



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

- shipping approvals acc. to: Lloyd's Register (LR),
 Det Norske Veritas (DNV),
 China Classification Society (CCS),
 American Bureau of Shipping (ABS)
- ▶ 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 gas and dust
- ▶ 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 certificated for shipbuilding and offshore applications.

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

Preferred areas of use are



Water

drinking water abstraction desalinization plant

Shipbuilding / Offshore



ballast tanks draught monitoring level measurement in ballast and storage tanks











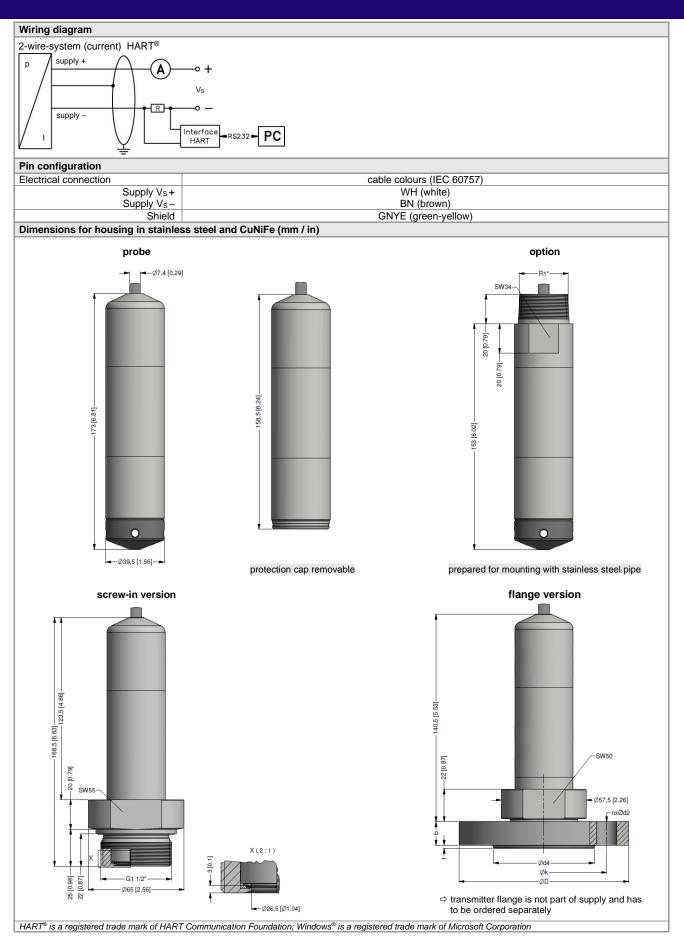




Pressure ranges									
Nominal pressure gauge 1	[bar]	0.06	0.16	0.4	1	2	5	10	20
Level	[mH ₂ O]	0.6	1.6	4	10	20	50	100	200
Overpressure	[bar]	2	4	6	8	15	25	35	45
Max. ambient pressure (housing): 40 bar									
on customer request we adjust the devices by software on the required pressure ranges, within the turn-down possibility (starting at 0.02 bar)									

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Output signal / Supply					
Standard	2-wire: 4 20 mA / V _S =	12 36 Vpc	with HART® communication	1	Vs rated = 24 Vpc
Option IS-version		2-wire: 4 20 mA / V _S = 14 28 V _{DC}			$V_{S rated} = 24 V_{DC}$
Performance	1		with HART® communication		- Grancu = 1 - DG
Accuracy ²	p _N ≥ 160 mbar	TD ≤ 1:5	≤ ± 0.2 % FSO		
Accuracy	p _N ≥ 100 IIIbai	TD ≥ 1.5	≤ ± 0.2 % FSO ≤ ± [0.2 + 0.03 x TD] % FSO	0	TD _{max} = 1:10
	n. < 160 mhar	10 > 1.5			TD 1.2
	p _N < 160 mbar	TD . 4.5	≤ ± [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
		TD > 1:5	≤ ± [0.1 + 0.02 x TD] % FS0		
Permissible load	$R_{\text{max}} = [(V_{\text{S}} - V_{\text{S} min}) / 0.02]$		load at HART®-communica	tion: $R_{min} = 2$	50 Ω
Long term stability	≤ ± (0.1 x turn-down) FSC				
Influence effects	supply: 0.05 % FSO / 10 \	/	permissible load: 0.05 % FS	3O / kΩ	
Turn-on time	850 msec				
Mean response time	140 msec without conside	ration of electr	onic damping	mean m	easuring rate 7/sec
Max. response time	380 msec				
Adjustability			ssible (interface / software ned	cessary ³):	
	electronic damping: 0 1		offset: 0 80 % FSO	turn dov	vn of span: max. 1:10
² accuracy according to IEC 60770 – limit	t point adjustment (non-linearity, l	hysteresis, repeat	tability)	40 - 11-1-1	()(D)
³ software, interface, and cable have to b	<u> </u>		ndows® 95, 98, 2000, NT Version 4	.u or nigner, ar	1a XP)
Thermal effects (offset and span)	<u> </u>	S			
Tolerance band	≤±1%FSO				
in compensated range	-20 80 °C				
Permissible temperatures	medium / electronics / env	rironment / stor	age: -25 85 °C		
Electrical protection ⁴					
Short-circuit protection	permanent				
Reverse polarity protection	no damage, but also no fu	ınction			
Electromagnetic compatibility	emission and immunity ac	cording to			
. ,	- EN 61326	- DNV (E	Det Norske Veritas)		
⁴ additional external overvoltage protection	on unit in terminal box KL 1 or KL				
Mechanical stability					
Vibration	4 a (according to DNV: cla	ass B curve 2	/ basis: DIN EN 60068-2-6)		
Electrical connection	+ g (according to DIVV. cit	doo b, curve z	Dadio. Dire Ere 00000 2 0)		
	TDE II blue 0.7.4 m				
Cable with sheath material ⁵	TPE-U blue Ø 7.4 m			20 (11 11	P
Bending radius	static installation: 10-fold				
⁵ shielded cable with integrated ventilatio	in tube for atmospheric pressure i	reierence (for nor	ninai pressure ranges absolute trie	ventilation tub	e is ciosea)
Materials (media wetted)					
Housing	standard: stainless steel 1	.4404 (316L)	option: CuNi10Fe1Mn	(resistant ac	jainst sea water)
Seals	standard: FKM				
B: 1			e temperature from -15 °C)		others on request
Diaphragm	standard: ceramics Al ₂ O ₃	96 %	option: ceramics Al ₂ O	3 99.9 %	
Protection cap	POM-C				
Cable sheath			increased resistance against	oil and gasoli	ne,
	resistant agains	t salt, sea wate	er, heavy oil)		
Miscellaneous					
Option cable protection	prepared for mounting wit	h etainlace eta	al nine		
for probes in stainless steel	prepared for mounting wit	II Stairliess stee	si pipe		
Ingress protection	IP 68				
Current consumption	max. 21 mA				
Weight	min. 650 g (without cable)				
CE-conformity	EMC Directive: 2014/30/E	:U			
ATEX Directive	2014/34/EU				
Category of the environment					
Lloyd's Register (LR)	EMV1, EMV2, EMV3, EM	V4	numl	per of certific	ate: 13/20056
Det Norske Veritas (DNV)	temperature: D	vibration:			ate: TAA00001GM
Det Norske Ventas (BNV)	humidity: B	enclosure:	D	JOI OF COTTINO	atc. 171/10000101VI
	electromagnetic compatib		В		
Evalosion protostica	Sicon ornagnetic compatib	ку.			
Explosion protection	IDE II 40 ATEX 4405 Y	00.11.	2.E	# 4B E : ::	IO T405 00 D
Approval DX15A-LMK 458H	IBExU 10 ATEX 1186 X			II 1D Ex ia II	IC T135 °C Da
Safety technical maximum values	$U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i =$				
			pacity of max. 110 nF opposite	e the enclosu	re
Permissible temperatures for			_{ttm} 0.8 bar up to 1.1 bar		
environment		70 °C			
Connecting cables			well as signal line/signal line:		
(by factory)			well as signal line/signal line:	1 μH/m	
of for optional stainless steel pipe the following	for optional stainless steel pipe the following designation is valid: "II 1G Ex ia IIC T4" (zone 0)				





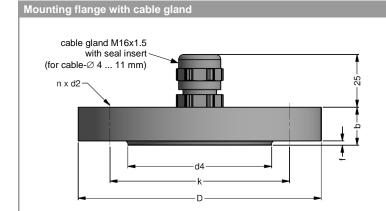


Transmitter flange for flange version n x Ød2 d4 k D

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

Technical data	
Suitable for	LMK 382, LMK 382H, LMK 458, LMK 458H
Flange material	stainless steel 1.4404 (316L)
Hole pattern	according to DIN 2507

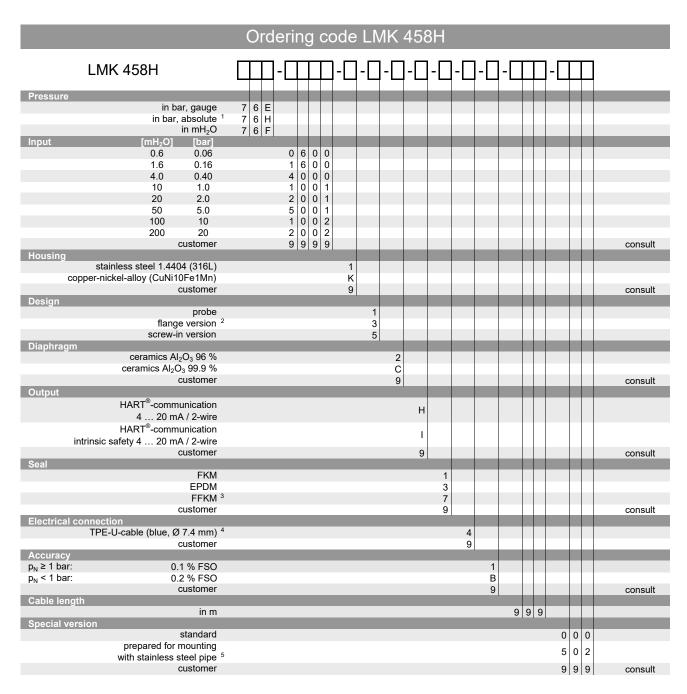
Ordering type	Ordering code	Weight
Transmitter flange DN25 / PN40	ZSF2540	1.2 kg
Transmitter flange DN50 / PN40	ZSF5040	2.6 kg
Transmitter flange DN80 / PN16	ZSF8016	4.1 kg



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

Technical data Suitable for all probes Flange material stainless steel 1.4404 (316L) Material of cable gland standard: brass, nickel plated on request: stainless steel 1.4305 (303); plastic Seal insert material: TPE (ingress protection IP 68) Hole pattern according to DIN 2507

Ordering type	Ordering code	Weight
DN25 / PN40 with cable gland brass, nickel plated	ZMF2540	1.4 kg
DN50 / PN40 with cable gland brass, nickel plated	ZMF5040	3.2 kg
DN80 / PN16 with cable gland brass, nickel plated	ZMF8016	4.8 kg



¹ nominal pressure ranges and absolute from 1 bar

HART® is a registered trade mark of HART Communication Foundation

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

³ min. permissible temperature from -15°C

⁴ shielded cable with integrated ventilation tube for atmospheric reference

⁵ possible for probes in stainless steel; stainless steel pipe is not part of the supply