

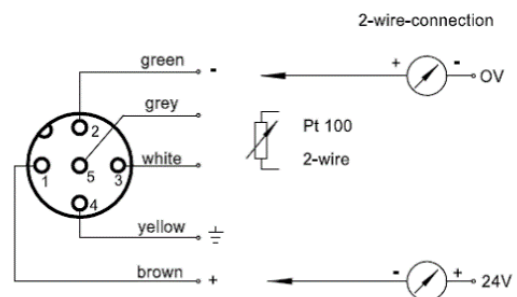
PRODUCT

The analogue 4-20mA submersible level transmitter is designed for hydrostatic measurement of level in tanks. Due to its robust construction and proven reliability, the HCG2011-MO4 is especially suited for use in rough environments on ships and on off-shore plants.



TECHNICAL FEATURES

- Measuring range from 160 mbar to 3200 mbar
- Piezo resistive sensor element
- Output signal: 4...20 mA, 2-wire
- Programmable, communication FSK BUS
- On-board temperature measurement Pt 100
- Quick-disconnect cable attachment
- Stainless steel (epoxy resin coated) immersion case
- Titanium membrane
- DNV·GL / LR / KR / BV Type Approval
- Explosion protection (intrinsically safe) Ex II 2G Ex ia IIC T6 Gb



nominal range	measuring mode	measuring ranges	measuring spans		overload limits
			min. span	max. span	
2500 mbar	level	0...+2500 mbar	160 mbar	2500 mbar	6000 mbar
3200 mbar	relative	-800...+3200 mbar	600 mbar	4000 mbar	10000 mbar
2500 mbar abs	absolut	0...+2500 mbar abs	500 mbar	2500 mbar	6000 mbar abs
4000 mbar	relative	0...+4000 mbar	600 mbar	4000 mbar	10000 mbar

HOUSING DESIGN

Immersion case

Degree of protection: IP 68, submersible up to 10 bar

Materials

Case: stainless steel epoxy resin coated
option: titanium

Gaskets: FKM (Viton), Fluor carbon-Elastomer

Pluggable cable connection: stainless steel, mat. No. 1.4462, NBR

Electrical connection: stainless steel plug, 5 poles

Cable: pluggable, with polyamide plastic tube protection



PROCESS CONNECTION

Types

KS	for standard applications
FW	with flange adapter, see order details
GW	with screw adapter, see order details

MEASURING SYSTEM

Sensor

Titanium membrane
Piezo resistive measuring element
System aeration via connection cable

TEMPERATURE RANGES

type	ambient temperature	process temperature	storage temperature
KS	-20	-20 to 85 °C	-40
FW	to	-20 to	to
GW	85 °C	120 °C	85 °C

TECHNICAL DATA

Supply voltage 12...30 VDC

Output – Pressure

Signal: 4...20 mA, 2-wire
Current range: 3.8...20.8 mA
Current limitation: approx. 21.8 mA
Alarm state: < 3.6 mA, option: > 21 mA
Response time: 160 ms
Damping: 0...120 seconds
Max. load at 24 VDC: 545 Ω

Output – Temperature

Signal: Pt 100, 2-wire circuitry
Accuracy: Class B, according to EN 60751
Application range: -40...+120°C
Response time: approx. 10 min

Accuracy

Referring to nominal range 2500 mbar (typical)

measuring range	2500 mbar	250 mbar	160 mbar
turndown	1 : 1	10 : 1	16 : 1
linearity/hysteresis/ repeatability	0,1 %	0,2 %	0,4 %
temperature	0,1 %	0,3 %	0,6 %
influence	2,5 mbar	0,75 mbar	0,96 mbar

Calibration position: factory adjusted vertical mounting

**TECHNICAL DATA****Approval / Test**

EMC tested: acc. IACS E10
Ex-approval: TÜV 96 ATEX 1137 X

Ex-approval

Input circuit: Intrinsic Safety Ex II 2G Ex ia IIC T6 Gb
Maximum values:
 U_i = 30 V
 I_i = 150 mA
 P_i = 0.7 W
 C_i = 20 nF
 L_i = 50 μ H

Pt 100 circuit: Intrinsic Safety Ex II 2G Ex ia IIC T6 Gb
Maximum values:
 U_i = 20 V
 I_i = 320 mA
 P_i = 0.1 W
 C_i = 6 nF
 L_i = 50 μ H

Temperature class T1-T4: T_{amb} = -20...70°C
 T_m = -20...70°C

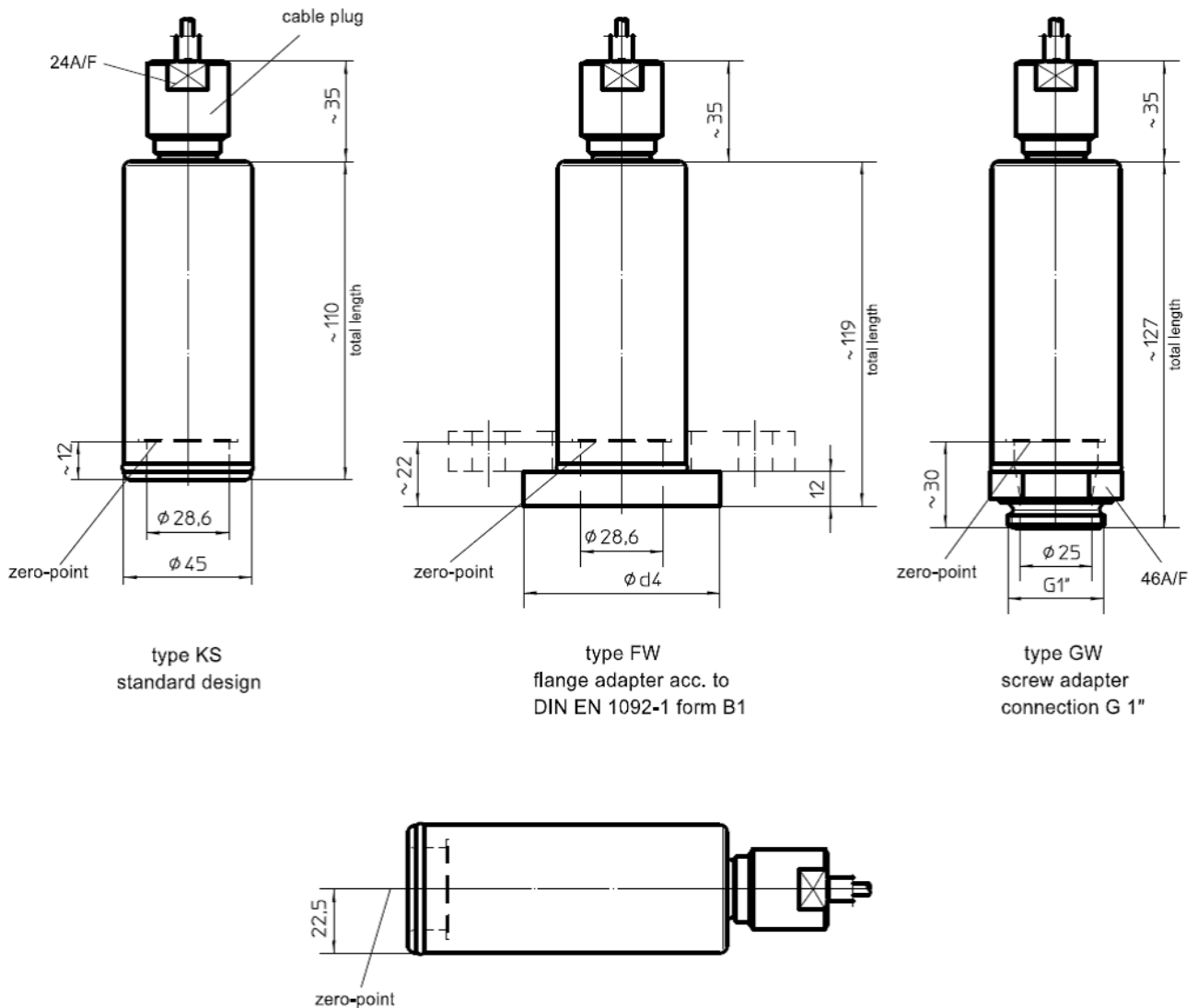
Temperature class T5-T6: T_{amb} = -20...40°C
 T_m = -20...40°C

Parameterization

Adjustable with the software

Parameters		variability/range	default
span	range:	from 160 to 3200 mbar (see instrument ranges)	nominal range
zero point	range:	-800...0...	0
pressure	unit:	mbar, mm WS (mm H2O), mm LC	mbar
density	range:	0.5 t/m ³ - 2.0 t/m ³	1 t/m ³
damping	range:	0...120 sec.	0.0 sec.
installation	position:	VERTICAL, HORIZONTAL, OVERARM	VERTICAL
alarm	current:	LO <3.6 mA, Hi >21.0 mA	LO
loop test	-	4...20 mA	—

DIMENSIONS



OPERATING INSTRUCTIONS

General

These operating instructions refer to installation, commissioning, servicing and adjustment. Statutory regulations, valid standards, additional technical details in the relevant data sheet, details of the type plate and any additional certificates are to be observed along with these operating instructions.

Safety instructions

- Installation, operation and maintenance of the instrument may be executed by authorized personnel, only, using suitable equipment.
- Warning: If the instrument is used incorrectly it is possible that serious injuries or damage can occur!
- Pressure transmitters that are mechanically defective can cause injuries or give rise to process faults. Suitable precautions should be taken to avoid this.




CE marking

The CE marking on the instruments certifies compliance with valid EU directives for bringing products to market within the European Union. The following directives are met:

EMC directives	EMC	2014/30/EU
Ex directive	ATEX	2014/34/EU
RoHS directive	RoHS	2011/65/EU, 2015/863/EU

Ex approval

Electrical equipment in hazardous areas should only be installed and commissioned by competent personnel. Modifications to devices and connections destroy the operating safety, the ex-proofing and the guarantee.

Certificate no.	TÜV 96 ATEX 1137 X		
Ex-protection intrinsically safe	 II 2G Ex ia IIC T6 Gb		
Maximum values:	Input circuit:	U_i	= 30 V
		I_i	= 150 mA
		P_i	= 0.7 W
		C_i	= 20 nF
		L_i	= 50 μ H
	Pt 100 circuit:	U_i	= 20 V
		I_i	= 320 mA
		P_i	= 0.1 W
		C_i	= 6 nF
		L_i	= 50 μ H
	Temperature class T1-T4	T_{amb}	= -20...70°C
		T_m	= -20...70°C
	Temperature class T5-T6	T_{amb}	= -20...40°C
		T_m	= -20...40°C
	Cable length	Max	= 50 m

Special conditions:

Wire the device to two separate circuits. The pressure output is a 4-20 mA analog signal; temperature is measured by a two-wire Pt 100 sensor.

Ensure potential equalization on the entire cable run, inside and outside the explosion-hazardous area.

Avoid static build-up due to friction on powder-coated housing parts.

Secure the titanium housing model against rocking and vibrations.

Mounting and operating

- Before mounting the instrument ensure that pressure range, overpressure resistance, media compatibility, thermostability and pressure port are suitable for the process at hand.



- Conduct process installation before electrical installation.
- To avoid soiling and damage remove protective cap or wrapping in front of the separating diaphragm before mounting.
- Do not touch the flush mounted separating diaphragm, as there is a danger of deformation at measuring ranges to 10 bar / 150 psi. Instrument zero point and measuring characteristics could also be affected.
- Secure the level sensor with the sensor lead. Fit the sensor so that there are no forces acting on the gland nut that is situated between sensor and lead. Be sure the sensor is not subjected to any stresses when installed in tanks and vessels. The sensor should only be used when fitted in a stem.
- Check that the gasket in the cable gland nut for the electrical connection is correctly fitted before immersing the sensor in product or other liquid.
- The level sensor is unsuitable for use with products that crystallize.
- Submersible level sensors monitor the hydrostatic level in tanks and vessels. The measured value is a function of the density of the product being monitored (density of water = 1).
- It is not permitted to open the sensor. Otherwise, the ex approval expires.
- Avoid electrostatic charges on powder-coated housing parts.
- Submersible pressure transmitters with a titanium housing need to be secured against vibrations and oscillations, e.g. by use of a guiding pipe, to avoid sparking.

Ventilation

Level sensors are ventilated through the sensor lead. The terminal box for the lead must be in a dry and well aired area (normal atmosphere pressure **!!Attention!!** Extra ventilation which might cause different pressure than atmosphere pressure will lead to wrong values of levels). To maintain good ventilation of sensor be sure that the power cable for the level sensor is not bent or damaged at any point.

Electrical connections

- Wire up the instrument with power switched off.
- The instrument can only be protected against electromagnetic interference (EMC) if the conditions for screening, earthing, wiring and potential isolation are met during installation.
- The mounting position should be taken into consideration when checking the zero output. Standard transmitters are adjusted at the factory for vertical mounting. Changes to the mounting position can cause zero shifts at pressure ranges ≤ 2 bar. These drifts can be corrected by adjustment on site.
- Process and ambient temperatures can cause zero displacements at the pressure transmitter with some system designs. We can supply you with an error analysis.
- When the instrument is opened any contact with the electrical connections can affect the signals. This situation can be avoided by switching off the supply voltage or by disconnecting the signal circuit.
- The instrument requires no maintenance.

**EU DECLARATION OF CONFORMITY****HOPPE** Bordmesstechnik GmbHKieler Str. 318 • 22525 Hamburg • Tel: 040/ 5619 49 -0 • Fax: 040/ 5619 49-99
Email: info@hoppe-bmt.de • Web: www.hoppe-bmt.de**EU-Konformitätserklärung
EU Declaration of Conformity**

KE_024H

Nachfolgende Produkte der HOPPE Marine GmbH werden in
alleiniger Verantwortung in Verkehr gebracht.
Hierbei werden die gültigen EU-Richtlinien angewandt.

Following products of HOPPE Marine GmbH are
placed on the market under the company's sole responsibility.
The relevant EU directives have been applied.

Die CE-Kennzeichnung der Geräte
The CE symbol on the devices

**Druckmessumformer TAUCHSONDE
Submersible pressure transmitter for liquid-level measurement**

Type HCG2011

weist auf die Anwendung der Richtlinien hin.
indicates their compliance with the relevant directives

Folgende Richtlinien werden angewendet:
The following directives are applied:

2011/65/EU	RoHS	EN IEC 63000:2018
2015/863/EU		
2014/30/EU	EMV EMC	EN 61326-1:2013
2014/34/EU	ATEX	EN IEC 60079-0:2018 EN 60079-11:2012 EN 1127-1:2019

EG-Baumusterprüfbescheinigung:
EC-type examination certificate:

TÜV 96 ATEX 1137 X

benannte Stelle / notified body

Hamburg, 09.02.2023

HOPPE Bordmesstechnik GmbH

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