



# LMK 458

## Probe For Marine And Offshore

Ceramic Sensor

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

#### **Nominal pressure**

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

#### **Output signals**

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

#### **Special characteristics**

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

### **Optional versions**

- ▶ diaphragm Al<sub>2</sub>O<sub>3</sub> 99.9 %
- different housing materials (stainless steel, CuNiFe)
- IS-version 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 certificated 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



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

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



monitoring of a ship's position and draught

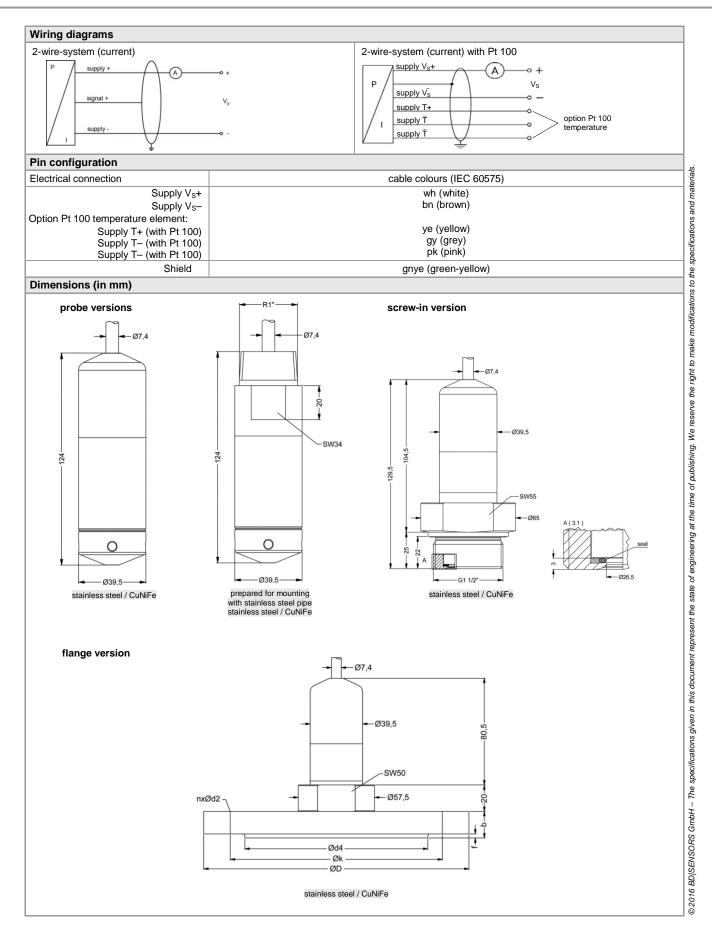
level measurement in ballast and storage tanks





Pressure ranges																
Nominal pressure <sup>1</sup>	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Level	[mH <sub>2</sub> O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Permissible vacuum	[bar]	-0			).3		-0.	.5					-1			
<sup>1</sup> available in gauge and ab	solute; nomir	nal pressi	ure rang	es abso	lute fron	n 1 bar										
Output signal / Supply		<b>a</b> :	4 00	• / \ /		00.14				0414						
Standard Option IS-version					$s = 9 \dots$	32 V <sub>DC</sub> . 28 V <sub>DC</sub>			rated = 2							
Performance		Z-wite.	4 20	IIIA / V	s = 14.	. 20 VDC	;	vs	rated =	24 VDC						
Accuracy <sup>2</sup>		standar	d. < + 0	25 % F	50				ontic	n: for F	2 > 0.6	har <sup>3.</sup>	< + 0 1	% FSC	)	
Permissible load						0			opiic	n. 101 F	N = 0.0	Dai .	<u> </u>	/0100	,	
Long term stability		$R_{max} = [(V_S - V_{S \min}) / 0.02 \text{ A}] \Omega$ $\leq \pm 0.1 \% \text{ FSO / year at reference conditions}$														
Influence effects		supply: 0.05 % FSO / 10 V permissible load: 0.05 % FSO / $k\Omega$														
Turn-on time		700 ms														
Mean response time		< 200 r							mea	an mea	suring	rate 5/s	sec			
Max. response time	00770 //	380 ms						- 1 - 1- 11:1	<b>`</b>							
<sup>2</sup> accuracy according to IEC <sup>3</sup> Under the influence of dist	urbance burs	t point ac st accordi	ijustmen ing to El	v 61000	nearity, 1 -4-4 (200	nysteresi 04) +2 k\	is, repea / accura	atability, acy deci	) reased :	to ≤ ± 0.	25 % F	SO.				
Thermal effects / Perm			<u> </u>													
Thermal error			% FSC				compen		ange -							
Permissible temperatures		mediur	n / elect	tronics /	enviror	nment: -2	25 12	25 °C		stora	ge: -40	125	°C			
Electrical protection <sup>4</sup>																
Short-circuit protection		permar														
Reverse polarity protectio Electromagnetic compatib					no functi v accore											
	hity		N 61326		y accon	0	maniscl	her Llo <sup>,</sup>	yd (GL	)		- De	t Norsk	e Verita	as (DN\	√)
<sup>4</sup> additional external overvol	tage protecti	on unit in	termina	l box KL	1 or KL	2 with a	tmosph	eric pre	ssure re	eference	e availal	ble				
Mechanical stability																
Vibration		4 g (ac	cording	to GL:	curve 2	/ accord	ding to [	DNV: C	lass B	/ basis	: DIN E	N 600	68-2-6)			
Electrical connection											,					
Cable outlet						air tube be is plu		nosphe	ric refe	rence (1	for nom	inal pr	essure	ranges	sealed	I
		gauge				be is pic	iggeu)									
Materials		otondo	rd: otoin		ol 1 14	24 (246)	)									
Housing		1				04 (316L Int agair		water)					(	others c	n reque	est
Seals (media wetted)		standa		KM	(	an agai		matory								
. ,		options				in. perm	nissible	temper						others c	on reque	əst
Diaphragm					2O3 96 9					tion: ce						
Cable sheath		TPE -U				haloger salt, se				stance	against	oil and	a gasoi	ine,		
Miscellaneous				551512111	agamo	. san, se	a water	, neav	y Oll)							
Optionally cable protection	า	stainle	ss steel	pipe fo	r probe	in stainle	ess ste	el: avai	lable a	s comp	act pro	duct (s	tandard	d: stainl	ess ste	el pipe
			total len	igth up t	to 2 m p	ossible;	other le	engths	on req	uest)						
Ingress protection		IP 68	4													
Current consumption Weight		max. 2	1 mA 50 g (wit	thout or	blo)											
CE-conformity			org (will Directive													
Option Pt 100 temperat	ture eleme				00,20											
Temperature range		-25 *	125°C													
Connection temperature e	element	3-wire														
Resistance		100 Ω at 0°C														
Temperature coefficient		3850 p	•													
Supply Is	nmont	0.3 1	1.0 mA <sub>1</sub>	DC	_	_	_	_				_		_	_	_
Category of the environ Lloyd's Register (LR)	ment	ENA) /4								mber of	f oomiti	oto: 1	2/2005	5		
Germanischer Lloyd (GL)				., EIVI V 3	, EMV4											
		D, EN					<u>,</u>			mber of		ale: 60	J 48 I -	09 HH		
Det Norske Veritas (DNV)			erature:		nu patibility	midity: E /: B	5			ration: mber of		ate <sup>.</sup> A	-12144			
IS-protection					,	-										
Approval DX14A-LMK 458	3	IBEVI	J 07 AT	EX 118	0 X				70	ne 0: 1	I 1G E	( ja IIR	T4 Ga			
Safety technical maximum		U <sub>i</sub> = 2	8 V, I <sub>i</sub> =	93 mA,	P <sub>i</sub> = 66	0 mW, 0 enclosu		5 nF; L <sub>i</sub>							iner cap	bacity
		U IIId.														
Permissible temp.for envir	onment	in zon				p <sub>atm</sub> 0.8		to 1.1 I	bar zo	ne 1 ar	nd highe	er: -25	70°C	2		
Permissible temp.for envir Connecting cables (by factory)	ronment	cable		20 60 y:	°C with signal li		bar up d as we	ell as si	gnal lin	e/signa	al line: 1	60 pF/	′m	2		

LMK 458 Hydrostatic Probe



Probe flange for flange version	
Technical Data	
Suitable for	LMK 382, LMK 382H, LMK 458
Flange material	stainless steel 1.4404 (316L)
Hole pattern	according to DIN 2507
Version	Size (in mm)
DN25 / PN40	D = 115, k = 85, d4 = 68, b = 18, f = 2, n = 4, d2 = 14
DN50 / PN40	D = 165, k = 125, d4 = 102, b = 20, f = 3, n = 4, d2 = 18
DN80 / PN16	D = 200, k = 160, d4 = 138, b = 20, f = 3, n = 8, d2 = 18
Ordering type	
Probe flange DN25 / PN40	ZSF2540
Probe flange DN50 / PN40	ZSF5040
Probe flange DN80 / PN16	ZSF8016

Assembling flange with cable gland

Technical Data											
Suitable for	all probes	cable gland M16x1.5 with 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 (303); plastic	nxØd									
Seal insert	material: TPE (ingress protection IP 68)										
Hole pattern	according to DIN 2507										
Version	Size (in mm)	۵									
DN25 / PN40	D = 115, k = 85, b = 18, n = 4, d = 14										
DN50 / PN40	D = 165, k = 125, b = 20, n = 4, d = 18	Øk									
DN80 / PN16	D = 200, k = 160, b = 20, n = 8, d = 18	ØD									
Ordering type											
Assembling Flange DN25 / PN40	ZMF2540										
Assembling Flange DN50 / PN40	ZMF5040										
Assembling Flange DN80 / PN16	ZMF8016										





		С	rde	eri	ng	CC	de	LM	K 4	58								
	·0			П	Т	٦ r	- 	1 -			1 -	1 -		r		7		
LMK 45	00		╏╹∟			1-L	1-L	╏╌└		-	╏╌└∟	l-L	-L					
Pressure																		
	in bar, gauge	765																
	in bar, absolute <sup>1</sup> in mH <sub>2</sub> O	7 6 8 7 6 6																
Input	[mH <sub>2</sub> O] [bar]	7 0 0																
	0.40 0.04			4	0 0													
	0.60 0.06		0	6	0 0													
	1.0 0.10 1.6 0.16		1		0 0 0 0													
	2.5 0.25		2	5														
	4.0 0.40		4		0 0													
	6.0 0.60		6	0	0 0													
	10 1.0		1		0 1													
	16 1.6		1		0 1													
	25 2.5 40 4.0		2	5 0	0 1 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 9	0 2 9 9	2												oo noult
Housing	customer		9	9	9 5	,												consult
	teel 1.4404 (316L)		_	_	_													
Copper-Nickel-allo						ł	<											
	customer					ę	9											consult
Design	Probe						4											
	Flange version <sup>2</sup>						1 3											
	Screw-in version						5											
Diaphragm							-											
	ramics Al <sub>2</sub> O <sub>3</sub> 96%							2										
Cera	mics Al <sub>2</sub> O <sub>3</sub> 99.9%							C										
Output	customer							9									_	consult
	20 mA / 2-wire	_	_	-	-	_	_	_	1								_	_
	20 mA / 2-wire								Ē									
· · · · ·	customer								9									consult
Seals	FKM									4								
	EPDM									1 3								
	FFKM <sup>3</sup>									7								
	customer									9								consult
Electrical connection																		
	TPE-U-cable <sup>4</sup>										4							
Accuracy	customer										9							consult
standard	0.25 %											2						
option für P <sub>N</sub> ≥0.6 bar:	0.1 %											1						
	customer											9						consult
Cable length	in m												0	0				

<sup>1</sup> nominal pressure ranges absolute from 1 bar

<sup>2</sup> mounting accessories are not part of supply and have to be ordered separately

with temperature sensor Pt 100 prepared for mounting with st. steel pipe <sup>5</sup>

in m

standard

customer

<sup>3</sup> min. permissible temperature from -15°C

Special version

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

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

consult