

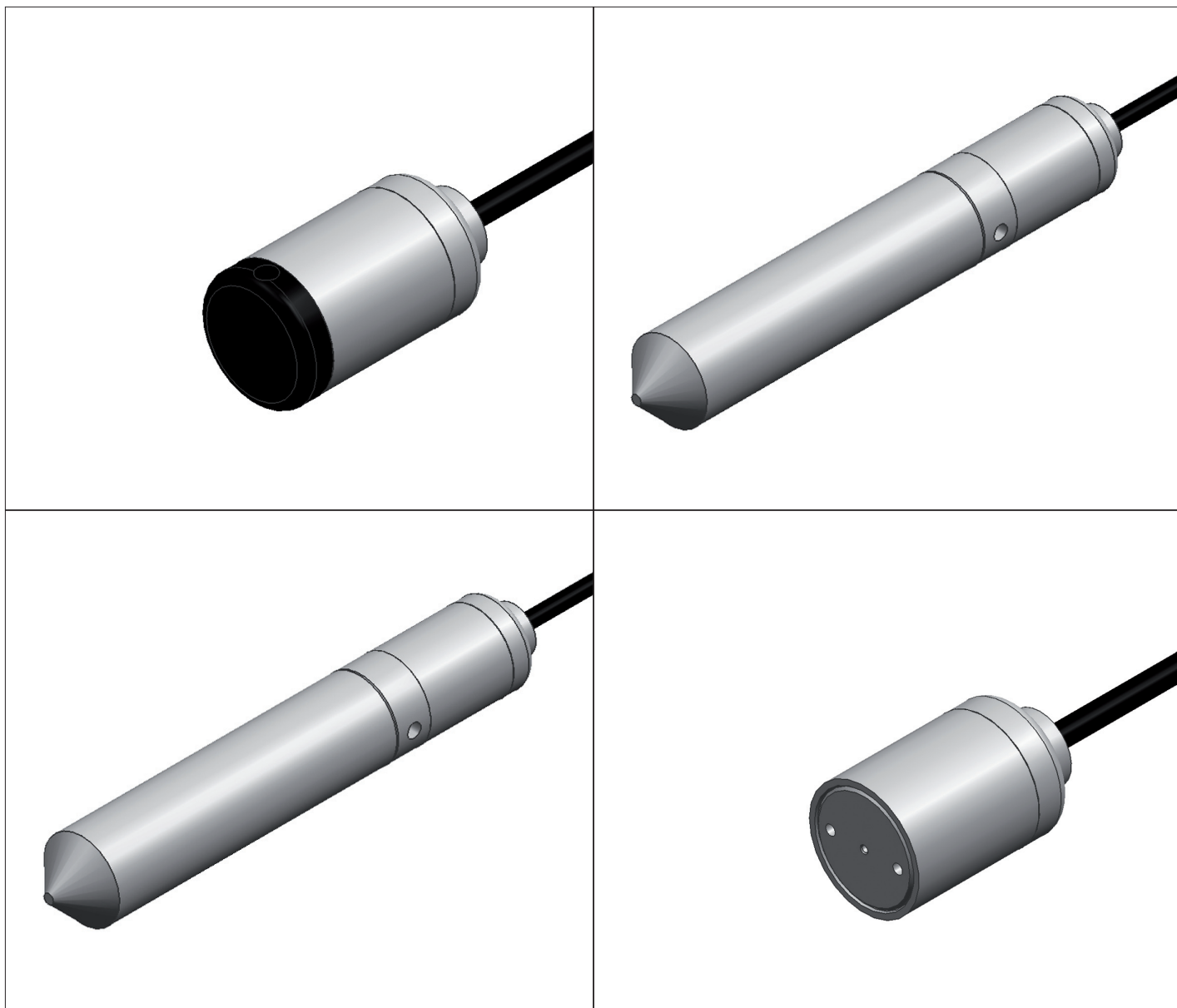
700

OEM Niveau-Drucktransmitter

OEM Pressure-type level sensing transmitter

OEM Transmetteur de niveau / de pression

0.8 ... 1.4 – 10 bar

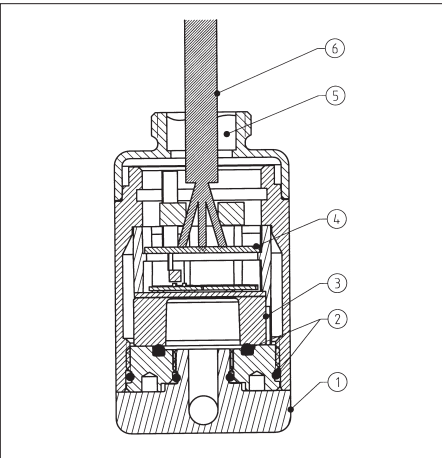


 **Huba Control**

FEINE MESSIDEEN FÜR DRUCK UND STRÖMUNG
FOR FINE PRESSURE AND FLOW MEASUREMENT
LA FINESSE DES MESURES DE PRESSION ET DE DEBIT

Technical overview

The OEM level sensing pressure transmitters type 700 are used for the level measurement in various medias. The level measurement is made with an absolute pressure measuring cell. Therefore the pressure (barometrical) which influences the media must be specified. For example a second transmitter with a measuring range of 0.8 ... 1.4 bar can be used. Dependent on the application the information about barometrical pressure should be available on the internet.



Legend to cross-section drawing

- 1 Protection cover
- 2 Sealings
- 3 Ceramic measuring cell with amplifier electronic
- 4 Print with EMC protection
- 5 Sealing compound Epoxy
- 6 Electrical connection (cable)

Pressure range

Absolute 0.8 ... 1.4 – 10 bar
Pressure ranges see order code selection table

Medium

Fuel oil, ultra-light SN 181 160-2
Fuel oil, heavy SN 181 160-2
Diesel oil
Benzine
(please consider Ex-protection!)
Water (tap-, rain water)
Other medias on request

Overload

3 x measuring range

Rupture pressure

3 x measuring range

Materials in contact with the medium

Ceramic Al₂O₃ (96%)
Stainless steel 1.4305 AISI 303 or
Stainless steel 1.4404 AISI 316
Cable: Polyester
Sealing compound: Epoxy
Protection cover: POM
Sealing material: FPM

Application temperature

Medium temperature -20 ... +60 °C
Storage -40 ... +80 °C
Version with Ex-protection
up to + 40 °C max.

Dynamic response

Suitable for static and dynamic measurements
Response time < 2 msec.

Output and power supply

3-wire
0.5 – 4.5 V 5 VDC
Ratiom. 10 ... 90% 5 VDC (4.75 ... 525)

Load

> 10 k Ohm / < 100 nF

Ex-protection

Ex II 2G EEx ia IIB T4
Ex II 1G EEx ia IIB T4

Current consumption

with max. signal output < 2.5 mA

Electrical connection

Lengths of cables see order code selection table

Tests / Admissions

see EMC-behavior

Packaging

Multiple packaging
à 20 pcs. cable 2 m
à 14 pcs. cable 5 m
à 8 pcs. cable 10 m, 15 m, 20 m

The distinct advantages

- Compact construction enhances operational reliability in case of shock and vibration
- Cable insertion sealed tightly
- High reliability as the absolute cell has no compensation to ambient
- Better stabilization of sensor in rough medias with additional weight (option)

Calculation of level

a) As mode of operation for level sensing transmitter, the density of the corresponding media to be measured and the actual (barometrical) pressure that influences the surface of the media.

Measuring range	Formula	Measuring range	Formula
0.8 – 1.4 bar abs.	$h = (15 * U_{out} + 72.5 - 0.1 * P_{baro}) \div (\rho * g)$	0.8 – 5 bar abs.	$h = (105 * U_{out} + 27.5 - 0.1 * P_{baro}) \div (\rho * g)$
0.8 – 2 bar abs.	$h = (30 * U_{out} + 65 - 0.1 * P_{baro}) \div (\rho * g)$	0.8 – 10 bar abs.	$h = (230 * U_{out} - 35 - 0.1 * P_{baro}) \div (\rho * g)$
0.8 – 3 bar abs.	$h = (55 * U_{out} + 52.5 - 0.1 * P_{baro}) \div (\rho * g)$	0.8 – 25 bar abs.	$h = (605 * U_{out} - 222.5 - 0.1 * P_{baro}) \div (\rho * g)$

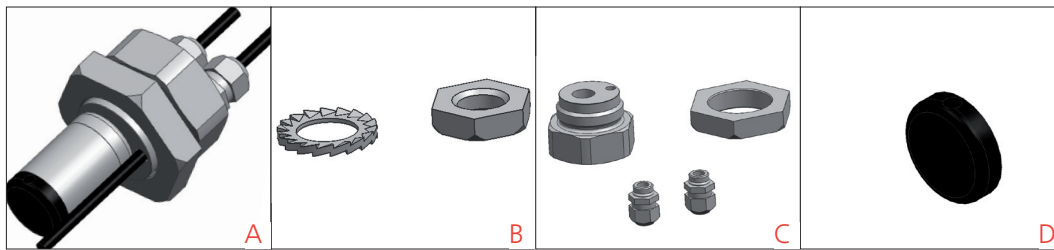
b) By using a second level sensing transmitter (0.8 ... 1.4 bar abs.) which is not submerged, as mode of operation of both sensor signals and density of the corresponding media to be measured.

Formulas:

$H_{1.4} = (U_{TS} - U_{baro}) * 15 \div (\rho * g)$	$H_5 = (7 U_{TS} - U_{baro} - 3) * 15 \div (\rho * g)$
$H_2 = (2 U_{TS} - U_{baro} - 3) * 15 \div (\rho * g)$	$H_{10} = (46 U_{TS} - 3 U_{baro} - 2.5) * 5 \div (\rho * g)$
$H_3 = (11 U_{TS} - 3 U_{baro} - 4) * 5 \div (\rho * g)$	$H_{25} = (121 U_{TS} - 3 U_{baro} - 56.5) * 5 \div (\rho * g)$

Legend:

h = level in m	U _{baro} = output signal of barometric transmitter in V (range 0.8...1.4 bar)	U _{out}
= output signal in V	ρ = density of corresponding media to be measured in kg per dm ³	
U _{TS} = output signal of level sensing transmitter in V	g = acceleration due to gravity (9,80665ms ⁻²)	
P _{baro} = barometric pressure at place in mbar (eg. transfer to geographic height: per 10 m additional height pressure decreases of about 1.2 mbar)		



Versions

- A – Connector with cable joints and barometric level sensing transmitter
- B – Mounting-set to case with connection thread
- C – Montageset mit Adapter
- D – Schutzkappe POM

Accuracy

Parameter		Einheit	
Tolerance zero point	max.	% fs	± 1.0
Tolerance full scale	max.	% fs	± 1.0
Total of linearity, hysteresis and repeatability	max.	% fs	± 0.5
TC zero point ¹⁾	max.	% fs/10K	± 0.3
TC sensitivity ¹⁾	typ.	% fs/10K	± 0.015

Test conditions: 25 °C, 45% RH, Power supply 5 VDC
TC z.p. / TC s. 0 ... +60 °C

Order code selection table

700. X X X X X X X X X X

	Pmax.	max. level measurable (for water dependent on place and weather)																		
Pressure range ²⁾ (bar) absolute	0.8 ... 1.4	4.5 bar	3.5 ... 6.7 mWs	8	1	1														
	0.8 ... 2.0	6.0 bar	9.6 ... 12.8 mWs	8	1	2														
	0.8 ... 3.0	9.0 bar	20.0 ... 23 mWs	8	1	4														
	0.8 ... 5.0	12.0 bar	40.0 ... 43 mWs	8	1	5														
	0.8 ... 10.0	25.0 bar	91.0 ... 94 mWs	8	3	0														
	▲		① ②																	
	Fullscale signal at these pressures																			
	① P _{BARO} = 1060 mbar (high pressure on sea level)																			
	② P _{BARO} = 740 mbar (low pressure at 2000 meters above sea level)																			
Sealing material ³⁾	FPM Fluoro-elastomer									0										
Output and power supply	0.5 – 4.5 V, ratiometric 5 VDC (4.75 – 5.25)		3-wire								0									
Electrical connection	Cable	2.0 meters																	0	
	Cable	5.0 meters																	1	
	Cable	10.0 meters																	2	
	Cable	15.0 meters																	3	
	Cable	20.0 meters																	4	
	Cable	30.0 meters																	5	
	Cable	50.0 meters																	6	
	Cable	100.0 meters																	7	
	Cable	2.0 meters	protected cable, zone 0																	A
	Cable	5.0 meters	protected cable, zone 0																	B
	Cable	10.0 meters	protected cable, zone 0																	C
	Cable	15.0 meters	protected cable, zone 0																	D
	Cable	20.0 meters	protected cable, zone 0																	E
Cable	30.0 meters	protected cable, zone 0																	F	
Cable	50.0 meters	protected cable, zone 0																	G	
Cable	100.0 meters	protected cable, zone 0																	H	
Housing ⁴⁾	Housing without mounting thread	Stainless steel 1.4305 AISI 303																	1	
	Housing with mounting thread	Stainless steel 1.4404 AISI 316L																	2	
Protection cover and additional weight	Without protection cover POM																		0	
	With protection cover POM																		1	
	With additional weight (approx. 310 g), 1.4404 AISI 316L																		3	
Ex-protection	Without Ex-protection																		0	
	Ex II 2G EEx ia IIB T4																		3	
	Ex II 1G EEx ia IIB T4 (protected cable, zone 0)																		4	
Pressure range variation	Indicate W and state range on order																		W	

Accessories

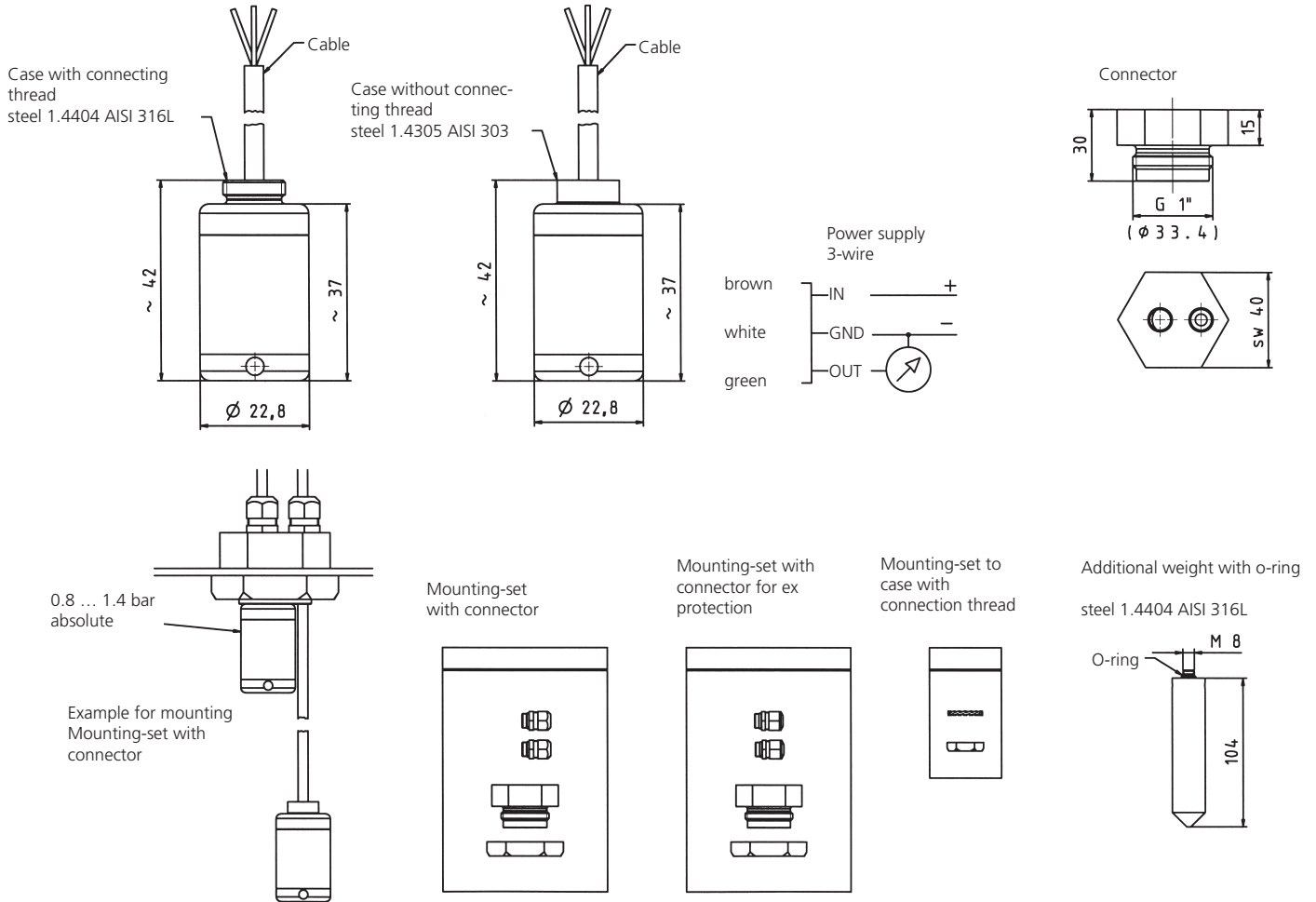
	Order number
Mounting-set with connector	109928
Mounting-set with connector for Ex-protection	109929
Mounting-set to case with connection thread G 1/4"	109933

¹⁾ TC = Temperature coefficient

²⁾ Other pressure ranges on request

³⁾ Acc. to standard norms ISO R 1629, other sealing materials on request

⁴⁾ Other versions on request



Electromagnetic compatibility

The product is designed exclusively for installation in equipment. The customer is responsible for CE conformity.

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