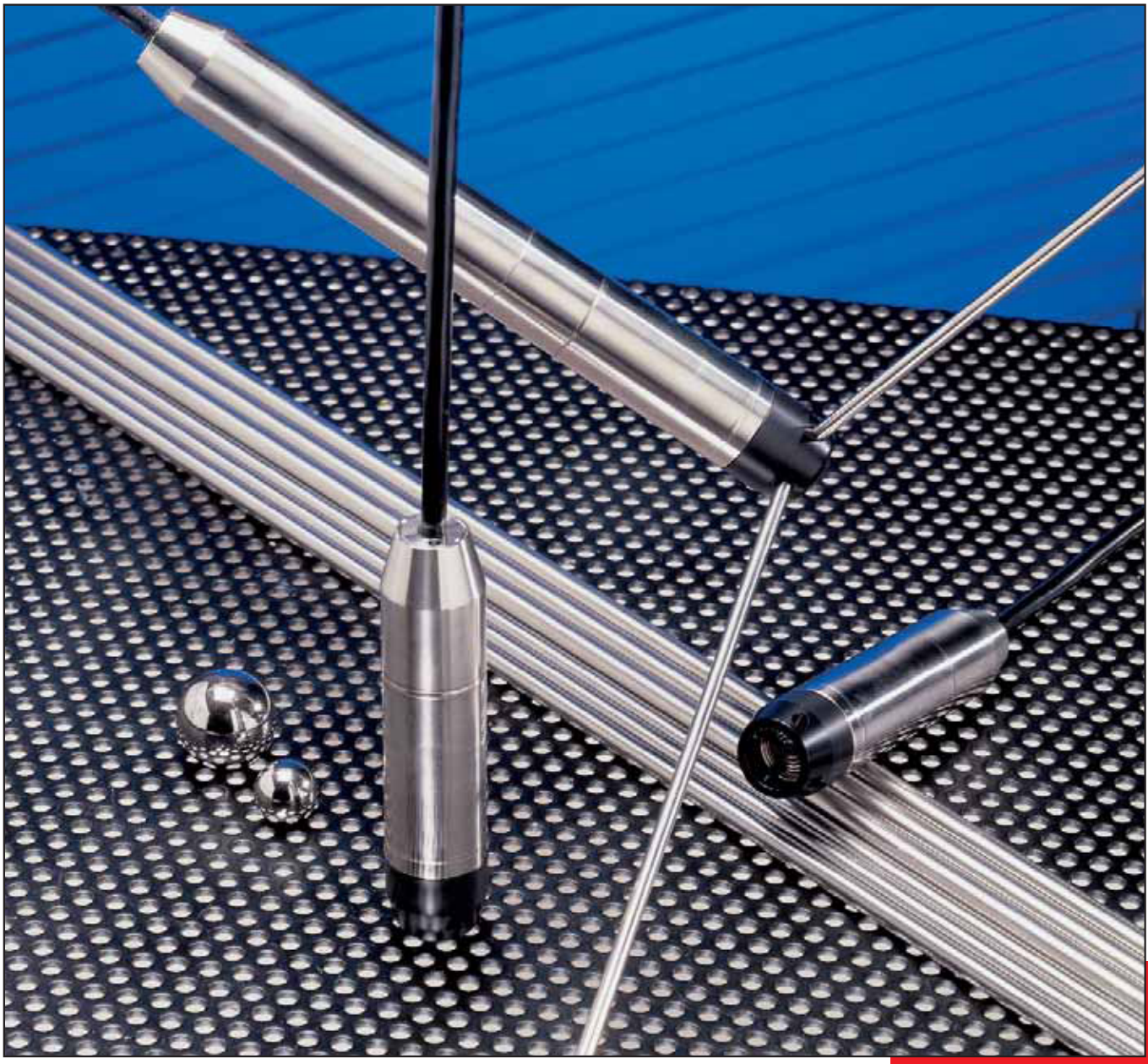
681

Pressure-type level sensing transmitter

0 to 25 bar



EDITION 11/2008

Huba Control

FOR FINE PRESSURE AND FLOW MEASUREMENT

Technical overview

The pressure transmitters of type 681 with piezoresistive measuring elements have compensated, calibrated and amplified sensor signals which are available as standard voltage or current outputs.

In the immersion-sensor version with a salt water and oil-resistant connection cable they are specially suited for level measurement, even in the presence of corrosive liquids.

The cable incorporates a tube for compensation of the ambient pressure.

Manufactured from stainless steel, its welded construction provides a watertight seal.

The distinct advantages

- Mechanically protected diaphragm due to special head design
- Supplementary weight (option) improves stabilization of sensor in turbulent media
- Effective overload protection due to chemically etched chip diaphragm and specially designed glass gland
- Compact construction using SMD technology, enhances operational reliability in the presence of shock and vibration
- Welded construction provides 100% sealing against media

Pressure ranges

Relative pressure 0.1 – 25 bar (differential measurements to ambient pressure)

Absolute pressure as option.

DIN categories see order code selection table

Overload

3 x Measuring range, min. 3 bar

Rupture pressure

> 200 bar (0.1 … 25 bar)

Characteristic line deviation

Acc. initial point setting DIN 16086, inclusive hysteresis and repeatability

≤ 0.50% fs
≤ +/- 0.25% fs (Option)
≤ +/- 0.10% fs up to pressure range 1 bar (option)

Application temperature

–5 … +50 °C

Storage - 40 … + 50 °C

Temperature error

Zero point (–5 … 50 °C)

0 … < 0.5 bar	≤ +/- 0.06	% fs/°C
0.5 … < 2 bar	≤ +/- 0.03	% fs/°C
2 … < 25 bar	≤ +/- 0.015	% fs/°C

Operating range (–5 … 50 °C) ≤ +/- 0.015 % fs/°C

Dynamic response

Suitable for static and dynamic measurements.
Response time: < 1 ms / 10 … 90% fs

Outputs and power supply

0 – 5 V	15 – 30 VDC	3-wire
0 – 10 V	15 – 30 VDC	3-wire
0 – 20 mA	9 – 33 VDC	3-wire
4 – 20 mA	9 – 33 VDC	2-wire

Short circuit-proof, with polarity reversal protection. Other signal outputs on request.

Load

0 – 20 mA $\frac{\text{supply voltage} - 6\ \text{V}}{0.02\ \text{A}}$ [Ohm]

max. 1 kOhm

4 – 20 mA max. $\frac{\text{supply voltage} - 9\ \text{V}}{0.02\ \text{A}}$ [Ohm]

Intrinsically safe version

Fig. 1 + 2 II 1G EEx ia IIC T4 … T6
Fig. 6 II 1G EEx ia IIB T4 … T6

Output 4 – 20 mA
Power supply 10 – 30 VDC

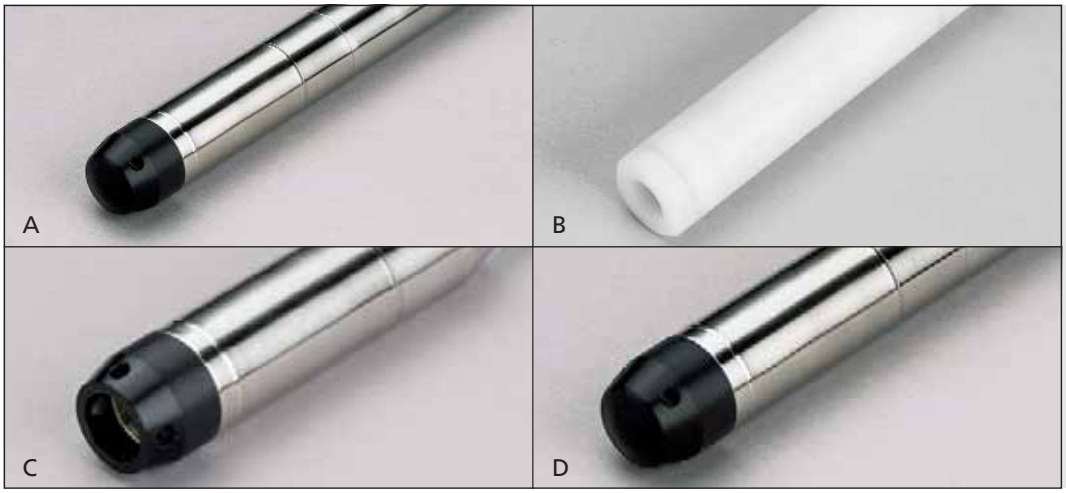
Load max. $\frac{\text{supply voltage} - 10\ \text{V}}{0.02\ \text{A}}$ [Ohm]

Current consumption

0 – 5 V	2.5 mA
0 – 10 V	2.5 mA
0 – 20 mA	26 mA fs (max. 30 mA)
4 – 20 mA	20 mA fs (max. 31 mA)

Electrical connections / Protection class

Test voltage 500 VDC



Versions

A – Supplementary weight

B – PVDF version, open
Fig. 6

C – Steel version,
open at front, Fig. 2

D – Steel version,
closed at front, Fig. 1

Order code selection table

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Medium	Diesel oil / fuel oil / kerosen	Fig. 1/2/3/4	Cable Teflon	0									
	Salt water / brackish water	Fig. 1/2	Titanium / Cable PUR	1									
	Drinking water, potable	Fig. 1/2/3/4	Cable PE	2									
	Lake / river water	Fig. 1/2/3/4	Cable PUR	3									
	Benzene[3]	Fig. 1/2/3/4	Cable Teflon	4									
	Chlorinated water	Fig. 1/2	Titanium / Cable PUR	5									
	Acids and alkaline solutions[4]	Fig. 5/6	PVDF / Teflon	6									
	Other medium, precise specification			9									
Pressure ranges[1]	0 ... 100 mbar				0	0							
	0 ... 160 mbar				0	1							
	0 ... 250 mbar				0	2							
	0 ... 400 mbar				0	3							
	0 ... 600 mbar				0	4							
	0 ... 1 bar				0	5							
	0 ... 1.6 bar				0	6							
	0 ... 2.5 bar				0	7							
	0 ... 4 bar				0	8							
	0 ... 6 bar				0	9							
	0 ... 10 bar				1	0							
	0 ... 16 bar				1	1							
	0 ... 25 bar				1	2							
Outputs	0 – 5 VDC						0						
	0 – 10 VDC						1						
	0 – 20 mA						2						
	4 – 20 mA						3						
	4 – 20 mA intrinsically safe version II 1G EEx ia IIB / IIC T6[4]						4						
	4 – 20 mA with overvoltage protection						5						
	0 – 10 VDC with overvoltage protection						6						
Characteristic line deviation	≤ +/- 0.50% fs							0					
	≤ +/- 0.25% fs							1					
	≤ +/- 0.10% fs on request							2					
Temperature range[2]	– 5 ... 50 °C compensated, medium temperature permissible: – 5 ... 50 °C								0				
Cable length	Data in meters Example: 2 0												
Version	Fig. 1 closed, short case												0
	Fig. 1 closed, with supplementary weight												1
	Fig. 2 open, short case												2
	Fig. 2 open, with supplementary weight												3
	Fig. 3 closed, screwing version, short case												4
	Fig. 3 closed, screwing version, with supplementary weight												5
	Fig. 4 open, screwing version, short case												6
	Fig. 4 open, screwing version, with supplementary weight												7

All media must be specified precisely in relation to temperature and concentration.
Standard seals with FPM, other seals on request.

Weight	Standard	Fig. 1/2/3/4	~ 160 g
	with supplementary weight		~ 420 g
	Standard / Ex-Version	Fig. 5/6	~ 270 g
	Cable / meter PUR		~ 50 g
	Cable / meter Teflon		~ 50 g

1 Other pressure ranges outside the DIN categoeries on request
2 Other temperature ranges on request
3 Specify type of benzene
4 Indicate correct medium

Dimensions in mm

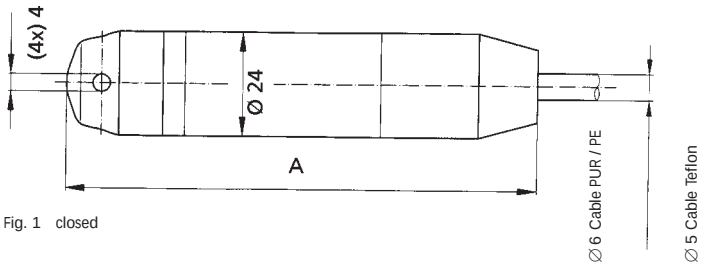

Fig. 1 closed

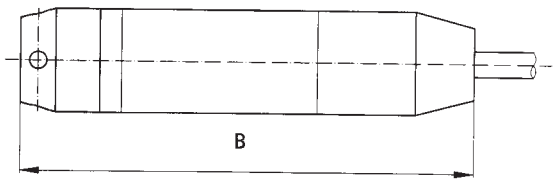

Fig. 2 open

		A (mm)	B (mm)
Standard	without weight prolongation	108	104
Standard	with weight prolongation	195	191
Overload protection	without weight prolongation	157	153
Overload protection	with weight prolongation	244	240
Ex-version	without weight prolongation	118	114
Ex-version	with weight prolongation	205	201

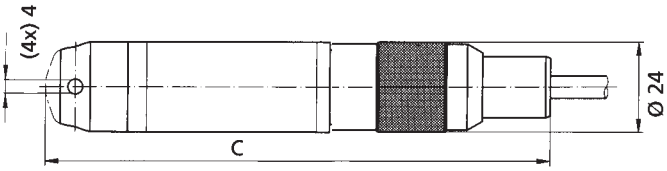

Fig. 3 closed, threaded version

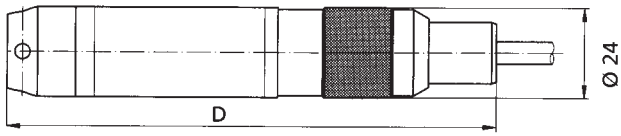

Fig. 4 open, threaded version

		C (mm)	D (mm)
Standard	without weight prolongation	134	130
Standard	with weight prolongation	221	217
Overload protection	without weight prolongation	183	179
Overload protection	with weight prolongation	270	266
Ex-version	without weight prolongation	144	140
Ex-version	with weight prolongation	231	227

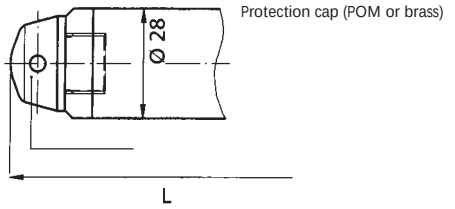

Fig. 5 closed, with protection cap

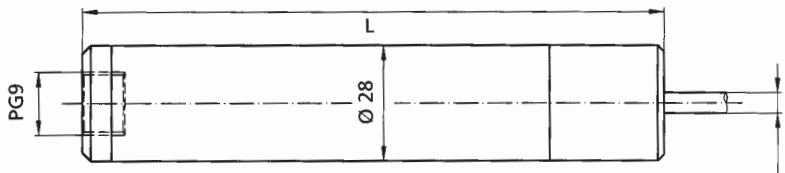

Fig. 6 open, without protection cap

		L (mm)
PVDF Standard	version open	140
PVDF Standard	version closed	154
PVDF Ex-version	version open	189
PVDF Ex-version	version closed	203

Electromagnetic compatibility: CE conformity to EC directive 89/336 EEC (EMC) by application of harmonized standards EN 61000-6-2 and EN 61000-6-3

Interference emit	Test standard		Effect
Basic specification	EN 61000-6-3		
Interference emission, class B	EN 55022		no effect
Interference stability	**Test standard**		**Effect**
Basic specification	EN 61000-6-2		
Electrostatic discharge	EN 61000-4-2	8 kV air, 4 kV contact	no effect
Radiated electromagnetic radiation field	EN 61000-4-3	10 V/m, 80 ... 1000 MHz, 80% AM 1 kHz	no effect
Radiated electromagnetic radiation field (GSM	EN 61000-4-3	10 V/m, 950 MHz, 200 Hz on/off	no effect
Fast transients (burst)	EN 61000-4-4	2 kV	no effect
Conducted electromagnetic interference	EN 61000-4-6	10 V, 0.15 ... 80 MHz, 80% AM 1 kHz	no effect
Surge[1]	EN 61000-4-5	10 kA (8/20 µs)	no effect

[1] Only versions with option over voltage protection option (lightning strike)

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