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SENSORS
pressure measurement



LMK 457

Hydrostatic Level Transmitter for Shipbuilding and Offshore

- ▶ capacitive ceramic sensor
- ▶ materials: 1.4571 (316Ti); optional CuNiFe
- ▶ submersible or flange construction
- ▶ nominal pressure ranges from 0 ... 40 mbar / 0 ... 40 cmWC up to 0 ... 25 bar / 0 ... 250 mWC

The hydrostatic level transmitter LMK 457 has been designed especially for shipbuilding and offshore applications with rough environmental and operation conditions. The transmitters are suitable for level measurement of fluids or pasty media in open tanks, containers, or reservoirs.

Based on a rugged and reliable capacitive ceramic sensor the LMK 457 is qualified for measuring small filling heights with high accuracy.

Due to the different housing materials such as stainless steel 1.4571 (316Ti) or the special copper-nickel-alloy CuNiFe in combination with several mounting types, the LMK 457 covers a lot of applications in shipbuilding and offshore business. Usage with many occurring media in various applications is possible.

The LMK 457 as a standard complies with the requirements of Germanischer Lloyd (GL) and Det Norske Veritas (DNV). Additionally, the devices can optionally be delivered with ATEX certificate.

Typical areas of use are:

- ▶ ballast tanks
- ▶ fuel and oil tanks
- ▶ service and waste water tanks, etc.

Characteristics

- ▶ small thermal effect
- ▶ excellent linearity
- ▶ good long term stability
- ▶ accuracy according IEC 60770: 0.35 % FSO
Option: 0.25 % FSO
- ▶ option Ex: II 2 G EEx ia IIC T4 (TÜV 03 ATEX 2006 X)
- ▶ customer specific versions:
 - special pressure ranges
 - other versions on request



LMK 457

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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	25
Level [mWC]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250
Permissible overpressure [bar]	1	1	2	2	4	4	4	7	7	15	25	25	40	60	60

Output signal / Supply

Standard	2-wire: 4 ... 20 mA / $V_s = 9 \dots 32 V_{DC}$ (rated: 24 V_{DC})	Ex-protection: $V_s = 12 \dots 28 V_{DC}$
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Performance

Accuracy ¹	standard: $\leq \pm 0.35 \% \text{ FSO}$ option: $\leq \pm 0.25 \% \text{ FSO}$	BFSL: $\leq \pm 0.175 \% \text{ FSO}$ BFSL: $\leq \pm 0.125 \% \text{ FSO}$
Permissible load	$R_{\max} = [(V_s - V_{s \min}) / 0.02] \Omega$	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω	

Thermal effects

Thermal error for offset and span	$\leq \pm 0.1 \% \text{ FSO} / 10 \text{ K}$
in compensated range	0 ... 70 °C

Electrical protection ²

Insulation resistance	> 100 M Ω
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to - EN 61326 - Germanischer Lloyd (GL) - Det Norske Veritas (DNV)
Option Ex-protection DX13-LMK 457	II 2 G EEx ia IIC T4 safety technical maximum values: $U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$

¹ accuracy according IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

² additional external overvoltage-protection unit with atmospheric pressure compensation KL1 or KL2 available (please ask for data sheet)

LMK 457

Hydrostatic Level Transmitter

Technical Data

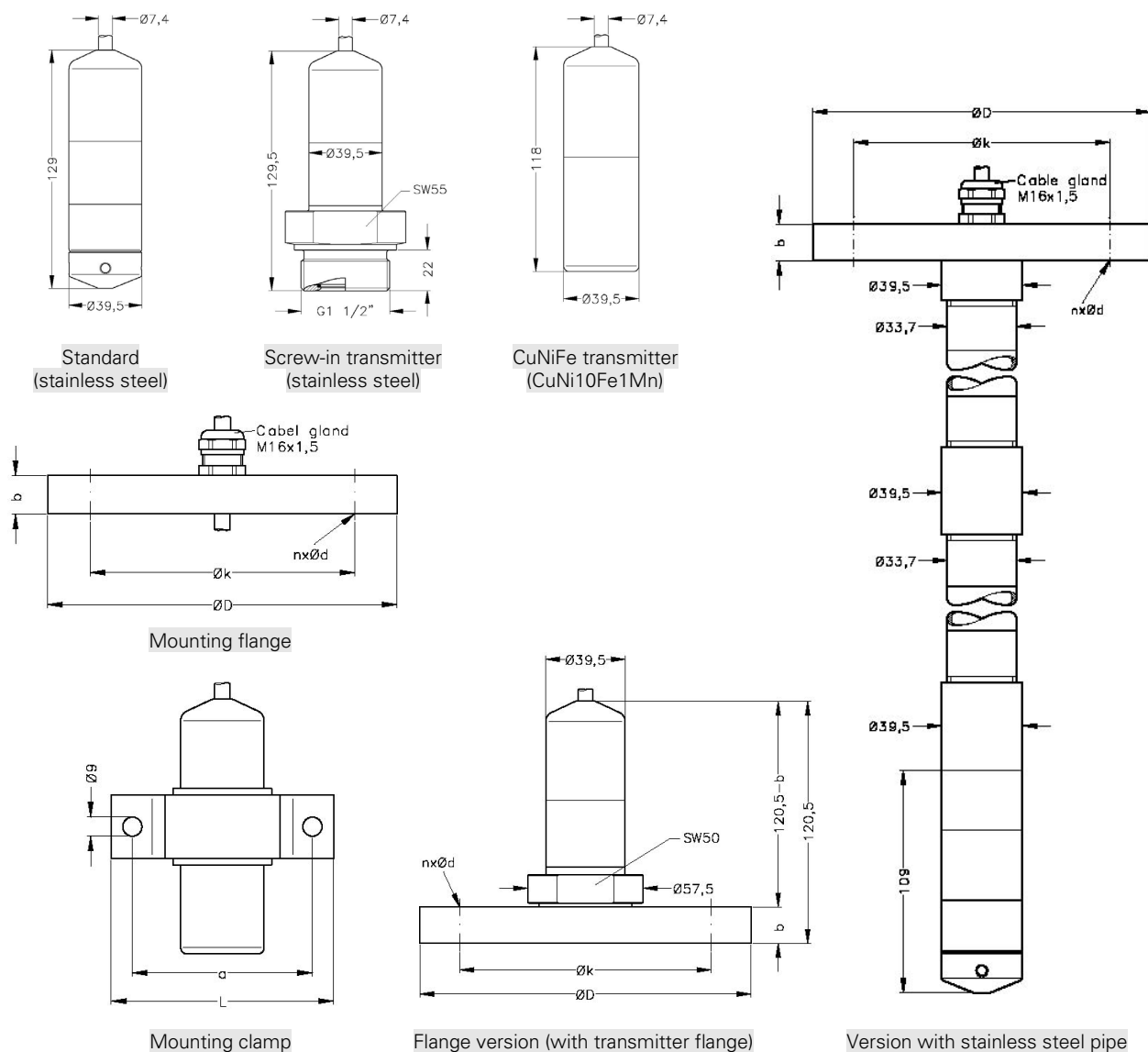
Permissible temperatures

Medium	-25 ... 80 °C
Storage	-40 ... 125 °C

Mechanical stability

Vibration	4 g, according to GL (curve 2), and DNV (Class B) / basis: IEC 60068-2-6
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Mechanical versions



Mounting clamp material	Dimensions	
	a	L
CuNiFe	115	82
Stainless steel	165	125

Flange	Dimensions				
	D	k	b	n	d
DN25/PN25	115	85	18	4	14
DN50/PN16	165	125	18	4	18
DN80/PN16	200	160	20	8	18

Electrical connection

Cable with cable sheath ³	PUR special black, TPE dark blue ⁴
Cable protection	standard: without cable protection option stainless steel pipe ⁵ : available as compact product with stainless steel pipe total length up to 2m; other lengths on request

Materials

Housing	standard: stainless steel 1.4571 (316Ti) option: CuNiFe (CuNi10Fe1Mn – resistant against sea water) others on request
Seals	FKM others on request
Diaphragm	ceramic Al ₂ O ₃ 96 %
Cable sheath ⁶	PUR special, TPE

Miscellaneous

Current consumption	max. 21 mA
Ingress protection	IP 68 – permanently submersible
Weight	approx. 400 g (without cable)

Mounting accessories (not part of the supply)

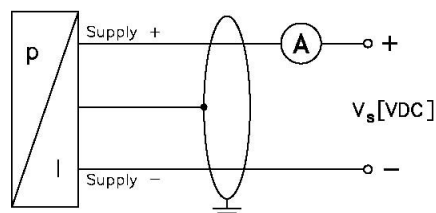
Transmitter flange, stainless steel 1.4571 (316Ti): DN25 / PN25 (Ø115, 18 thick, 4 drill holes Ø14 at Ø85) DN50 / PN16 (Ø165, 18 thick, 4 drill holes Ø18 at Ø125) DN80 / PN16 (Ø200, 20 thick, 8 drill holes Ø18 at Ø160)
Mounting clamp, stainless steel 1.4571 (316Ti) or CuNiFe
Mounting flange for fixing submersible transmitter, stainless steel 1.4571 (316Ti): DN25 / PN25 (Ø115, 18 thick, 4 drill holes Ø14 at Ø85) DN50 / PN16 (Ø165, 18 thick, 4 drill holes Ø18 at Ø125) DN80 / PN16 (Ø200, 20 thick, 8 drill holes Ø18 at Ø160)

Pin configuration

Electrical connection		cable colours (DIN 47100)
2-wire-system	Supply +	white
	Supply –	brown
	Ground	yellow / black

Wiring diagram

2-wire-system (current)



³ shielded cable with integrated air tube for atmospheric reference

⁴ on request

⁵ not for CuNiFe version

⁶ resistant against sea water, halogen free, temperature resistant up to +125 °C