC (-5 70 °C) grey PUR (-25 70 °C) black FEP (-25 70 °C) black TPE (-25 70 °C) black TPE (-25 125 °C) blue ³ shielded cable with integrated air tube for atmospheric pressure reference Materials (media wetted) Housing stainless steel 1.4404 (316L) Seals FKM EPDM others on request Diaphragm standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 % Nose cone POM Explosion protection (only for 4 20 mA / 2-wire) Approval DX14-LMK 358 IBEXU05ATEX1070 X Zone 0 ⁴ : II 1 G Ex ia IIB T 4 Ga Zone 20: II 1D Ex iaD 20 T 85°C Safety technical maximum values U, = 28 V, I, = 93 mA, P ₁ = 660 mW, C ₁ = 27 nF, L ₁ = 5 μH Permissible temperature -25 70 °C Connecting cables cable capacitance: signal line/shield also signal line/signal line: 100 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m ⁴ for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0) Miscellaneous Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 68	Electromagnetic compatibility	, , , , , , , , , , , , , , , , , , , ,								
PVC (-5 70 °C) grey PUR (-25 70 °C) black FEP (-25 70 °C) black FEP (-25 70 °C) black TPE (-25 125 °C) blue	² additional external overvoltage protection	on unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request								
PUR (-25 70 °C) black FEP (-25 70 °C) black TPE (-25 70 °C) black TPE (-25 125 °C) blue 3 shielded cable with integrated air tube for atmospheric pressure reference Materials (media wetted) Housing stainless steel 1.4404 (316L) Seals FKM EPDM others on request Diaphragm standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 % Nose cone POM Explosion protection (only for 4 20 mA / 2-wire) Approval DX14-LMK 358 IBEXU05ATEX1070 X Zone 0 4: 11 1G Ex ia IIB T4 Ga Zone 20: II 1D Ex iaD 20 T 85°C Safety technical maximum values U ₁ = 28 V, I ₁ = 93 mA, P ₁ = 660 mW, C ₁ = 27 nF, L ₁ = 5 μH Permissible temperature -25 70 °C Connecting cables (by factory) cable inductance: signal line/shield also signal line/signal line: 1 μH/m 4 for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0) Miscellaneous Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 6	Electrical connection									
FEP (-25 70 °C) black TPE (-25 125 °C) blue	Cable with sheath material ³									
TPE (-25 125 °C) blue **shielded cable with integrated air tube for atmospheric pressure reference **Materials (media wetted) Housing stainless steel 1.4404 (316L) Seals FKM EPDM others on request Diaphragm standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 % Nose cone POM **Explosion protection (only for 4 20 mA / 2-wire) Approval DX14-LMK 358 IBExU05ATEX1070 X Zone 0 *! II 10 Ex ia IIB T4 Ga Zone 20 : II 11 DE x ia D2 0 T 85 °C Safety technical maximum values U ₁ = 28 V, I ₁ = 93 mA, P ₁ = 660 mW, C ₁ = 27 nF, L ₁ = 5 μH Permissible temperature -25 70 °C Connecting cables cable capacitance: signal line/shield also signal line/signal line: 100 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m * for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0) Miscellaneous Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 68										
* shielded cable with integrated air tube for atmospheric pressure reference Materials (media wetted) Housing stainless steel 1.4404 (316L) Seals FKM EPDM others on request Diaphragm standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 % Nose cone POM Explosion protection (only for 4 20 mA / 2-wire) Approval DX14-LMK 358 IBEXU05ATEX1070 X Zone 0 *: II 10 Ex ia IIB T4 Ga Zone 20: II 1D Ex ia D 20 T 85°C Safety technical maximum values U ₁ = 28 V ₁ I ₁ = 93 mA, P ₁ = 660 mW, C ₁ = 27 nF, L ₁ = 5 μH Permissible temperature -25 70 °C Connecting cables (by factory) cable capacitance: signal line/shield also signal line/signal line: 100 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m 4 for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0) Miscellaneous Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 68										
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option: ceramics Al ₂ O ₃ 99.9 % Nose cone POM Explosion protection (only for 4 20 mA / 2-wire) Approval DX14-LMK 358 IBEXU05ATEX1070 X Zone 0 ⁴ : II 1G Ex ia IIB T4 Ga Zone 20: II 1D Ex iaD 20 T 85°C Safety technical maximum values U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i = 27 nF, L _i = 5 μH Permissible temperature -25 70 °C Connecting cables (by factory) cable capacitance: signal line/shield also signal line/signal line: 100 pF/m cable inductance: signal line/shield also signal line: 1 μH/m 4 for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0) Miscellaneous Current consumption max. 21 mA Weight lngress protection IP 68										
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Explosion protection (only for 4 20 mA / 2-wire) Approval DX14-LMK 358 IBEXU05ATEX1070 X	N	_ '								
Approval DX14-LMK 358 IBExU05ATEX1070 X		1								
Zone 0 ⁴ : II 1G Ex ia IIB T4 Ga Zone 20: II 1D Ex iaD 20 T 85°C Safety technical maximum values U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i = 27 nF, L _i = 5 μH Permissible temperature -25 70 °C Connecting cables (by factory) cable capacitance: signal line/shield also signal line/signal line: 100 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0) Miscellaneous Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 68	· · · · · ·									
Zone 20: II 1D Ex iaD 20 T 85°CSafety technical maximum values $U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C_i = 27 \text{ nF}, L_i = 5 \text{ μH}$ Permissible temperature $-25 \dots 70 \text{ °C}$ Connecting cables (by factory)cable capacitance: signal line/shield also signal line/signal line: 100 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m 4 for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0) Miscellaneous Current consumptionmax. 21 mAWeightapprox. 650 g (without cable)Ingress protectionIP 68	Approval DX14-LMK 358									
Safety technical maximum values U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i = 27 nF, L _i = 5 μH Permissible temperature -25 70 °C Connecting cables (by factory) cable capacitance: signal line/shield also signal line/signal line: 100 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0) Miscellaneous Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 68										
Permissible temperature -25 70 °C Connecting cables (by factory) cable inductance: signal line/shield also signal line/signal line: 100 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0) Miscellaneous Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 68	Safety technical maximum values									
(by factory) cable inductance: signal line/shield also signal line 1 μH/m for optional stainless steel pipe following designation is valid: "If 1G Ex ia IIC T4 Ga" (zone 0) Miscellaneous Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 68	Permissible temperature									
⁴ for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0) Miscellaneous Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 68	Connecting cables									
Miscellaneous Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 68	(by factory)	cable inductance: signal line/shield also signal line/signal line: 1 μH/m								
Current consumption max. 21 mA Weight approx. 650 g (without cable) Ingress protection IP 68	⁴ for optional stainless steel pipe followin	g designation is valid: "II 1G Ex ia IIC T4 Ga" (zone 0)								
Weight approx. 650 g (without cable) Ingress protection IP 68	Miscellaneous									
Weight approx. 650 g (without cable) Ingress protection IP 68	Current consumption	max. 21 mA								
Ingress protection IP 68	Weight									
	Ingress protection	111 01								
	CE-conformity	EMC Directive: 2004/108/EC								



Ordering code

LMK 358	<u> </u>]-[]-[]-[]-[]-[]- -	Ш-Ш	
Pressure	1 1 5				
in bar in mH₂O	4 4 5 4 6				
Input [mH ₂ O] [bar]	4 4 0				
0.40 0.04	0 4 0 0				
0.60 0.06	0 6 0 0				
1.0 0.10	1 0 0 0				
1.6 0.16	1 6 0 0 2 5 0 0				
2.5 0.25	2 5 0 0				
4.0 0.40	4 0 0 0 6 0 0 0				
6.0 0.60 10 1.0	6 0 0 0 1				
16 1.6	1 0 0 1 1 1 6 0 1				
25 2.5	2 5 0 1				
40 4.0	4 0 0 1				
60 6.0	6 0 0 1				
100 10	1 0 0 2 9 9 9				
customer	9 9 9 9				consult
Housing					
Stainless steel 1.4404 (316L)	1				11
Customer	9				consult
Diaphragm Ceramics Al ₂ O ₃ 96%		2			
Ceramics Al ₂ O ₃ 99.9%		C			
customer		9			consult
Output					00110011
4 20 mA / 2-wire		1			
0 10 V / 3-wire		3			
Intrinsic safety 4 20 mA / 2-wire		E			
customer		9			consult
Seals FKM		1			
EPDM		1 3			
customer		9			consult
Electrical connection					Coriodit
PVC-cable ¹		1			
PUR-cable ¹		2			
FEP-cable ¹		3			
TPE-cable ¹		4			
customer		9			consult
Accuracy					
standard 0.35 %			3		
option 0.25 % customer			9		consult
Cable length					Corisuit
in m			9 9 9		
Special version					
standard				0 0 0	
prepared for mounting ²				1 0 6	
with stainless steel pipe					
cable protection with				1 0 3 9 9 9	
stainless steel corrugated pipe with pipe length in m				1 0 3 9 9 9	consult
customer				9 9 9	consult
Guotomoi				010101	Contour

¹ cable with integrated air tube for atmospheric pressure reference

² 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_2O up to 0 ... 100 mH_2O

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

others on request

Special characteristics

- diameter 35 mm
- cable and sensor section separable
- excellent linearity
- small thermal effect

Optional versions

- SIL 2 (Safety Integrity Level) according to IEC 61508 / 61511
- mounting accessories as screw fitting and terminal clamp of 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, waste water as well as fuels and oils. Basic element is a piezoresistive stainless steel sensor.

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

Preferred areas of use are

Water / filtrated sewage

ground water level measurement storm water systems drinking water system

drinking water system water treatment plants

Fuel / Oil

fuel storage tank farm biogas plants process water recycling





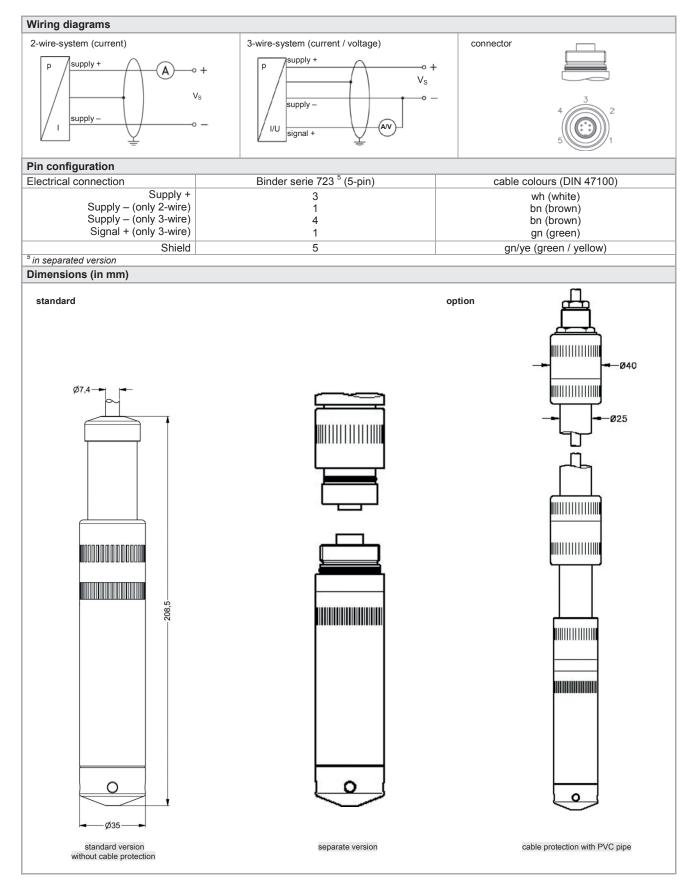
LMP 808

Input pressure range												
Nominal pressure gauge	[bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10
Level	[mH ₂ O]	1	1.6	2.5	4	6	10	16	25	40	60	100
Overpressure	[bar]	0.5	1	1	2	5	5	10	10	20	40	40
Burst pressure ≥	[bar]	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50	50

Output signal / Supply									
Standard		2-wire: 4 20 mA / V _S = 8 32 V _{DC}							
Options 3-wire		3-wire: 0 20 mA / V _S = 14 30 V _{DC}	3-wire: 0 20 mA / V _S = 14 30 V _{DC}						
<u> </u>		0 10 V / V _S = 14 30 V _{DC}							
Performance									
Accuracy		standard: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO							
		•	≤ ± 0.35 % FSO						
		option 1: nominal pressure ≥ 0.4 bar: ≤ ± 0.25 % FSO							
Permissible load		current 2-wire: $R_{max} = [(V_S - V_S min) / 0.02 A] \Omega$							
		current 3-wire: $R_{max} = 500 \Omega$							
		voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$							
Influence effects		supply: 0.05 % FSO / 10 V							
		load: 0.05 % FSO / kΩ							
Long term stability		≤ ± 0.1 % FSO / year							
Response time		< 10 msec							
		t point adjustment (non-linearity, hysteresis, repeatab	ility)						
Thermal effects (Offset									
Nominal pressure P _N	[bar]	< 0.40	≥ 0.40						
Tolerance band	[% FSO]	≤±1	≤ ± 0.75						
in compensated range	[°C]		0 50						
Permissible temperatur	es								
Permissible temperature	s	medium: 0 50 °C storage: -10 50 °C							
Electrical protection ²									
Short-circuit protection		permanent							
Reverse polarity protection	on	no damage, but also no function							
Electromagnetic compati		emission and immunity according to EN 6132	6						
		on unit in terminal box KL 1 or KL 2 with atmospheric							
Electrical connection									
Cable with sheath materi	al ³	PVC (0 50 °C) grey PUR (0 50 °C) black							
		FEP (0 50 °C) black							
Cable protection		standard: without cable protection optional: prepared for mounting of a PVC pipe with diameter 25 mm							
³ cable with integrated air tul	oe for atmos	pheric pressure reference							
Materials (media wetted	d)								
Housing		PVC grey							
Seals		FKM EPDM							
Diaphragm		stainless steel 1.4435 (316L)							
Protection cap		POM							
Miscellaneous									
Option SIL ⁴ 2 application		according to IEC 61508 / IEC 61511							
Connecting cables			able capacitance: signal line/shield also signal line/signal line: 160 pF/m						
(by factory)			able capacitance: signal line/shield also signal line/signal line: 1uH/m						
Current consumption		signal output current: max. 25 mA							
	signal output voltage: max. 7 mA								
Weight	approx. 400 g (without cable)								
Ingress protection IP 68									
CE-conformity EMC Directive: 2004/108/EC									
CE-COIIIOIIIIILY		LIVIO DIICOLIVO. 200-7 100/LO							

LMP 808

Technical Data



This document contains product specifications; properties are not guaranteed. Subject to change without notice.

60 LMP 808 Ordering code

LMP 808	Ш-Ш	□ - □ - □ -	□-□- <u></u>			
D						
Pressure	4 4 0					
in bar	4 1 0					
in mH ₂ O	4 1 1					
Input [mH ₂ O] [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				
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		0 1				
40 4.0	4 0	0 1				
60 6.0	2 5 4 0 6 0	0 1				
100 10	1 0	0 2				
customer	1 0 9 9	0 2 9 9				consult
Housing	0 0					Cornolit
PVC		Α				
customer		9				consult
Diaphragm		3				Consuit
Stainless steel 1.4435 (316L)		1				
customer		9				consult
Output		3				Consuit
4 20 mA / 2-wire			1			
0 20 mA / 3-wire			2			
0 20 mA / 3-wire			3			
SIL2 4 20 mA / 2-wire			3			
SILZ 4 20 IIIA / Z-WITE			1S 9			
			9			consult
Seals						
FKM			1			
EPDM			3			
customer			9			consult
Electrical connection	1					
PVC-cable			1			
PUR-cable	1		2			
FEP-cable	1		3			
customer			9			consult
Accuracy						
standard for P _N ≥ 0.4 bar 0.35 %			3			
standard for $P_N < 0.4$ bar 0.5 %			5			
option 1 for $P_N \ge 0.4$ bar 0.25 %			2			
customer			9			consult
Cable length						
in m				9 9 9		
Special version						
standard				0	0 0	
prepared for mounting with PVC pipe	2			1	0 6	
customer				9	9 9	consult

¹ cable with integrated air tube for atmospheric pressure reference

² PVC pipe is not part of the supply



Plastic Probe for Aggressive Media

Ceramic Sensor

accuracy according to IEC 60770: 0.5 % FSO

Nominal pressure

from 0 ... 4 mH₂O up to 0 ... 100 mH₂O

Output signals

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

Special characteristics

- diameter 35 mm
- excellent 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 versione. g. special pressure ranges

The plastic submersible probe LMK 807 is designed for continous level measurement for waste water or and different 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



Sewage

waste water treatment water recycling dumpsite



Aggressive media

level measurement in most of acids and lyes



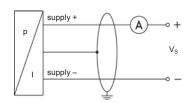


Technical Data

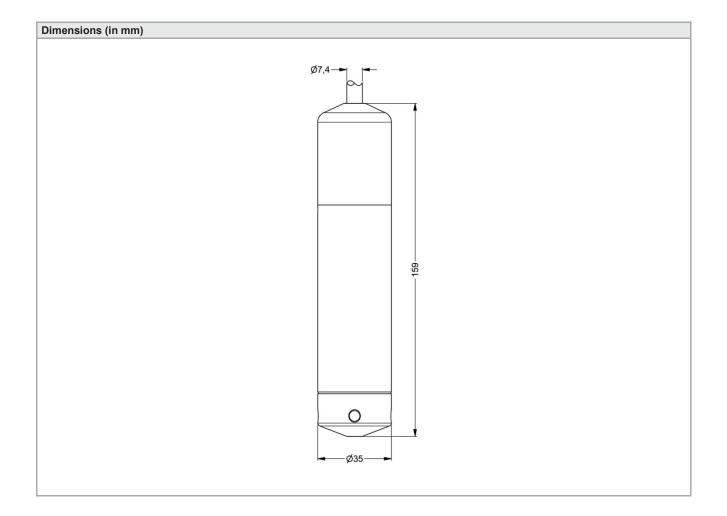
Input pressure range									
Nominal pressure gauge	[bar]	0.4	0.6	1	1.6	2.5	4	6	10
Level	[mH ₂ O]	4	6	10	16	25	40	60	100
Overpressure	[bar]	1	2	2	4	4	10	10	20
Burst pressure ≥	[bar]	2	4	4	5	5	12	12	25

Output signal / Supply								
Standard	2-wire: 4 20 mA / V _S = 8 32 V _{DC}							
Performance								
Accuracy 1	≤±0.5 % FSO							
Permissible load	$R_{\text{max}} = [(V_{\text{S}} - V_{\text{S min}}) / 0.02 \text{ A}] \Omega$							
Influence effects	supply: 0.05 % FSO / 10 V							
	load: 0.05 % FSO / kΩ							
Long term stability	t 0.1 % FSO / year							
Response time	< 10 msec							
· · · · · · · · · · · · · · · · · · ·	limit point adjustment (non-linearity, hysteresis, repeatability)							
Thermal effects (Offset and Sp	pan)							
Thermal error ≤ ± 0.2 % FSO / 10 K in compensated range -25 70 °C								
							Permissible temperatures	
Permissible temperatures	medium: 0 50 °C							
	storage: -10 50 °C							
Electrical protection ²								
Short-circuit protection	permanent							
Reverse polarity protection	no damage, but also no function							
Electromagnetic compatibility	emission and immunity according to EN 61326							
² additional external overvoltage prote	ection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request							
Electrical connection								
Cable with sheath material ³	PVC (0 50 °C) grey							
	PUR (0 50 °C) black							
	FEP (0 50 °C) black							
³ cable with integrated air tube for atr	nospheric pressure reference							
Materials (media wetted)								
Housing	PVC grey							
Seals	FKM / EPDM / FFKM							
Diaphragm	ceramics Al ₂ O ₃ 96 %							
Miscellaneous								
Option SIL 2 application	according to IEC 61508 / IEC 61511							
Connecting cables	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m							
(by factory)	cable inductance: signal line/shield also signal line/signal line: 1µH/m							
Current consumption	max. 25 mA							
Weight	approx. 200 g (without cable)							
Ingress protection	IP 68							
CE-conformity	EMC Directive: 2004/108/EC							
Wiring diagram								

2-wire-system (current)



Pin configuration							
Electrical connection cable colours (DIN 47100)							
Supply +	wh (white)						
Supply –	bn (brown)						
Shield	gn/ye (green / yellow)						



64 LMK 807 Ordering code

LMK 807	<u> </u>]-[]-[]-			
Pressure					
in bar in mH₂O	3 9 0 3 9 1				
Input [mH ₂ O] [bar]	3 9 1				
4.0 0.40	4 0 0 0				
6.0 0.60	6 0 0 0				
10 1.0	1 0 0 1				
16 1.6	1 6 0 1				
25 2.5	2 5 0 1 4 0 0 1 6 0 0 1				
40 4.0	4 0 0 1				
60 6.0	6 0 0 1				
100 10	1 0 0 2 9 9 9 9				
Customer Housing	9 9 9 9				consult
PVC		A			
customer		9			consult
Diaphragm					Conduct
Ceramics Al ₂ O ₃ 96%		2			
customer		2 9			consult
Output					
4 20 mA / 2-wire		1			
SIL2 4 20 mA / 2-wire		18			
customer		9			consult
Seals					
FKM EPDM		1			
FFKM		3 7			
customer		9			consult
Accuracy		9			Consuit
0.5 %			5		
customer			9		consult
Electrical connection					
PVC-cable ¹			1		
PUR-cable ¹			2		
FEP-cable ¹			2 3		
customer			9		consult
Cable length					
in m			9 9 9		
Special version standard				0 0 0	
customer				0 0 0 9 9	consult
customer				9 9 9	Consult

¹ cable with integrated air tube for atmospheric pressure reference



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 mH₂O up to 0 ... 100 mH₂O

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 % Al₂O₃
- housing material PP or PVDF

Optional versions

- different kinds of cable and seal materials
- prepared for mounting with pipe

The plastic submersible probe LMK 809 is designed for continous level measurement in waste water or in most of aggressive media. Basic element is a capacitiv 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



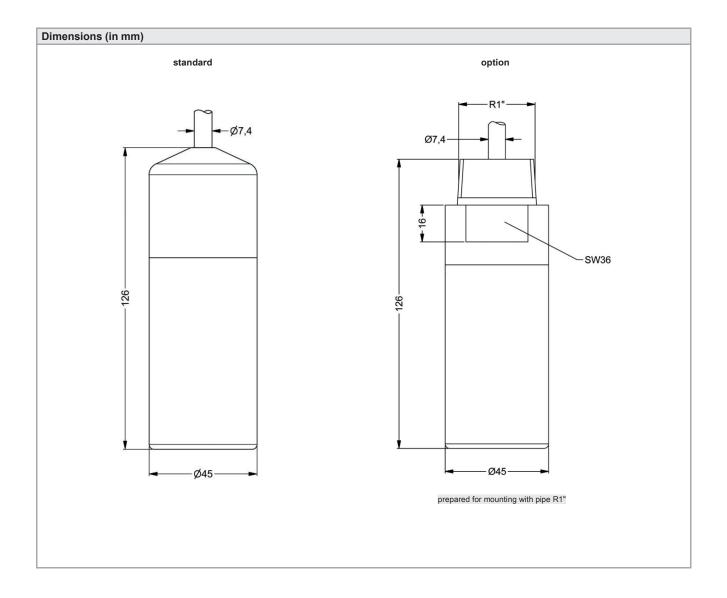
Aggressive media

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 ₂ 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 20 mA / V _S = 9 32 V _{DC}							
Option 3-wire	3-wire: 0 10 V / V _S = 12.5 32 V _{DC}							
Performance								
Accuracy ¹	standard: ≤± 0.35 % FSO							
, toodiacy	otion: ≤± 0.25 % FSO							
Permissible load	$_{\text{max}} = [(V_{\text{S}} - V_{\text{S min}}) / 0.02 \text{A}] \Omega$							
Influence effects	pply: 0.05 % FSO / 10 V							
	ad: 0.05 % FSO / kΩ							
Long term stability	± 0.1 % FSO / year							
Turn-on time	700 msec							
Mean response time	< 200 msec measuring rate: 5/sec							
Max. response time	380 msec it point adjustment (non-linearity, hysteresis, repeatability)							
Thermal effects (Offset and Span								
Thermal error) ≤ ± 0.1 % FSO / 10 K							
Thermal error	in compensated range 0 70 °C							
Permissible temperatures	This componential transfer that the component transfer transfer that the component transfer transfer transfer transfer transfer transfer trans							
Permissible temperatures	medium: -25 100 °C							
electronic / environment: -25 100 °C								
	storage: -25 100 °C							
Electrical protection ²								
Short-circuit protection	permanent							
Reverse polarity protection	o damage, but also no function							
Electromagnetic compatibility	emission and immunity according to EN 61326							
	on unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request							
Electrical connection								
Cable with sheath material ³	PUR (-25 70 °C) black							
	FEP (-25 70 °C) black TPE (-25 100 °C) blue							
³ cable with integrated air tube for atmos	nheric pressure reference							
Materials (media wetted)	priorio procedire reference							
Housing	standard: PP							
Tiodollig	option: PVDF							
Seals	FKM / EPDM / FFKM							
Diaphragm	ceramics Al ₂ O ₃ 99.9 %							
Miscellaneous								
Connecting cables	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m							
(by factory)	cable inductance: signal line/shield also signal line/signal line: 1µH/m							
Current consumption	max. 21 mA							
Weight	approx. 320 g (without cable)							
Ingress protection	IP 68							
CE-conformity	EMC Directive: 2004/108/EC							
Wiring diagram								
2-wire-system (current)	3-wire-system (voltage)							
supply +	p supply + o +							
p / A	V _s							
	V _s							
	supply –							
supply –								
<u> </u>	Signal + V							
Pin configuration	=							
Electrical connection	cable colours (DIN 47100)							
Supply +								
Supply –								
Signal + (only for 3-wire)	gn (green)							
Shield	gn/ye (green / yellow)							



Ordering code

LMK 809]-[]-[]-[]	
$\begin{array}{c c} \textbf{Pressure} & & & & & & & \\ & & & & & & & & \\ & & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & & \\ & & \\ & & & \\$	3 9 5 3 9 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
100 10 customer	1 0 0 2 9 9 9		consult
PP PVDF customer	E B 9		consult
Diaphragm Ceramics Al ₂ O ₃ 99.9% customer	C 9		consult
Output 4 20 mA / 2-wire 0 10 V / 3-wire	1 3		
Seals	9		consult
FKM EPDM FFKM	1 3 7	3	
Accuracy	9		consult
standard 0.35 % option 0.25 % customer		3 2 9	consult
Electrical connection PUR-cable ¹ FEP-cable ¹ TPE-cable ¹		2 3 4	Jonesia
Cable length in m		9 9 9	consult
Special version standard		0 0 0	
pipe R1" customer		6 1 0 9 9 9	consult

¹ cable with integrated air tube for atmospheric pressure reference





Separable Plastic Submersible Probe

Ceramic Sensor

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

Nominal pressure

from 0 ... 40 cmH₂O up to 0 ... 100 mH₂O

Output signals

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

Special characteristics

- diameter 45 mm
- cable and probe separable
- chemical resistance
- housing PVC

Optional versions

- cable protection via PVC pipe
- diaphragm 99.9 % Al₂O₃
- ▶ different kinds of cable
- ▶ different kinds of seal materials

The separable plastic submersible 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 semiflush diaphragm.

In order to facilitate stock-keeping and maintenance the transmitter 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 ₂ 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 20 mA / V _S = 9 3	32 V _{DC}	option 3-wire:	0 10 V / V _S = 12.5 32 V _{DC}		
Performance					0 20		
Accuracy			IEC 60	0770 ¹			
Accountably	-4						
	0.000 (500						
Permissible load		option: $ \le \pm 0.25 \% \text{ FSO}$ $R_{\text{max}} = [(V_S - V_{S \text{min}}) / 0.02 \text{ A}] \Omega$					
Influence effects		supply: 0.05 % FSO / 10 V					
imacrice enects	load:	11.7					
Long term stability	≤ ± 0.1 °	≤±0.1 % FSO / year					
Turn-on time	700 mse	700 msec					
Mean response time	< 200 m	sec		measurin	ig rate 5/sec		
Max. response time	380 mse	eC .			-		
¹ accuracy according to IEC 60770 – li	mit point adju	stment (non-linearity, hysteres	is, repeat	tability)			
Thermal effects (Offset and Spa	in)						
Thermal error	≤ ± 0.1 %	6 FSO / 10 K					
	in compe	ensated range 0 50 °C					
Permissible temperatures							
Permissible temperatures	medium:	-10 5	0 °C				
·	electroni	c / environment: -10 5	0°C				
	storage:	-10 5	O°C				
Electrical protection ²							
Short-circuit protection	permane	ent					
Reverse polarity protection		ige, but also no function					
Electromagnetic compatibility		and immunity according t	o EN 61	326			
² additional external overvoltage protect					ce available on request		
Electrical connection							
Cable with sheath material ³	PVC (-5	50 °C) grey					
		0 50 °C) black					
		FEP (-10 50 °C) black					
Cable protection		l: without cable protection					
		prepared for mounting	of a PVC	C pipe with diame	ter 25 mm		
³ cable with integrated air tube for atmo	spheric pres	sure reference					
Materials (media wetted)							
Housing	PVC gre	•					
Seals		PDM / others on request					
Diaphragm		l: ceramics Al ₂ O ₃ 96 %					
	option:	ceramics Al ₂ O ₃ 99.9 %					
Miscellaneous							
Connecting cables		cable capacitance: signal line/shield also signal line/signal line: 160 pF/m					
(by factory)	_	cable inductance: signal line/shield also signal line/signal line: 1 μH/m					
Current consumption		max. 25 mA					
Weight		approx. 400 g (without cable)					
Ingress protection		IP 68					
CE-conformity	EMC Dir	EMC Directive: 2004/108/EC					
Wiring diagram							
2-wire-system (current)		3-wire-system (voltage)			connector		
p /supply+		supply +					
p / supply + A	∘ +	р		∘ +			
		/ 		Vs			
/	Vs		+	 ∘ -	~		
		supply –			4 3 2		
supply -	∘ -	/ u \	_V		4		
Y Supply - Y		signal +			(((((**********************************		
55 _ 55		=			5 1		

Electrical connection	
Supply + 3 3 wh (white)))
Supply - 1 4 bn (brown) Signal + (only for 3-wire) - 1 gn (green) Shield 5 5 gn/ye (green / yellow)	
Signal + (only for 3-wire) - 1 gn (green)	
Shield 5 5 gn/ye (green / yellow) 4 in separated version Dimensions (in mm)	
4 in separated version Dimensions (in mm) (green / yellow)	
Dimensions (in mm)	
Standard separated version special version for cable	Pg 16

72 LMK 858 Ordering code

LMK 858	ПП-ПП-П-П-П-П-П-П-П-П-П-П-П-П-П-П-П-П-	
Pressure		
in basin mH_2		
Input [mH ₂ O] [bar		
0.40 0.04		
0.60 0.06		
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	6 0 0 0 0 0 0 0 0 0 0 0	
10 1.0	1 0 0 1	
16 1.6	1 6 0 1	
25 2.5	2 5 0 1 4 0 0 1	
40 4.0	4 0 0 1 6 0 0 1	
60 6.0 100 10	6 0 0 1 1 1 0 0 2	
custome		consult
Housing	. 9 9 9 9	Consuit
PV	C A	
custome		consult
Diaphragm		
Ceramics Al ₂ O ₃ 96°	% 2	
Ceramics Al ₂ O ₃ 99.99	% C	
custome	er 9	consult
Output		
4 20 mA / 2-wir		
0 10 V / 3-wir custome		aanault
Seals	er 9	consult
FKI	VI 1	
EPD		
custome	-	consult
Electrical connection		CONSCIL
PVC-cab	e ¹ 1	
PUR-cab	e ¹ 2	
FEP-cab	e ¹ 3	
custome		consult
Accuracy		
standard 0.35	% 3	
option 0.25 °		
Calaba la math	9	consult
Cable length	<u> </u>	9 9 9
Special version	II	9 9 9
Special version standar	d	0 0 0
prepared for mounting with PVC pip		1 0 6
custome	- Pr	9 9 9 consult
540101111		

¹ cable with integrated air tube for atmospheric pressure reference

² PVC pipe is not part of the supply



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



Plant and Machine Engineering



Energy Industry



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 ₂ O]		1.6	2.5	4	6	10	1.6	2.5	40	60	100	160	250	400
Overpressure [hin20]		1.0	2.5	2	5	5	10	10	20	40	40	80	80	105
Burst pressure ≥ [bar]		1.5	1.5	3	7.5	7.5	15	15	25	50	50	120	120	210
Vacuum resistance	-	-		_	n resist		13	13	23	50	30	120	120	210
vacuum resistance		bar: or			11 162120	ance								
Output signal / Supply														
Standard	2-wire:	4	20 m	A / V	/ _S = 8	32 V	DC							
Option IS-version	2-wire:				/ _S = 10									
Options 3-wire	3-wire:				$\frac{1}{1} = \frac{1}{1}$				0	10.1/	/ V _S =	- 1/1 3	20 V	
	3-WITE.	. 0	20 11	IA / V	'S - 14	30 V	DC		0.	10 V	/ V _S -	- 14 3	DO V DC	
Performance	otondo		aminal	nr00011	ro < 0 1	l han		0 E 0/ E	.00					
Accuracy1	standa				re < 0.4 re ≥ 0.4			0.5 % F 0.35 %						
	option				re ≥ 0.4			0.25 %						
	option				ressure			0.1 % F						
Permissible load	· ·	t 2-wire					0.02 A]							
		t 3-wire		R _{max} =		S min)	0.02 / 1							
		e 3-wire		R _{min} =										
Influence effects	supply				FSO /	10 V			loa	id: (0.05 % F	SO / kg	Ω	
Long term stability		1 % FS							.50		/ 0 1			
Response time		er: ≤ 10												
		er: ≤ 3												
¹ accuracy according to IEC 60770 – lim	nit point a	djustme	nt (non-l	inearity,	hysteres	is, repe	atability)							
Thermal effects (Offset and Spar	1)													
Nominal pressure P _N [bar]	•			≤ 0.40							> 0.40			
Tolerance band [% FSO]				≤ ± 1						<u> </u>	≤ ± 0.75			
in compensated range [°C]			(70 70						-2	20 85	5		
Permissible temperatures														
Permissible temperatures	mediu	m: -40 .	125 °	,C	electr	onics /	environ	ment: -	40 8	35 °C	stoi	rage: -4	0 100) °C
Electrical protection	1110010				0.001.					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		ago		
Short-circuit protection	perma	nont												
Reverse polarity protection			uit alen	no fund	rtion									
	∣ no dar													
	no dar					5 FN 6	1326							
Electromagnetic compatibility					ording to	EN 6	1326							
Electromagnetic compatibility Mechanical stability	emissi	on and	immun	ity acco				DIN E	N 6006	2 2 6				
Electromagnetic compatibility Mechanical stability Vibration	emissi	on and MS (25	immun	ity acco		acco	ording to							
Electromagnetic compatibility Mechanical stability Vibration Shock	emissi 10 g R 500 g	on and MS (25 / 1 mse	immun 200	ity acco		acco								
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4	10 g R 500 g	MS (25 / 1 mse A / 2-w	immun 5 200 cc ire)	ity acco	ording to	acco	ording to	DIN E						
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals	10 g R 500 g 20 m	MS (25 / 1 mse A / 2-w	immun 5 200 c ire)	ity acco	ording to	acco	ording to	DIN E						
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4	10 g R 500 g	MS (25 / 1 mse A / 2-wi J 10 AT 0:	immun c 200 ic ire) EX 100	0 Hz)	ording to	acco	ording to	DIN E						
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331	10 g R 500 g 20 m IBExt zone	MS (25 / 1 mse A / 2-w J 10 AT 0: I 20: I	immun c ire) EX 100 I 1G Ex I 1D Ex	0 Hz) 68 X / c ia IIC	IECEX T4 Ga T 85°C	acco acco (IBE 1	ording to ording to 2.0027X	DIN E						
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals	10 g R 500 g 20 m. IBExt zone : zone :	MS (25 / 1 mse A / 2-wi J 10 AT 0: I 20: I 8 V, I _i =	immun i 200 ire) EX 106 I 1G Ex I 1D Ex	0 Hz) 68 X / (ia IIC (ia IIIC), P _i = 6	IECEX T4 Ga T 85°C 60 mW	acco acco (IBE 1 Da , C _i ≈ 0	ording to ording to 2.0027X nF, L _i ≈	DIN E (0 μH,	N 6006	3-2-27	the hous	sing		
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values	10 g R 500 g 20 m. IBExt zone : zone :	ion and ims (25 / 1 mse A / 2-wi J 10 AT 0: I 20: I 8 V, I _i = upply co	immun i 200 ire) EX 106 I 1G Ex I 1D Ex	68 X / c ia IIIC c ia IIIC d, P _i = 6 ons hav	IECEX T4 Ga T 85°C 60 mW e an inr	acco acco x IBE 1 Da , C _i ≈ 0 ner cap	ording to ording to 2.0027X nF, L _i ≈	DIN E 0 μH, max. 2	N 60068	3-2-27	the hous	sing		
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331	10 g R 500 g 20 m. IBExt zone 2 zone 2 the st in zon	ion and ims (25 / 1 mse A / 2-wi J 10 AT 0: I 20: I 8 V, I _i = upply co	immun i 200 c ire) TEX 100 I 1G Ex I 1D Ex 93 mA	68 X / c ia IIC c ia IIIC a, P _i = 6 ons hav	IECEX T4 Ga T 85°C 60 mW e an inr	accordance	ording to ording to ording to ording to ording to ordinate \mathbf{Z} . \mathbf	DIN E 0 μH, max. 2	N 60068	3-2-27	the hous	sing		
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium	10 g R 500 g 20 m. IBEXI zone : zone : U _i = 2 the su in zon in zon	ion and ion an	immun i 200 ic ire) EX 106 I 1G Ex I 1D Ex 93 mA onnection	68 X / (ia IIIC ia IIc ia	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C	according according to the second according to the se	ording to ording to ording to ording to ording to ordinate \mathbf{Z} . \mathbf	0 μH, max. 2	7 nF op 1 bar	3-2-27 posite t	the hous			
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for	10 g R 500 g 20 m. IBEXU zone : zone : U _i = 2 the su in zon in zon cable	ion and ion an	immun i 200 c ire) EX 100 I 1G Ex I 1D Ex 93 mA onnection nigher: cance:	68 X / c ia IIC c ia IIIC	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie	according according to the second according to the se	ording to ording to ording to ording to ording to ording to ordinary $L_i \approx 0.8 \text{ bg}$	O μH, max. 2' ar bis 1.	7 nF op 1 bar	posite t				
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables	10 g R 500 g 20 m. IBEXU zone : zone : U _i = 2 the su in zon in zon cable	MS (25 / 1 mse A / 2-wi J 10 AT 0: I 20: I 8 V, I; = upply coile 0: lie 1 or h capaciti	immun i 200 c ire) EX 100 I 1G Ex I 1D Ex 93 mA onnection nigher: cance:	68 X / c ia IIC c ia IIIC	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie	according according to the second according to the se	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	O μH, max. 2' ar bis 1.	7 nF op 1 bar	posite t	60 pF/n			
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials	10 g R 500 g 20 m. IBExU zone : zone : U _i = 2 the su in zon in zon cable	MS (25) / 1 mse A / 2-wi J 10 AT 0: I 20: I 8 V, I _i = i ipply co ie 0: ie 1 or I capaciti inducta	immun i 200 ire) EX 100 I 1G Ex I 1D Ex 93 mA onnection inigher: cance:	68 X / C ia IIIC ia II	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie	according according to the second according to the se	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	O μH, max. 2' ar bis 1.	7 nF op 1 bar	posite t	60 pF/n			
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory)	10 g R 500 g 20 m. IBEXU zone : zone : in zon in zon cable cable	MS (25/7 1 mse A / 2-w J 10 AT 0: I 20: I 8 V, I _i = ipply co ie 0: ie 1 or I capaciti inducta	immun i 200 ire) FEX 100 I 1G Ex 93 mA connection inigher: cance: ince:	68 X / c ia IIC c ia IIIC	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi	according according to the second according to the se	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	O μH, max. 2' ar bis 1.	7 nF op 1 bar	posite t	60 pF/n			
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port Housing	10 g R 500 g 20 m. IBEXU zone : zone : in zon in zon cable cable	MS (25/7 1 mse A / 2-w J 10 AT 0: I 20: I 8 V, I _i = upply co te 0: te 1 or h capacit inducta	immun i 200 ire) FEX 100 I 1G Ex 93 mA connection inigher: cance: ince:	68 X / c ia IIC c ia IIIC	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi	according according to the second according to the se	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	O μH, max. 2' ar bis 1.	7 nF op 1 bar	posite t	60 pF/n			
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port Housing	10 g R 500 g 500 g 20 m. 20 m. U _i = 2 the su in zone cable cable stainle	MS (25/7 1 mse A / 2-w J 10 AT 0: I 20: I 8 V, I _i = ipply co ie 0: ie 1 or I capaciti inducta	immun i 200 ire ire) FEX 100 I 1G Ex 93 mA connection inigher: cance: I 1.4400 FKM	68 X / c ia IIC c ia IIIC	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi	according according to the second according to the se	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	O μH, max. 2' ar bis 1.	7 nF op 1 bar	posite t	60 pF/n	n	st	
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port	emissi 10 g R 500 g 20 m. IBEXU zone : zone : in zon in zon cable cable stainle standa option	MS (25/7 1 mse A / 2-w J 10 AT 0: I 20: I 8 V, I _i = ipply co ie 0: ie 1 or I capaciti inducta	immun	68 X / c ia IIC c ia IIIC	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi	according according to the second according to the se	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	O μH, max. 2' ar bis 1.	7 nF op 1 bar	posite t	60 pF/n μΗ/m	n	st	
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port Housing Seals Diaphragm	In a continuous stainle	MS (25/7 1 mse A / 2-w J 10 AT 0: I separate 0: I separate 1 or I capaciti inductate ass steed ard: :	immun i 200 ire ire) I 1G Ex 93 mA onnectic nigher: cance: I 1.440 FKM EPDI I 1.443	68 X / c ia IIC is ia IIIC in a IIC i	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi	according according to the second according to the se	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	O μH, max. 2' ar bis 1.	7 nF op 1 bar	posite t	60 pF/n μΗ/m	n	st	
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port Housing Seals Diaphragm Media wetted parts	In a continuous stainle	MS (25/7 1 mse A / 2-w J 10 AT 0: I 20: I 8 V, I _i = i inducta inducta ess stee ess stee erd: :	immun i 200 ire ire) I 1G Ex 93 mA onnectic nigher: cance: I 1.440 FKM EPDI I 1.443	68 X / c ia IIC is ia IIIC in a IIC i	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi	according according to the second according to the se	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	O μH, max. 2' ar bis 1.	7 nF op 1 bar	posite t	60 pF/n μΗ/m	n	st	
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port Housing Seals Diaphragm Media wetted parts Miscellaneous	emissi 10 g R 500 g 20 m IBExt zone i zone	inductarian sess steems	immun i 200 ic ire) EX 100 I 1G Ex I 1D Ex 93 mA onnection inigher: ance: I 1.440 FKM EPDI I 1.443 , seals,	68 X / (a ia IIC (a ia IIC (b) (a ia IIC (a ia IIC (b) (a ia IIC (b) (a ia IIC (b) (a ia IIC (b) (a ia IIC (a ia IIC (b) (a ia IIC	IECEX T4 Ga T4 Ga T4 S5°C 60 mW e an inr . 60°C . 70°C ine/shie ine /shi	acco acco (IBE 1. Da , C _i ≈ 0 ner cap with p _a	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	O μH, max. 2' ar bis 1.	7 nF op 1 bar	posite t	60 pF/n μΗ/m	n	st	
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port Housing Seals Diaphragm Media wetted parts Miscellaneous Optionally SIL ² 2 application	In zon cable stainle stainle pressu	MS (25/7 1 mse A / 2-w J 10 AT 0: I = 120: I = 1	immun i 200 ire) EX 100 I 1G Ex 100 I 1D Ex 93 mA ennection in in ince: I 1.440 FKM EPDI I 1.443 , seals,	68 X / (a IIC a IIIC a	IECEXT4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi .) .)	acco acco (IBE 1. Da , C _i ≈ 0 ner cap with p _a	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	0 μH, max. 2 ar bis 1. ine / sig	7 nF op 1 bar gnal line	posite t	60 pF/m μH/m	n n reques	st	
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port Housing Seals Diaphragm Media wetted parts Miscellaneous Optionally SIL ² 2 application Current consumption	stainle stainle pressu	MS (25/7 1 mse A / 2-w J 10 AT 0: I = 1 pply cole 0: lee 1 or h capaciti inductates steepers	immun i 200 ire) FEX 100 I 1G Ex 93 mA connection ingher: cance: I 1.440 FKM EPDI I 1.443 , seals, EC 615 current	68 X / (a IIC a IIIC a	IECEXT4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi .) .)	acco acco (IBE 1. Da , C _i ≈ 0 ner cap with p _a	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	0 μH, max. 2 ar bis 1. ine / sig	7 nF op 1 bar gnal line	posite t	60 pF/n μΗ/m	n n reques	st	
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port Housing Seals Diaphragm Media wetted parts Miscellaneous Optionally SIL² 2 application Current consumption	emissi 10 g R 500 g 20 m. IBEXU zone : zone : in zon in zon cable cable stainle standa option stainle pressu accord signal approx	MS (25/7 1 mse A / 2-w J 10 AT 0: I = 120: I = 1	immun i 200 ire) FEX 100 I 1G Ex 93 mA connection ingher: cance: I 1.440 FKM EPDI I 1.443 , seals, EC 615 current	68 X / (a IIC a IIIC a	IECEXT4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi .) .)	acco acco (IBE 1. Da , C _i ≈ 0 ner cap with p _a	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	0 μH, max. 2 ar bis 1. ine / sig	7 nF op 1 bar gnal line	posite t	60 pF/m μH/m	n n reques	st	
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port Housing Seals Diaphragm Media wetted parts Miscellaneous Optionally SIL² 2 application Current consumption Weight Installation position	stainle stainle pressu	on and MS (25 / 1 mse A / 2-w J 10 AT 0: I 20: I 8 V, I i = lipply co le 0: le 1 or I capaciti inducta ess stee ard: : less stee ure port output x. 200 g	immun	68 X / (a IIC a IIIC a	IECEXT4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi .) .)	acco acco (IBE 1. Da , C _i ≈ 0 ner cap with p _a	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	0 μH, max. 2 ar bis 1. ine / sig	7 nF op 1 bar gnal line	posite t	60 pF/m μH/m	n n reques	st	
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port Housing Seals Diaphragm Media wetted parts Miscellaneous Optionally SIL² 2 application Current consumption Weight Installation position Operational life	stainle stainle pressu accord signal approxany 3 > 100 g R	MS (25/7 1 mse A / 2-w J 10 AT 0: I 20: I 8 V, I = upply cone 0: I capaciti inductation and in	immun	68 X / C ia IIC is a IIIC in a IIC i	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi	acco acco (IBE 1. Da , C _i ≈ 0 ner cap with p _a	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	0 μH, max. 2 ar bis 1. ine / sig	7 nF op 1 bar gnal line	posite t	60 pF/m μH/m	n n reques	st	
Electromagnetic compatibility Mechanical stability Vibration Shock Explosion protection (only for 4 Approvals DX19-LMP 331 Safety technical maximum values Permissible temperature for medium Conneting cables (by factory) Materials Pressure port Housing Seals Diaphragm Media wetted parts Miscellaneous Optionally SIL² 2 application Current consumption	stainle stainle pressu accord signal approxany 3 > 100 g R	MS (25) / 1 mse A / 2-w J 10 AT 0: I 20: I 8 V, I i elipply co le 0: le 1 or I capaciti inducta less stee ard:	immun	68 X / C ia IIC is a IIIC in a IIC i	IECEX T4 Ga T 85°C 60 mW e an inr . 60 °C . 70 °C ine/shie ine /shi	acco acco (IBE 1. Da , C _i ≈ 0 ner cap with p _a	ording to ording to ording to ording to ording to ording to one or ordinary $L_i \approx 0.8 \text{ bg}$ acity of $L_i \approx 0.8 \text{ bg}$ signal I	0 μH, max. 2 ar bis 1. ine / sig	7 nF op 1 bar gnal line	posite t	60 pF/m μH/m	n n reques	st	

Pin configuration					
Electrical connections	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	1	IN + IN –	wh (white)
Supply – Signal + (only for 3-wire)	2 3	4	2 3	OUT +	bn (brown) gn (green)
Shield	ground pin	5	4	4	ye/gn(yellow/green)
Wiring diagrams					, , , , , , , , , , , , , , , , , , , ,
2-wire-system (current)		3-wire-system (curre	nt/voltage)		
p supply + A supply -	v _s -∞ -	p supply + supply - signal +	V _E	+	
Electrical connections (dimension	ns in mm)				
standard option		-+n-	■Ø4,3 ,		
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 34,5	334,5 - Ø35		49,5	07.4
3 ()				M12x1,5	
	ries 723 5-pin M12x P 67) (IP	1 4-pin cable outlet with (67) (IP 67)	PVC cable compact (field housing IP 67)	cable outlet, cable with ventilation tube (IP 68) ⁵
⁴ standard: 2 m PVC cable (without ven ⁵ different cable types and lengths avail	able, permissible tempe	e temperature: -5 70 erature depends on kind	°C) of cable		
Mechanical connection (dimensi					
standa	rd		standard for SIL- a		
61 91 G 3/4	≈ 33 − Ø34,5 − Ø26,5 − Ø40		63 4 16 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Ø34,5 Ø26,5 Ø40	
G3/4" flush (D with ISO				h (DIN 3852) SO 4400	

76 LMP 331 Ordering code

LMP 331	<u> </u>]-[]
Pressure					
in bar	4 3 0				
in mH ₂ O	4 3 1				
Input [mH ₂ O] [bar]					
1 0.10	1 0 0	0			
1.6 0.16	1 6 0	0			
2.5 0.25	2 5 0	0			
4 0.40	4 0 0	0			
6 0.60	6 0 0				
10 1.0	1 0 0	1			
16 1.6	1 6 0	1			
25 2.5	2 5 0	1			
40 4.0	4 0 0	1			
60 6.0	6 0 0	1			
100 10	1 0 0 1 6 0 2 5 0	2			
160 16	1 0 0 1 6 0 2 5 0	2			
250 25	2 5 0	2			
400 40	4 0 0 9 9 9	2			
customer	9 9 9	9			consult
Pressure port					
Stainless steel 1.4404 (316L)		1			
customer		9			consult
Diaphragm					
Stainless steel 1.4435 (316L)		1			
customer		9			consult
Output					
4 20 mA / 2-wire		1			
0 20 mA / 3-wire		2			
0 10 V / 3-wire		3			
Intrinsic safety 4 20 mA / 2-wire		Ē			
SIL2 4 20 mA / 2-wire		1S			
SIL2 with Intrinsic safety					
4 20 mA / 2-wire		ES			
customer		9			consult
Seals					
FKM			1		
EPDM			3		
NBR			5		
customer			9		consult
Electrical connection					
Male and female plug ISO 4400			1 0 0		
Male plug Binder series 723 (5-pin)			2 0 0 T A 0		
Cable outlet with PVC cable			2 0 0 T A 0		
Cable outlet			TR0		
Male plug M12x1 (4-pin) / metal			M 1 0		
Compact field housing					
stainless steel 1.4305			8 5 0		
customer			9 9 9		consult
Accuracy					
standard for P _N ≥ 0.4 bar 0.35 %			3		
standard for P _N < 0.4 bar 0.5 %			5		
option 1 for $P_N \ge 0.4$ bar 0.25 %			2		
option 2 0.1 %	3		1		
customer			9		consult
Special version					
standard				0 0 0	
customer				0 0 0	consult
				1 1	

 $^{^1}$ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C), others on request 2 cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable

³ not in combination with SIL



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 impuritied 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



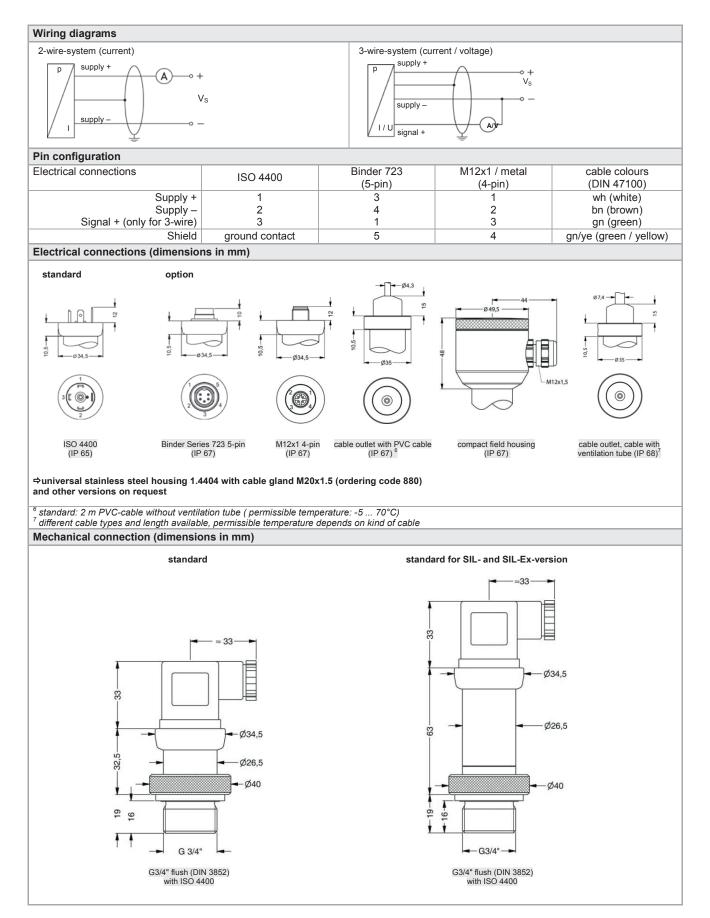






Input pressure range													
Nominal pressure gauge	[bar]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40 ¹	60 ¹
Level	[mH ₂ O]	4	6	10	16	25	40	60	100	160	250	400	600
Overpressure	[bar]	1	1 2 2 4 4 10 20 20 40 100 100 200								200		
Burst pressure	[bar]	2	4	4	5	5	12	25	25	50	120	120	250
Vacuum resistance	[bar]	P _N ≥ 1	bar: unli	mited va	cuum res	sistance							
	P _N < 1 bar: on request												
¹ only possible with stainless steel pressure port													

Output signal / Supply								
Standard	2-wire: 4 20 mA / V _S	= 8 32 V _{DC}						
Option IS-protection ²	2-wire: 4 20 mA / V _S	= 10 28 V _{DC}						
Optionen 3-wire	3-wire: 0 20 mA / V _S 0 10 V / V _S							
² IS-protection not possible with plastic	pressure port							
Performance								
Accuracy ³	≤ ± 0.5 % FSO							
Permissible load	current 2-wire: R _{max} current 3-wire: R _{max}	$x = [(V_S - V_{S min}) / 0.02 A] \Omega$ $x = 500 \Omega$ $x = 10 k\Omega$						
Influence effects	supply: 0.05 % FSO / 10 load: 0.05 % FSO / kg) V						
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec							
³ accuracy according to IEC 60770 – lii	mit point adjustment (non-linearity,	, hysteresis, repeatability)						
Thermal effects (Offset and Spa	n) / Permissible Temperatur	res						
Thermal error	≤ ± 0.2 % FSO / 10 K							
in compensated range	-25 85 °C							
Permissible temperatures ⁴	medium: -40 125 °C storage: -40 100 °C	electronics / en	vironment: -40 85 °C					
⁴ for pressure port of PVC the minimun	n permissible temperature is -30 °	С						
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 / housing	standard: options for P _N ≤ 25 bar:	pressure port stainless steel 1.4404 (316L) PVDF	housing stainless steel 1.4404 (316L) PVDF					
Option compact field housing		cable gland brass nickel plated other	ers on request					
Seals	standard: FKM	others on request						
Diaphragm	ceramics Al ₂ O ₃ 96 %							
Media wetted parts	pressure port, seals, diaphra	agm						
Explosion protection (only for 4	20 mA / 2-wire)							
Approval DX19-LMK 331 only for stainless steel pressure port	IBExU 10 ATEX 1068 X	C T4 Ga						
Safety technical maximum values	$U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 60$		the housing					
Permissible temperatures for environment	in Zone 0: -20	. 60 °C with p _{atm} 0.8 bar up to 1.1 ba . 70 °C						
Connecting cables (by factory)	cable capacitance: signal l	ine/shield also signal line / signal line ine /shield also signal line / signal line						
Miscellaneous								
Option SIL ⁵ 2 application	according to IEC 61508 / IE	C 61511						
Current consumption		ax. 25 mA signal output vo	Itage: max. 7 mA					
Weight	approx. 150 g	20 mil Signal Output VO	iago. Ilian. I IIIn					
Installation position	any							
Operational life	> 100 x 10 ⁶ pressure cycles							
CE-conformity	EMC Directive: 2004/108/E							
		_						
ATEX Directive	94/4/EG							



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LMK 331

Ordering code

LMK 331	Щ]-[-]- <u></u>]-[]-	- 🔲]-[-	-[- [
Pressure																		
gauge in bar	4 6	0																
gauge in mH_2O Input $[mH_2O]$ $[bar]$	4 6	1																
4.0 0.40		4	0	0 0														
6.0 0.60		6	0	0 0 0 0														
10 1.0		1	0	0 1														
16 1.6		1		0 1														
25 2.5 40 4.0		2 4	5	0 1 0 1														
60 6.0		6	0	0 1														
100 10		1	0	0 2														
160 16		1	6	0 2														
250 25		2	5	0 2														
400 40 1		4	0	0 2														
600 60 ¹ customer		6		0 2 9														consult
Analogue output		9	9	9 9														Consuit
4 20 mA / 2-wire					1				_	_	_						_	
0 20 mA / 3-wire					2													
0 10 V / 3-wire					3													
Intrinsic safety 4 20 mA / 2-wire ²					E													
SIL2 4 20 mA / 2-wire SIL2 with Intrinsic safety ²					1S													
4 20 mA / 2-wire					ES													
customer					9													consult
Accuracy																		
0.5 %						5												
customer			_	_		9			_									consult
Electrical connection Male and female plug ISO 4400							1	0	0									
Male plug Binder series 723 (5-pin)							2	0	0									
Cable outlet with PVC cable ³							T	Α	0									
Cable outlet with cable							Т	R	0									
Male plug M12x1 (4-pin) / metal							M	1	0									
compact field housing							8	5	0									
stainless steel 1.4305 customer							۵	9	۵									consult
Mechanical connection				-	-	-	9	ן פ	9									Consult
G3/4" DIN 3852 with										V.	0 0							
flush sensor										K								
customer										9 9	9 9							consult
Seals FKM												1						
NBR												1 5						
EPDM												3						
customer												9						consult
Pressure port																		
Stainless steel 1.4404 (316L)													1					
for $P_N \le 25$ bar $PVDF^4$ customer													B 9					consult
Diaphragm													Э					Consult
Ceramics Al ₂ O ₃ 96%														2				
customer														9				consult
Special version																		
standard															0		0	
customer															9	9	9	consult

 $^{^1}$ only possible for pressure port of stainless steel 2 Ex-protection not possible with plastic pressure port 3 standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C) 4 min. permissible temperature -30 °C



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 ½" for pasty and polluted media

Optional versions

- ► IS-version

 Ex ia = intrinsically safe for gases and dusts
- ▶ diaphragm 99.9 % Al₂O₃
- 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 Al_2O_3 99.9 % is available. An intrinsically safe version complete the range of possibilities.

Preferred areas of use are



Plant and Machine Engineering



Environmental Engineering (water – sewage – recycling)

Preferred used for



Fuel and Oil



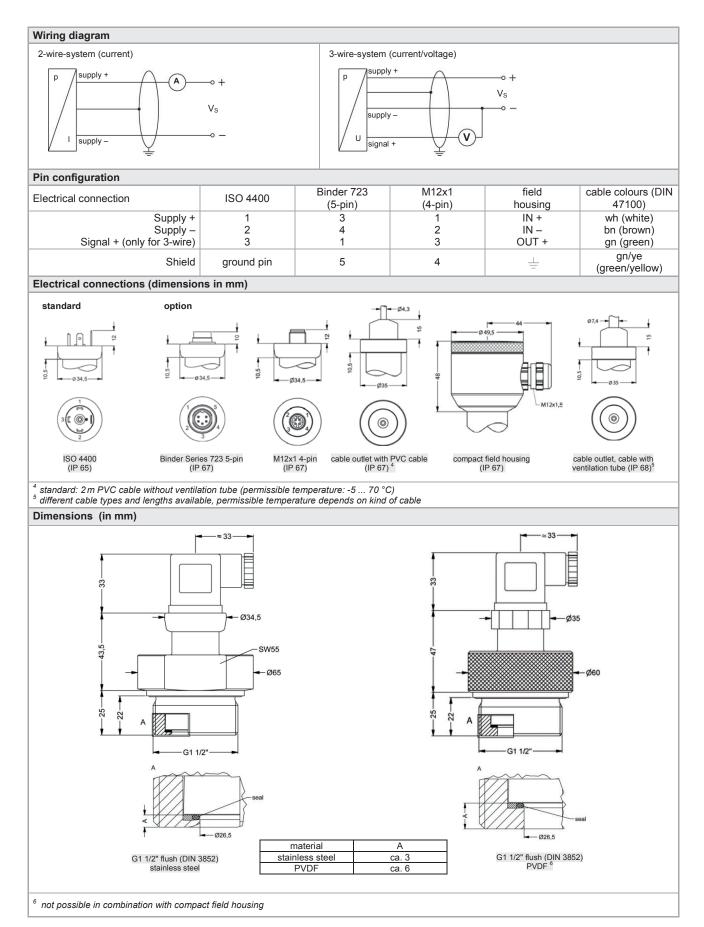
Viscous and Pasty Media





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 ₂ O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Low pressure	[bar]	-0	.2	-0).3		-0	.5					-1			

Output signal / Supply			
Standard	2-wire: 4 20 mA / V _S = 9 32 V _{DC}		
Option Ex-version	2-wire: 4 20 mA / $V_S = 14$ 28 V_{DC}		
Option 3-wire	3-wire: 0 10 V / V _S = 12.5 32 V _{DC}		
Performance	0 time: 0 10 t		
Accuracy ¹	standard: < + 0.35 % FSO		
	option: ≤ ± 0.25 % FSO		
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02]$ voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$	Α] Ω	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ		
Long term stability	≤ ± 0.1 % FSO / year		
Turn-on time	700 msec		
Mean measuring time	5/sec		
Response time	mean response time: ≤ 200 msec	max. response tir	ne: 380 msec
	limit point adjustment (non-linearity, hysterisis, repeatability,		
	oan) / -Permissible temperatures		
Tolerance band	•	range - 20 80 °C	
Permissible temperatures ²		rironment:-40 85 °C	storage: -40 100 °C
² for pressure port of PVC the minimu	1 111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		5 51014gc40 100 C
Electrical protection	an permissione temperature is -50° C		
	normanent		
Short-circuit protection	permanent		
Reverse polarity protection	no damage, but also no function emission and immunity according to EN 61326		
Electromagnetic compatibility	emission and infiniting according to EN 61326		
Mechanical stability	140 5140 (00 000011)		=11.00000
Vibration	10 g RMS (20 2000 Hz)	according to DIN	
Shock	100 g / 1 msec	according to DIN	EN 60068-2-27
Materials (media wetted)			
Pressure port	standard: stainless steel 1.4404 (316L)	option: PVDF	
Housing	standard: stainless steel 1.4404 (316L)	option: PVDF	
Seals	FKM -40 125 °C FFKM -15 125 °C EPDM -40 125 °C	·	
Diaphragm	standard: ceramics Al ₂ O ₃ 96 % options: ceramics Al ₂ O ₃ 99.9 %		
Media wetted parts	pressure port, seals, diaphragm		
IS-protection (only for 4 20	mA / 2-wire)		
Approval DX14-LMK 351	IBExU05ATEX1070 X		
	stainless steel-pressure port with male (connect zone 0: II 1 G Ex ia IIC T4 Ga stainless steel-pressure port with cable: zone 0: II 1 G Ex ia IIB T4 Ga plastic-pressure port with male (connector): zone 0/1 3: II 1/2 G Ex ia IIC T4 Ga/Gb plastic-pressure port with cable: zone 0/1 3: II 1/2 G Ex ia IIB T4 Ga/Gb	zone 20: zone 20: zone 20: zone 20/21 ⁴ : zone 20/21 ⁴ :	II 1 D Ex iaD T 85 °C
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 27 nF ,	L _i = 5 μH	
Max. permissible temperature for environment	in zone 0: -20 60 °C for p _{atm} 0.8 bit zone 1 and higher: -25 70 °C	ar up to 1.1 bar	
Connecting cables	capacity: signal line / shield also signal line	/ signal line: 160 pF/r	n
(by factory)	inductance: signal line / shield also signal line		
³ The designation depends on the use With nominal pressure ranges > 60	ed pressure range. With nominal pressure ranges \leq 60 mba mbar and $<$ 10 bar (see item 17 of the type-examination cer	r the designation is "2Gʻ rtificate) must be attende	í. ed!
Miscellaneous			
Current consumption	signal output current: max. 21 mA	signal output volta	ge: max. 5 mA
Weight	approx. 200 g	<u> </u>	
Installation position	any		
Operational life	> 100 x 10 ⁶ loading cycles		
CE-conformity	EMV-directive: 2004/108/EC		



84 LMK 351

Ordering code

LMK 351	Ш-Ш	□-□-□	-	-		· 🗆 - 🗀]-□	П	
Pressure									
in bar	4 7 0 4 7 1								
$\frac{\text{in mH}_2\text{O}}{\text{Input}}$	4 7 1								
0.4 0.04	0 4 0	0							
0.6 0.06	0 6 0 1 0 0	0 0							
1.0 0.10	1 0 0	0 0							
1.6 0.16	1 6 0 2 5 0	0 0							
2.5 0.25 4.0 0.40	2 5 0 4 0 0								
6.0 0.60	6 0 0								
10 1.0	1 0 0	1							
16 1.6	1 6 0 2 5 0								
25 2.5	2 5 0								
40 4.0 60 6.0	4 0 0 6 0 0								
100 10	6 0 0 1 0 0	2							
160 16	1 6 0	2							
200 20	2 0 0 9 9	2 2 2 9							
customer	9 9 9	9							consult
Output 4 20 mA / 2-wire		1							
0 10 V / 3-wire		3							
Intrinsic safety 4 20 mA / 2-wire		E							
customer		9							consult
Accuracy									
standard 0.35 % option 0.25 %		3							
customer		2 9							consult
Electrical connection									
Male and female plug ISO 4400			1 0 0						
Male plug Binder series 723 (5-pin)			2 0 0 T A 0						
Cable outlet with PVC- cable ¹ Cable outlet ²									
Male plug M12x1 (4-pin) / metal			T R 0 M 1 0						
compact field housing			8 5 0						
customer			9 9 9						consult
Mechanical connection									
G1 1/2" DIN 3852 with				M 0 0					
flush sensor customer				9 9 9					consult
Seals				ا ق ا ق ا ق					Corisuit
FKM					1				
EPDM					3				
FFKM customer					7				00.20114
Pressure port					9				consult
Stainless steel 1.4404 (316L)						1			
PVDF ³						В			
customer						9			consult
Diaphragm Ceramics Al ₂ O ₃ 96%						2			
Ceramics Al ₂ O ₃ 99.9%						C			
customer						9			consult
Special version									
standard							0 0 9 9	0	
customer							9 9	9	consult

 $^{^{\}rm 1}$ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 $^{\rm o}\text{C})$

² cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable

 $^{^3}$ not possible in combination with compact field housing; min. permissible temperature -30 $^\circ\text{C}$



EP 500

Pressure Transmitter

Special application: level measurement via air bubbling

Characteristics:

- ▶ capacitive ceramic sensor
- nominal pressure range from0 ... 60 mbar up to 0 ... 20 bar
- output signal 4 ... 20 mA / 2-wire
- hat rail housing
- programmingvia integrated interface







Technical Data

Input pressure range								
Nominal pressure P _N gauge [bar]	0.06	0.16	0.4	1	2	5	10	20
Nominal pressure P _N abs. [bar]				on re	quest			
Permissible overpresure [bar]	2	4	6	8	15	25	35	40
Permissible vacuum for P _N gauge [bar]	-0.2	-0.3	-0).5		-	1	

Output signal / Supply								
Standard	2-wire: 4 20 mA / V _S = 9 32 V _{DC} ; V _{S Nom.} = 24 V _{DC}							
Current consumption	max. 21 mA	max. 21 mA						
Performance								
Accuracy 1	IEC 60770 ² : ≤ ± 0.2 % FSO	BFSL: ≤± 0.1 % FSO						
Turn-on time	700 msec							
Permissible load	$R_{\text{max}} = [(V_{\text{S}} - V_{\text{S min}}) / 0.02 \text{ A}] \Omega$							
Long term stability	≤ ± 0.1 % FSO / year							
Response time (10 90 %)	120 msec – without consideration of electronic damp	ping						
Measuring rate	8/sec							
	for nominal pressure ranges ≤0.4 bar the accuracy is calculated as follows: ≤ ± [0.2 + 0.04 x(nominal pressure range / adjusted range)] % FSO accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)							
Thermal errors (Offset and Span)/ 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								

EP 500

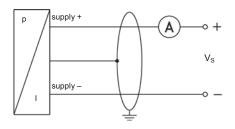
Technical Data

Electrical protection					
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	standard: stainless steel 1.4301 on request: brass				
Housing	version EP 500: PA6 (housing foot: PA66) varsion EP 500 - 500: ABS				
Seals (media wetted)	FKM				
Diaphragm	ceramic Al₂O₃ 96 %				
Media wetted parts	pressure port, seals of sensor, diaphragm				
Category of the environment					
Germanischer Lloyd (GL)	C, EMC1 number of certificate: 86 482 - 09 HH				
Miscellaneous					
Ingress protection	IP 00				
Function display	green SMD-LED - lights by information flow through the transmitter				
Installation position	any				
Operational life	> 100 x 10 ⁶ pressure cycles				
Weight	approx. 200 g				
Adjustability configuration via programming kit CIS 700 ³; following configurations are possible: - electronic damping: 0 100 sec - offset: 0 67 % FSO - turn down of span: max. 1:20 - configuration of pressure unit - calibration via connected pressure reference					
³ programming kit has to be ordered	l separately (software appropriate for Windows [®] 95, 98, 2000, NT Version 4.0 or higher, and XP)				

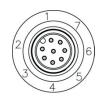
Pin configuration

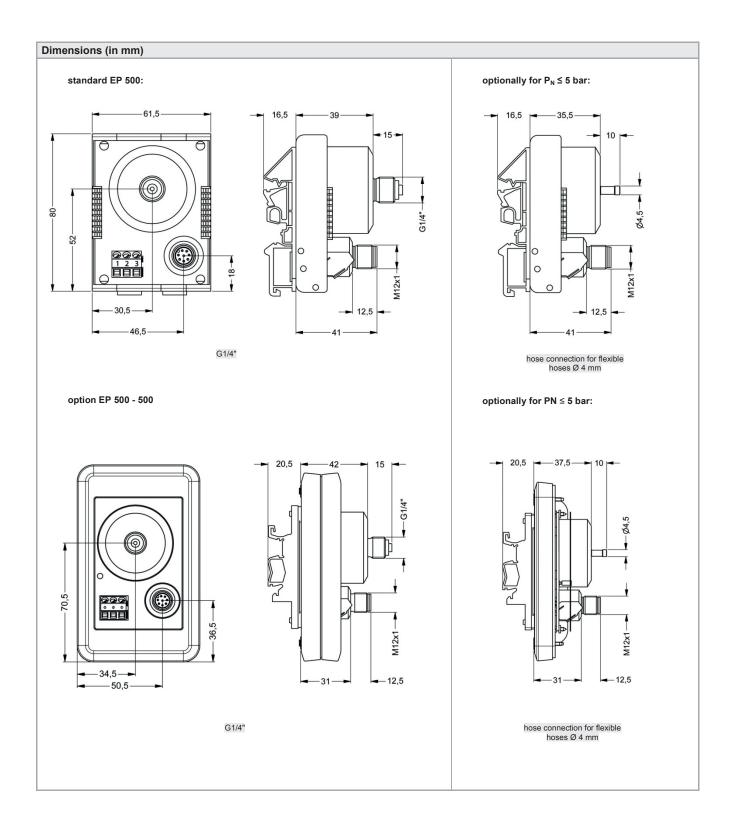
Tim comiguration		
Electrical connections	terminal clamps	M12x1 (8-polig), metal
Supply +1	1	-
Supply +2	-	4
Supply –	2	2
Tx	-	5
Rx	-	6
GND	-	7
NC NC	-	1
Shield	3	3
	·	·

Wiring diagram









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88 EP 500

Ordering code

EP 500	<u> </u>					
Pressure						
gauge	UP5					
absolute	U P 5 U P 6					consult
Input [bar]						
0.06	0 6 0 1 6 0 4 0 0	0				
0.16	1 6 0	0				
0.4	4 0 0	0				
1.0 2.0	1 0 0	1				
5.0	5 0 0	1				
10	1 0 0	2				
20	2 0 0	2				
customer	2 0 0 5 0 0 1 0 0 2 0 0 9 9 9	9				consult
Output	- ' ' '					
4 20 mA / 2-wire		1				
customer		9				consult
Accuracy						
0.2 %		B 9				
customer		9				consult
Mechanical connection hose connection Ø 4.5 mm ¹			V 0 2			
G1/4" EN 837			Y 0 2			
customer			4 0 0 9 9 9			consult
Seal			9 9 9			Corisuit
FKM			1			
customer			9			consult
Pressure port						
stainless steel 1.4301 (304)				2 M		
brass						consult
customer				9		consult
Diaphragm						
ceramics Al ₂ O ₃ 96%				2		
Special version customer				9		consult
standard standard				C	0 0	
option				5	5 0 0	consult
customer				ç	9 9	consult
Gagtomor						Soriouit

¹ hose connection only up to 5 bar



KL 1

Terminal Box

Aluminium

Product characteristics

- aluminium die cast case
- for connecting 2-wire submersible transmitters
- ▶ integrated pressure balance item
- 2 signal lines

Optional versions

- overvoltage protection with nominal discharge current of 10 kA
- Pt 100 temperature sensor for submersible pressure transmitters with built in Pt 100 sensor

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

It offers integrated atmospheric pressure compensation. Optionally with overvoltage protection and Pt 100 temperatur sensor for BD|SENSORS devices.

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.

 ϵ

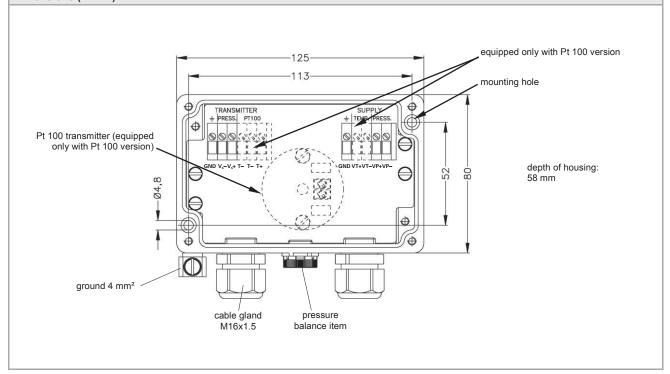
General specifications						
Number of signal lines	2-wire (4 20 mA)					
Housing	aluminium die cast case, grey powder-coating					
Ingress protection	IP 66					
Cable entries	cable gland M16x1.5 Polyamide, seals NBR, IP 68, diameter range: standard 5 10 mm others on request					
Atmospheric pressure compensation	pressure balance item with PTFE filter					
Terminal clamps	vertical clamps for stranded and solid wires up to 2.5 mm ²					
Weight	approx. 550 g					
Optional overvoltage protection						
Series resistance	10 Ω for each wire					
Nominal discharge current	10 kA (8/20 μs)					
Max. rated current	30 mA					
Optional Pt 100 temperature sen	nsor ¹					
Temperature range	standard: 0 70 °C option: T _{min} T _{max} can be in range from -40 °C up to 400 °C					
Connection temperature sensor	3-wire					
Output signal / Supply	2-wire: 4 20 mA / V _S = 12 34 V _{DC}					
Accuracy	< 0.15 %					
Linearity	< 0.1 %					
Thermal effects	< 0.01 % / K					
¹ only necessary if the transmitter is equipped with a Pt 100 temperature sensor						
Wiring diagram						

KL 1 with Pt100 emp.-signal supply + 12...34 VDC

The ground wires of all components have to be connected!

 $^{\star}\,$ The supply V_{S} has to be chosen according to needs of the used transmitter.

Dimensions (in mm)



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Ordering code

KL 1 - ZB.601	-[-[I		
Version						L	_	
standard	1	0	0					
over voltage protection	1	0	1					
thermo element Pt 100	1	Т	0					
thermo element Pt 100 and over voltage protection ¹	1	Т	1				Т	
Special version							4	
standard				C	0) (0	
customer				9	9	9	9	consult

 $^{^{\}rm 1}$ only necessary if the submersible transmitter is equipped with a Pt 100 temperature sensor



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

- overvoltage protection
- HART® 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.

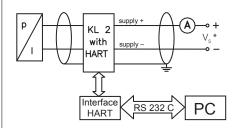
The KL 2 with optional overvoltage protection is additionally equipped with surge arresters with a nominal discharge current of 10 kA.

As a further option the KL 2 is available with a HART® connection.



General specifications				
Number of signal lines	2-wire (4 20 mA)			
Housing material plastic 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 ²			
Weight	approx. 220 g			
Optional overvoltage protecti	ion			
Series resistance	10 Ω for each wire			
Nominal discharge current	10 kA (8/20 μs)			
Max. rated current	30 mA			
Optional HART® connection				
Connections terminal clamp connection				
Wiring diagram				

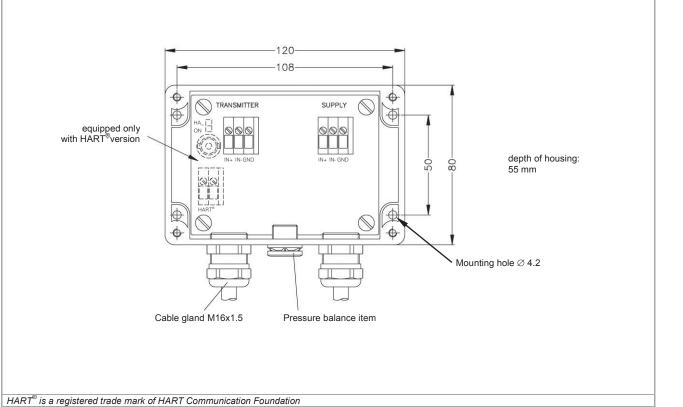
Wiring diagram



The ground wires of all components have to be connected!

 $^{\star}\,$ The supply V_{S} has to be chosen according to needs of the used transmitter.

Dimensions (in mm)



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KL 2 - ZB.601 2 0 0 2 0 1 2 2 0 2 H 0 2 H 1 standard over voltage protection version with 2 channels HART® communication interface HART® communication interface and over voltage protection 0 0 0 9 9 9 standard

consult

customer

HART® is a registered trade mark of HART Communication Foundation

Mounting flange v	with cable gland		
Technical data			cable gland M16x1.5 with
Suitable for	all probes		seal insert (for cable-Ø 4 11 mm)
Flange material	stainless steel 1.4404 (316L)		
Material of cable gland	standard: brass, nickel plated on request: stainless steel 1.4305; pla	stic	nxØd
Seal insert	material: TPE (ingress protection IP 68)		
Hole pattern	according to DIN 2507		L
Version	Size (in mm)	Weight	Øk
DN25 / PN40	D = 115, k = 85, b = 18, n = 4, d= 14	1.4 kg	25
DN50 / PN40	D = 165, k = 125, b = 20, n = 4, d= 18	3.2 kg	
DN80 / PN16	D = 200, k = 160, b = 20, n = 8, d= 18	4.8 kg	
Ordering type		Ordering code	
DN25 / PN40 with cable	e gland brass, nickel plated	ZMF2540	
DN50 / PN40 with cable	e gland brass, nickel plated	ZMF5040	
DN80 / PN16 with cable	e gland brass, nickel plated	ZMF8016	

Terminal clamp					
Technical Data			175 74 74		
Suitable for all probes with cable Ø 5.5 10.5 mm					
Material	standard: steel, zinc plated optionally: stainless steel 1.4301	P10			
Weight	approx. 160 g				
Ordering type		Ordering code			
Terminal clamp, steel, zinc plated		Z100528			
Terminal clamp, stainl	ess steel 1.4301	Z100527			

probe flange		
Technical data		
Suitable for	LMK 382, LMK 382H, LMK 458, LMK 45	8H
Flange material	stainless steel 1.4404 (316L)	
Hole pattern	according to DIN 2507	
Version	Size (in mm)	Weight
DN25 / PN40	D = 115, k = 85, b = 18, n = 4, d= 14	1.2 kg
DN50 / PN40	D = 165, k = 125, b = 20, n = 4, d= 18	2.6 kg
DN80 / PN16	D = 200, k = 160, b = 20, n = 8, d= 18	4.1 kg
Ordering type		Ordering code
Transmitter flange DN25 / PN40		ZSF2540
Transmitter flange DN	ZSF5040	
Transmitter flange DN	ZSF8016	

	Description	Display	Input
PA 430	Plug-on Display self powered with Contacts and Ex-approval	4-digit LED-display 4 x 7 mm, rotatable	4 20 mA, 0 10 V
PA 440	Field Display with Contacts and Ex-approval	4-digit LED-display 4 x 10 mm 4-digit LCD-display 4 x 18 mm	4 20 mA
PA 450	Field Display for Difference Formation	4-digit LED-display 4 x 10 mm	2 inputs: 4 20 mA
CIT 200	Process Display	4-digit LED-display 4 x 13 mm	0/4 20 mA, 0/1 5 V, 0/2 10 V, PT100 / PT500 / PT1000
CIT 250	Process Display with Contacts	4-digit LED-display 4 x 13 mm	0/4 20 mA, 0/1 5 V, 0/2 10 V, PT100 / PT500 / PT1000
CIT 300	Process Display with Contacts and Analogue Output	4-digit LED-display 4 x 20 mm	0/4 20 mA, 0/1 5 V, 0/2 10 V, PT100 / PT500 / PT1000
CIT 350	Process Display with Bargraph, Contacts and Analogue Output	4-digit LED-display 4 x 9 mm + 20-segment-Bargraph	0/4 20 mA, 0/1 5 V, 0/2 10 V
CIT 400	Process Display with Contacts, Analogue Output and Ex-approval	4-digit LED-display 4 x 10 mm	4 20 mA
CIT 600	Multichannel Process Display (LCD)	graphic LC-display 128 x 64 pixel	2 / 4 / 8 inputs: 0/4 20 mA, PT100 / PT500 / PT1000
CIT 650	Multichannel Process Display (LCD) with Datalogger	graphic LC-display 128 x 64 pixel	1 / 4 / 8 inputs: 0/4 20 mA, PT100 / PT500 / PT1000
CIT 700	Mulitchannel Process Display (TFT) with Contacts, Analogue Outputs and Datalogger	graphic 3,5" TFT- monitor, touchscreen	max. 48 inputs: 0 20 mA, 0 10 V max. 12 inputs: PT 100 / PT 500 / PT 1000 (Ω) max. 24 inputs: thermocouple (mV)
CIT 750	Mulitchannel Process Display (TFT) with Contacts, Analogue Outputs and Datalogger	graphic 5,7" TFT- monitor, touchscreen	max. 72 inputs: 0 20 mA, 0 10 V max. 18 inputs: PT 100 / PT 500 / PT 1000 (Ω) max. 36 inputs: thermocouple (mV)

Output	Housing Dimensions (B x H x T) in mm	Interface	
0 / 1 / 2 PNP-outputs 4 20 mA, 0 10 V	plastic, rotatable 47 x 47 x 68	-	bar
0 / 1 / 2 PNP- outputs 4 20 mA	plastic 120 x 80 x 57 aluminium 125 x 80 x 57	-	12.86
0 / 1 / 2 PNP- outputs 4 20 mA	plastic 120 x 80 x 57	-	un
	front panel 72 x 36 x77 (95)	RS 485 Modbus RTU	1648
0 / 1 / 2 relay- outputs	front panel 72 x 36 x 77	RS 485 Modbus RTU	1548 N N N N N N N N N N N N N N N N N N N
0 / 2 / 4 relay- outputs 0/4 20 mA	front panel 96 x 48 x 98	RS 485 Modbus RTU	1648 No. 18
0 / 2 / 4 relay- outputs 0/4 20 mA	front panel 48 x 96 x 98	RS 485 Modbus RTU	15 15 1
2 / 4 relay- outputs 0/4 20 mA	front panel 72 x 72 x 110 hat rail 70 x 75 x 110	-	
2 OC- outputs	front panel 96 x 96 x 100	RS 485 Modbus RTU	88.9
2 OC- outputs	front panel 96 x 96 x 100	RS 485 Modbus RTU USB-Host Port	88.9
max. 16 relay- outputs, max. 24 SSR-ouputs, max. 8 outputs 4 20 mA	front panel 96 x 96 x 100	RS 485 Modbus RTU, RS 232, Ethernet (Modbus TCP, Java Applets) USB Host Port	
max. 36 relay- outputs, max. 72 SSR-outputs, max. 24 outputs 4 20 mA	front panel 144 x 144 x 100	RS 485 Modbus RTU, RS 232, Ethernet (Modbus TCP, Java Applets) USB Host Port	

COMPETENCE

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