



# LMK 458H

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

Ceramic Sensor

accuracy according to IEC 60770: 0.1 % FSO

#### **Nominal pressure**

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

#### **Output signals**

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

#### **Special characteristics**

- ▶ diameter 39.5 mm
- HART<sup>®</sup> communication (setting of offset, span and damping)
- ► high overpressure resistance
- ► high long-term stability

#### **Optional versions**

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

The hydrostatic probe LMK 458H has been developed for measuring level in service and storage tanks and is 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



<u>Water</u> Drinking water abstraction Desalinization plant

Shipbuilding / Offshore



Ballast tanks Draught monitoring Level measurement in ballast and storage tanks

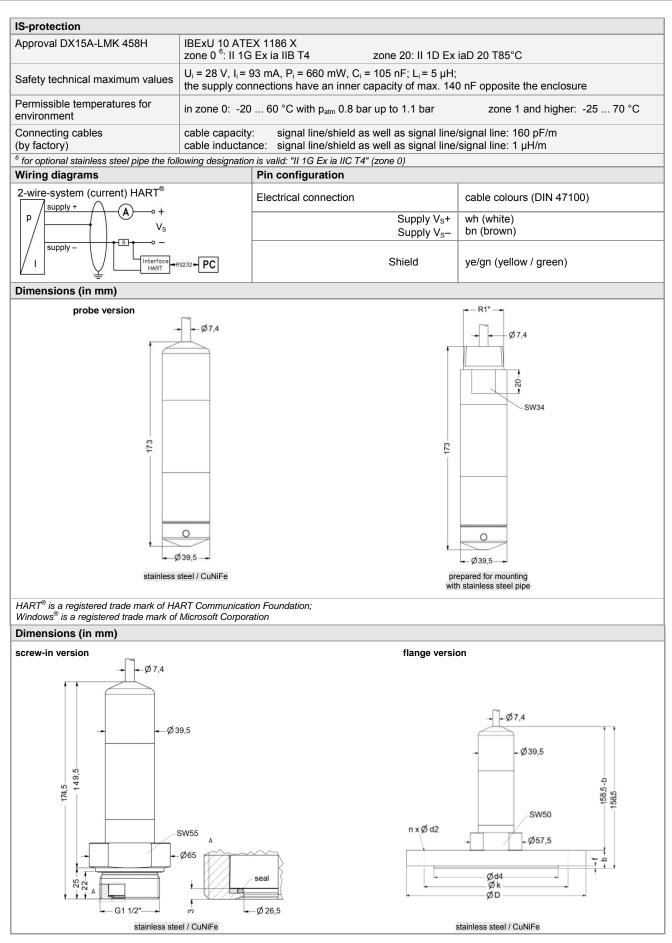




Tel: +49 (0) 92 35 / 98 11- 0 Fax: +49 (0) 92 35 / 98 11- 11

Pressure ranges									
Nominal pressure <sup>1</sup>	[bar]	0.06	0.16	0.4	1	2	5	10	20
Level	[mH <sub>2</sub> O]	0.6	1.6	4	10	20	50	100	200
Overpressure	[bar]	2	4	6	8	15	25	35	45
<sup>1</sup> On customer request we		evices by softwa	are on the requ	ired pressure ra	nges, within the	turn-down p	ossibility (stari	ing at 0.02 bai	r).
Output signal / Supply									
Standard		2-wire: 4 2			with HART®			$_{\rm S rated}$ = 24 V <sub>D</sub>	-
Option IS-version		2-wire: 4 2	$20 \text{ mA / V}_{s} =$	14 28 V <sub>DC</sub>	with HART®	communica	ation V	$_{\rm S rated}$ = 24 V	C
Performance		r							
Accuracy <sup>2</sup>		P <sub>N</sub> ≥ 160 mbar		TD ≤ 1:5 TD > 1:5	≤ ± 0.2 % FSO ≤ ± [0.2 + 0.03 x TD] % FSC		[D] % FSO	TD <sub>max</sub> = 1:10	
		$P_N < 160 \text{ mbar}$			≤ ± [0.2 + 0.1 x TD] % FSO		TD <sub>max</sub> = 1:3		
		$P_N \ge 0.6$ bar		TD ≤ 1:5 TD > 1:5	≤ ± 0.1 % FSO ≤ ± [0.1 + 0.02 x TD] % FSO		TD <sub>max</sub> = 1: 10		
Permissible load		$R_{max} = [(V_S -$	V <sub>S min</sub> ) / 0.02	A] Ω	load at HA	RT <sup>®</sup> -comm	unication: R	<sub>min</sub> = 250 Ω	
Long term stability					erence conditi				
Influence effects			% FSO / 10				oad: 0.05 %	FSO / kΩ	
Turn-on time		850 msec			F				
Mean response time			thout conside	eration of elec	tronic dampin	g	mean	measuring r	ate 7/sec
Max. response time		380 msec						3	
Adjustability		configuration of following parameters possible (interface / software necessary <sup>3</sup> ): - electronic damping: 0 100 sec - offset: 0 80 % FSO - turn down of span: max. 1:10							
<sup>2</sup> accuracy according to IEC <sup>3</sup> software, interface, and ca	60770 – lim able have to	it point adjustm be ordered sep	ent (non-linear arately (softwa	rity, hysteresis, re appropriate f	repeatability) or Windows <sup>®</sup> 95	, 98, 2000, N	T Version 4.0	or higher, and	XP)
Thermal effects (Offse	t and Spar	n) / Permissil	ole temperat	ures					
Tolerance band			m-down] % F						
TC, average			urn-down] %	FSO / 10 K					
in compensated range		-20 80 °C							
Permissible temperature	es	medium: -25	85 °C	electronics	s / environmer	nt: -25 85	°C stor	age: -25 8	35 °C
Electrical protection <sup>4</sup>									
Short-circuit protection		permanent							
Reverse polarity protect Electromagnetic compa		no damage, but also no function emission and immunity according to - EN 61326 - Germanischer Lloyd (GL) - Det Norske Veritas (DNV)							
<sup>4</sup> additional external overvo	ltage protect	ion unit in termi	inal box KL 1 o	r KL 2 with atm	ospheric pressu	re reference a	available		
Mechanical stability									
Vibration		4 g (accordir	ng to GL: cur	ve 2 / accordi	ng to DNV: Cl	ass B / bas	is: DIN EN 6	60068-2-6)	
Electrical connection		·							
Cable outlet with sheat material <sup>5</sup>		PUR FEP TPE others on rea	(-25 70 (-25 70 (-25 85 quest	)°C) bla	ack ack lue				
<sup>5</sup> shielded cable with integra	ated air tube			rence					
Materials (media wette		P ····							
Housing		standard: sta others on ree		1.4404 (316L)	option	: CuNi10Fe	1Mn (resista	int against se	ea water)
Seals		FKM; FFKM others on ree	; EPDM						
Diaphragm		standard: ce	•	96 %	option	: ceramics	Al <sub>2</sub> O <sub>3</sub> 99.9 %	)	
Nose cone		POM							
Category of the enviro	nment								
	_)	D, EMC 1			r	umber of ce	ertificate: 19	777 - 11 HH	
Germanischer Lloyd (GL					v	ibration: B			
- · ·	V)	temperature electromagn	: D h etic compatit	numidity: B pility: B		umber of ce	ertificate: A-1	2144	
Det Norske Veritas (DN	∨)	· ·				umber of ce	ertificate: A-1	2144	
Det Norske Veritas (DN) Miscellaneous	∨)	electromagn stainless ste	etic compatit	oility: B obe in stainle		able as com	pact produc		stainless
Germanischer Lloyd (GL Det Norske Veritas (DN Miscellaneous Cable protection Ingress protection	V) 	electromagn stainless ste	etic compatit	oility: B obe in stainle	n ss steel: availa	able as com	pact produc		stainless
Det Norske Veritas (DN <b>Miscellaneous</b> Cable protection Ingress protection Current consumption	∨)	electromagn stainless ste steel pipe wi IP 68 max. 21 mA	etic compatit el pipe for pr th a total lenç	obe in stainle gth up to 2 m	n ss steel: availa	able as com	pact produc		stainless
Det Norske Veritas (DN <b>Miscellaneous</b> Cable protection Ingress protection	V)	electromagn stainless ste steel pipe wi IP 68 max. 21 mA min. 650 g (v	etic compatit el pipe for pr th a total lenç	obe in stainle gth up to 2 m	n ss steel: availa	able as com	pact produc		stainless

## LMK 458H Hydrostatic Probe



#### Accessories

Transmitter flange for	flange version						
Technical data							
Suitable for	LMK 382, LMK 382H, LMK 458, LMK 458H						
Flange material	stainless steel 1.4404 (316L)						
Hole pattern	according to DIN 2507						
Version	Size (in mm)		Weight				
DN25 / PN40	D = 115, k = 85, d4 = 68, b = 18, f = 2, n	= 4, d2 = 14	1.2 kg				
DN50 / PN40	D = 165, k = 125, d4 = 102, b = 20, f = 3	n = 4, d2 = 18	2.6 kg				
DN80 / PN16	D = 200, k = 160, d4 = 138, b = 20, f = 3	n = 8, d2 = 18	4.1 kg				
Ordering type			Ordering code				
Transmitter flange DN25	5 / PN40		ZSF2540				
Transmitter flange DN50	) / PN40		ZSF5040				
Transmitter flange DN80	) / PN16		ZSF8016				
Mounting flange with o	able 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; pla	stic					
Seal insert	material: TPE (ingress protection IP 68)						
Hole pattern	according to DIN 2507						
Version	Size (in mm)	Weight					
DN25 / PN40	D = 115, k = 85, b = 18, n = 4, d= 14	1.4 kg					
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	gland brass, nickel plated	ZMF2540					
DN50 / PN40 with cable	gland brass, nickel plated	ZMF5040					
DN80 / PN16 with cable	gland brass, nickel plated	ZMF8016					





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

<sup>1</sup> nominal pressure ranges sealed gauge and absolute from 1 bar

<sup>2</sup> optionally for submersible transmitter (type of construction)

<sup>3</sup> mounting accessories are not part of supply and have to be ordered separately

<sup>4</sup> shielded cable with integrated air tube for atmospheric reference
<sup>5</sup> stainless steel pipe is not part of the supply

<sup>6</sup> only possible for  $P_N \ge 0,60$  bar

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price list contains product specification; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice. بي. 10.01.2013 بې

