

LMK 458

Probe for Marine and Offshore

Ceramic Sensor

accuracy according to IEC 61298-2:
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
- ▶ diaphragm ceramics Al₂O₃ 99.9 %
- ▶ LR-certificate (Lloyd's Register)
- ▶ DNV-approval
- ▶ ABS-certificate
(American Bureau of Shipping)
- ▶ CCS-certificate
(China Classification Society)
- ▶ high overpressure resistance
- ▶ high long-term stability

Optional versions

- ▶ different housing materials
(stainless steel, CuNiFe)
- ▶ IS-version
Ex ia = intrinsically safe for gas
- ▶ screw-in and flange version
- ▶ accessories e.g. assembling and probe
flange, mounting clamp

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

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

Preferred areas of use are



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 gauge ¹	[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	[mH2O]	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]	-0.2		-0.3		-0.5				-1								
Max. ambient pressure (housing): 40 bar																		
¹ available in gauge and absolute; nominal pressure ranges absolute from 1 bar																		
Output signal / Supply																		
Standard	2-wire: 4 ... 20 mA / V _S = 10 ... 32 V _{DC}									V _S rated = 24 V _{DC}								
Option IS-version	2-wire: 4 ... 20 mA / V _S = 12 ... 28 V _{DC}									V _S rated = 24 V _{DC}								
Performance																		
Accuracy ²	standard: ≤ ± 0.25 % FSO									option: for p _N ≥ 0.6 bar ³ : ≤ ± 0.1 % FSO								
Permissible load	R _{max} = [(V _S – V _{S min}) / 0.02 A] Ω																	
Long term stability	≤ ± 0.1 % FSO / year at reference conditions																	
Influence effects	supply: 0.05 % FSO / 10 V									permissible load: 0.05 % FSO / kΩ								
Turn-on time	700 msec																	
Mean response time	< 200 msec									mean measuring rate 5/sec								
Max. response time	380 msec																	
² accuracy according to IEC 61298-2 – limit point adjustment (non-linearity, hysteresis, repeatability)																		
³ under the influence of disturbance burst according to EN 61000-4-4 (2004) +2 kV accuracy decreased to ≤ ± 0.25 % FSO																		
Thermal effects (offset and span) / Permissible temperatures																		
Tolerance band	≤ ± 1 % FSO									in compensated range -20 ... 80 °C								
Permissible temperatures	medium / electronics / environment: -25 ... 125 °C									storage: -40 ... 125 °C								
Electrical protection ⁴																		
Short-circuit protection	permanent																	
Reverse polarity protection	no damage, but also no function																	
Electromagnetic compatibility	emission and immunity according to									- EN 61326				- DNV				
⁴ additional external overvoltage protection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available																		
Mechanical stability																		
Vibration	4 g (according to DNV: class B, curve 2 / basis: DIN EN 60068-2-6)																	
Electrical connection																		
Cable with sheath material ⁵	TPE-U blue Ø 7.4 mm																	
Bending radius	static installation: 10-fold cable diameter									dynamic application: 20-fold cable diameter								
⁵ shielded cable with integrated ventilation tube for atmospheric pressure reference (for nominal pressure ranges absolute, the ventilation tube is closed)																		
Materials																		
Housing	standard: stainless steel 1.4404 (316L) option: CuNi10Fe1Mn (resistant against sea water)																	

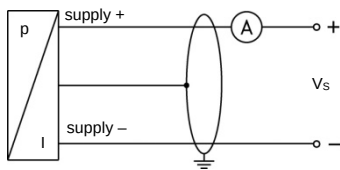
LMK 458

Probe for Marine and Offshore

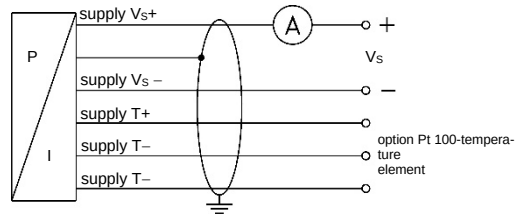
Technical Data

Wiring diagrams

2-wire-system (current)



2-wire-system current (pressure) / 3-wire-system (temperature)



Pin configuration

Electrical connection

Supply $V_s +$
Supply $V_s -$

Option Pt 100 temperature element:

Supply $T +$
Supply $T -$
Supply $T -$

Shield

cable colours (IEC 60757)

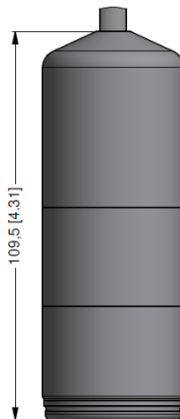
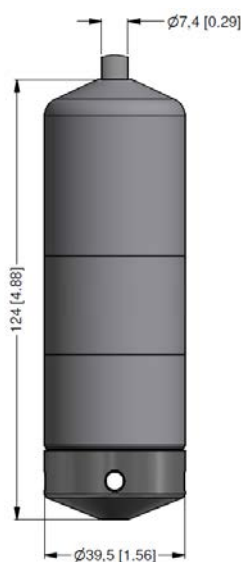
WH (white)
BN (brown)

YE (yellow)
GY (grey)
PK (pink)

GNYE (green-yellow)

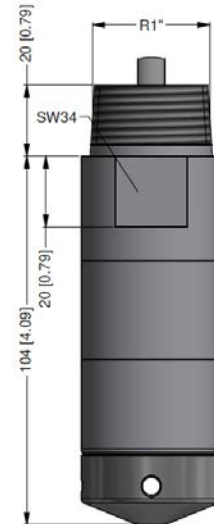
Dimensions for housing in stainless steel and CuNiFe (mm / in)

probe



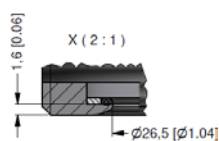
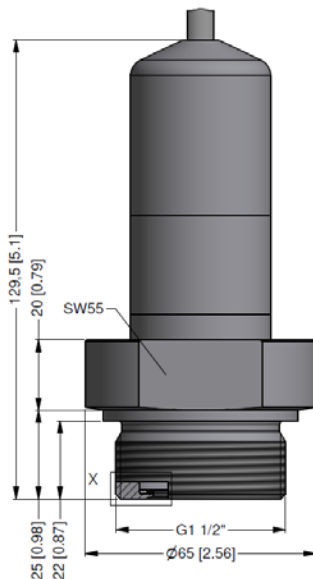
protection cap removable

option

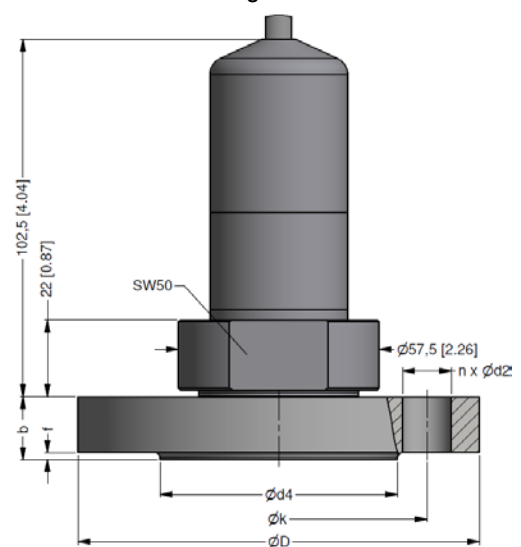


prepared for mounting with stainless steel pipe

screw-in version

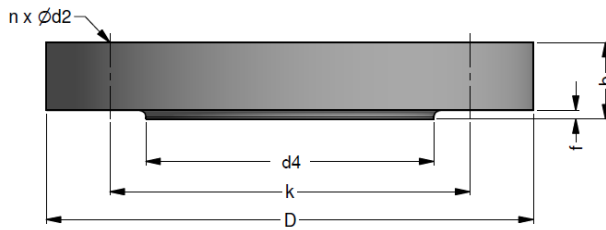


flange version



⇒ transmitter flange is not part of supply and has to be ordered separately

Transmitter flange for flange version



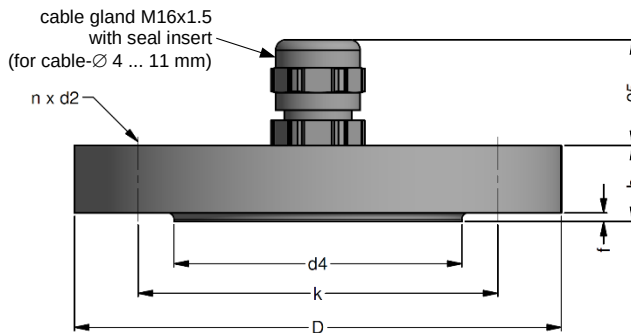
dimensions in mm			
size	DN25 / PN40	DN50 / PN40	DN80 / PN16
b	18	20	20
D	115	165	200
d2	14	18	18
d4	68	102	138
f	2	3	3
k	85	125	160
n	4	4	8

Technical data

Suitable for	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

Mounting flange with cable gland



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

Technical data

Suitable for	all probes
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

Ordering code LMK 458

LMK 458

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Pressure									
	in bar, gauge	7	6	5					
	in bar, absolute ¹	7	6	8					
	in mH ₂ O	7	6	6					
Input									
	[mH ₂ O]	[bar]							
	0.4	0.04	0	4	0	0			
	0.6	0.06	0	6	0	0			
	1.0	0.10	1	0	0	0			
	1.6	0.16	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			
	200	20	2	0	0	2			
	customer		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				3				
	screw-in version				5				
Diaphragm									
	ceramics Al ₂ O ₃ 99.9 %				C				
	customer				9				consult
Output									
	4 ... 20 mA / 2-wire				1				
	intrinsic safety 4 ... 20 mA / 2-wire				E				
	customer				9				consult
Seal									
	FKM				1				
	EPDM				3				
	FFKM ³				7				
	customer				9				consult
Electrical connection									
	TPE-U-cable (blue, Ø 7.4 mm) ⁴				4				
	customer				9				consult
Accuracy									
	standard	0.25 % FSO			2				
	option für P _N ≥ 0.6 bar:	0.1 % FSO			1				
	customer				9				consult
Cable length									
	in m				9	9	9		
Special version									
	standard				0	0	0		
	with temperature sensor Pt 100 ⁵				0	1	3		
	prepared for mounting ⁶				5	0	2		
	with stainless steel pipe								
	customer				9	9	9		consult

¹ nominal pressure ranges absolute from 1 bar

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 not possible in combination with IS-version

⁶ possible for probes in stainless steel; stainless steel pipe is not part of the supply