Pressure Sensors Special for submersible measurement

Accuracy 0,25% and 0,5%

Standard signal: 4...20 mA; 2-wire
or 0...20 mA; 3-wire

Description

The pressure sensor special for submersible measurement has been developed especially for use in liquids for hydrostatic level measurement.

Due to the systematic use of stainless steel for the wetted parts, this sensor is suitable for the food industry without any restrictions. For measuring tasks in aggressive media a special version with PTFE cable can be obtained.

A hermetically sealed stainless steel case with a protection type IP 68 allows the pressure sensor to be immersed down to a depth of 300 m.

The inner vented connection cable makes pressure compensation of the measuring cell against the atmosphere possible and thus hydrostatic pressure measurement.

The mechanical fastening of the pressure sensor does not require any additional strain relief, as the construction of the cable is suitable to take a maximum tensile force of 1000 N. An additional weight can be screw-fitted to increase the actual weight of the sensor.

For mains-independent service in the field, the sensor can operate with a supply voltage of 5 V.

The sensor can be obtained with a lightning protection.To determine the media temperature the submersible sensor can be equiped with a Pt 100 sensor.

The pressure sensor special for submersible measurment meets the electromagnetic compatibility (EMC) requirements to EN 61326.

Features

- O Compact design
- O Protection type IP 68 (up to 300m depth)
- O Corrosion resistant stainless steel design
- O PUR shealted cable with inner ventilation
- O tensile strength of the cable up to1000 N
- O Option: lightning protection
- O Option: PTFE cable
- O Option: temperature measurement (Pt 100)

Measuring ranges

Gauge pressure

positive	0...0,1 bar	up to	0...25 bar

Applications

Water level measurement in:

Potable water wells,
Bore holes,
Waste water plants,
Containers,
Flow water.

Models: P3230, P3233

Technical data

Model	P3233	P3230	Options [0]
Pressure type	positive gauge pressure		
Output signal	4...20 mA, 2-wire	4...20 mA, 2-wire 0...20 mA, 3-wire	0...5 V, 0...10 V, 3-wire 0,5...2,5 V, 3-wire; [1] Pt 100 (DIN IEC 751), 4-wire for Model 3230
Accuracy [2]	0,5 % of F.S.	0,25 % of F.S [7]	
Ranges acc. to EN	0 ... 0,25 bar to 0 ... 10 bar	0 ... 0,1 bar to 0 ... 25 bar	other ranges on request
Sensor element	piezoresistive		
Repeatability	≤ ± 0,05 % of F.S		
Stability (annual)	≤ ± 0,2 % of F.S. in rated conditions		
Pressure connection	G ½ B with protection cap		
Wetted parts – Case [3] – protection cap – Cable	stainless steel PA		protection cap stainless steel or Hastelloy for Model P3230
	PUR	PUR, Polyolefine (shrink hose)	for model P3230 PTFE [4]
Overload limit	≤ 1 bar, 5x; ≤ 4 bar, 4x; ≤ 25 bar, 3,2x		
Electrical connection	connection cable (PUR-shealted with inner ventilation, tensile strength 1000 N)		
Power supply	10....30 VDC, (14...30 VDC for output 0...10 V) (5...30 VDC, for output 0,5...2,5 V)		
Power consumption – 4...20 mA – 0...20 mA – 0,5...2,5 V – voltage output:	current signal current signal + 4 mA approx. 2 mA 8 mA		
Load – current output – voltage output	$\leq \frac{UB - 10V}{0{,}020A} - 0{,}14\frac{\Omega}{m} *$ cable length ≥ 100 kOhm		
Temp. comp. range	0....+ 50°C		
Temperature influence medium TK	± 0,2 % /10 K, on zero and span [5]		
Response time	≤ 1 ms (within 10% to 90% of F.S.)		
Emission [6]	acc. to EN 61326		
Interference [6]	acc. to EN 61326		
Protection type – depth	IP 68 acc. to EN 60 529 / IEC 529 up to 100 m	up to 300 m	
Electrical protection type	polarity, overload and short circuit protection		lightning protection (IEC 801-5; 1,5 kV)
Temperature ranges – storage – medium	-30 .... 80 °C -10 .... 50 °C		Model P3230 -10 ... 85 °C (PTFE-cable)
Weight – sensor – cable – additional weight	approx. 0,18 kg approx. 0,08 kg/m approx. 0,5 kg	approx. 0,2 kg approx. 0,08 kg/m approx. 0,5 kg	

of F.S. = of full scale value

1) Special signal for mains independent operation, for ranges 0...0,25 bar.
2) Terminal point adjustment according to DIN 16 086, including linearity and hysteresis (calibrated in vertical installation position)
3) Including pressure connection and diaphragm.
4) max depth 100 m
5) 0,4 % for measuring ranges 0...0,1 and 0...0,16 bar.
6) Declaration of conformity on request.
7) Measuring ranges<0,25 bar only with accuracy 0,5%

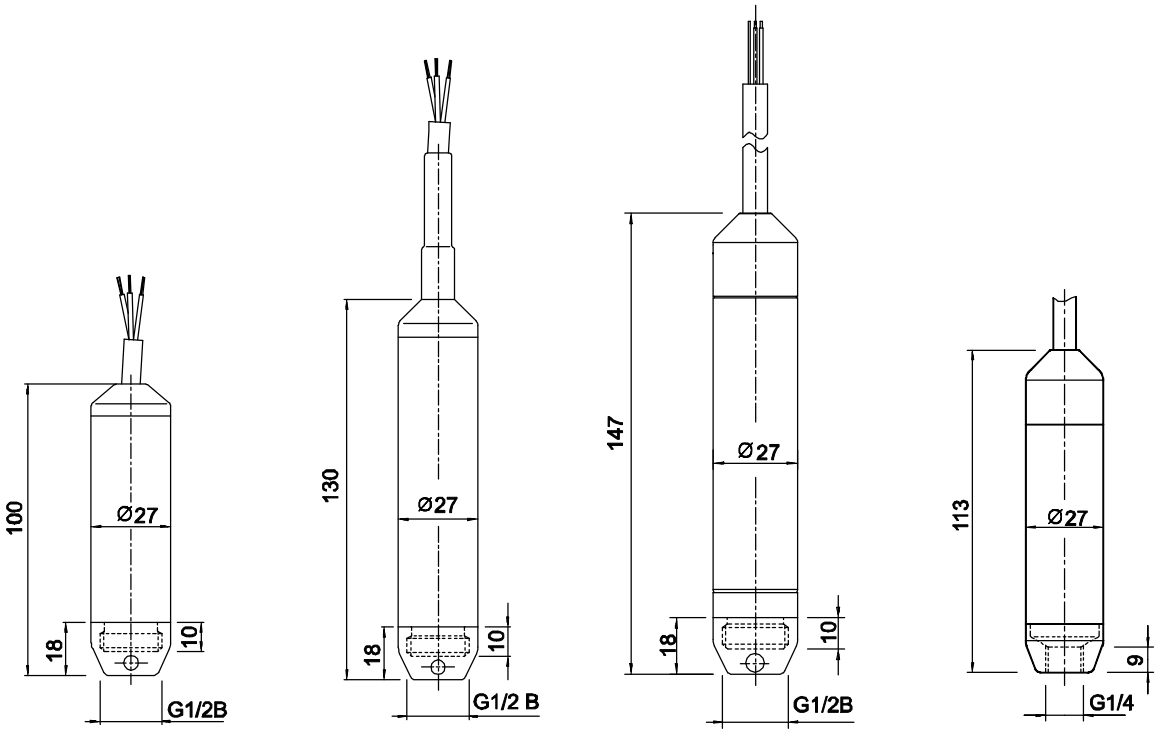
Dimensions (mm)

Model P3233
(depth up to 100 m)

Model P3230
with PUR-cable
(depth up to 300 m)

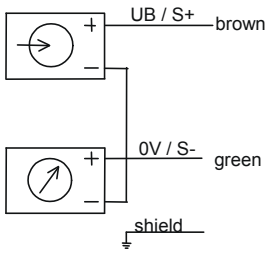
Model P3230
with PTFE-cable
(depth up to 100 m)

Model P3230 Hastelloy
with FEP-cable
(depth up to 100 m)

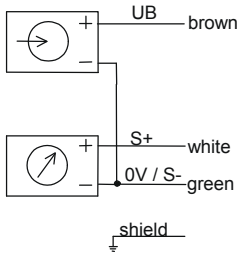


Electrical connection

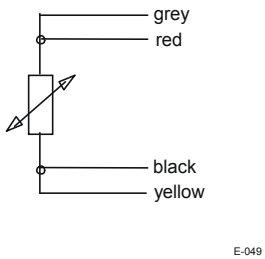
2 wire
with cable outlet



3 wire
with cable outlet



Pt 100, 4 wire

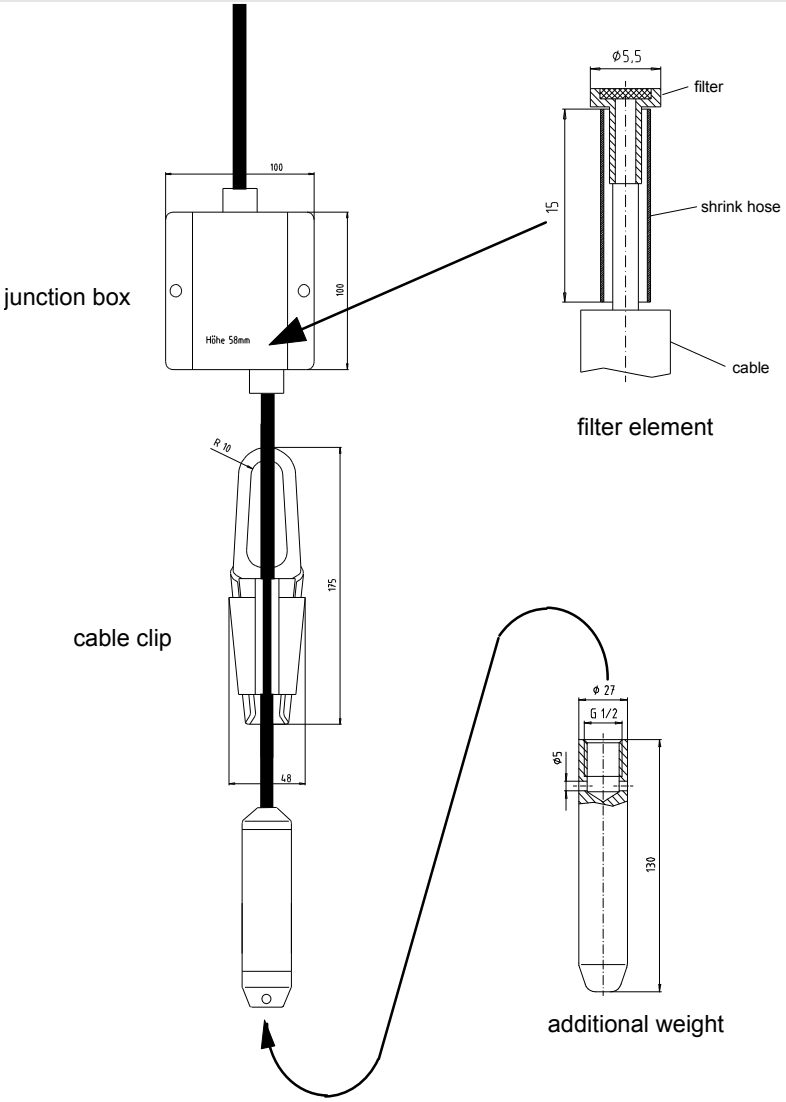


Connection table for cable outlet

	4...20 mA (2 - wire)	0...10VDC (3 - wire)
Supply: UB+	brown	brown
Supply: 0V	green	green
Signal: S+	-	white
Signal: S-	-	green
Shield	blue	blue

Accessories

Art. No.	Description
AZM51X001003	Filter element for capillary tube
AZM51X001002	Cable clip
AZM51X001001	Additional weight
AZM51X001004	Junction box (protection type IP 54)



Ordering details

1. Model
2. Measuring range
3. Output signal
4. Options

Subject to technical changes

Ex - Pressure Sensors
EEx ia I / IIC T6

according to ATEX

with internal diaphragm for submersible pressure measurement

accuracy 0.25% and 0.5 %

standard output: 4...20 mA; 2-wire system

Description

Ex-pressure sensors Industrial Heavy Duty are top of the range products in Ex-pressure gauge technology.

The intrinsically safe Ex-pressure sensors are designed for zone 1 and have special type approval for use in potentially explosive atmospheres and a CENELEC certificate according to the new ATEX.

Due to the systematic use of high-grade stainless steel for the wetted parts, this sensor is suitable for aggressive media. For measuring tasks in aggressive media a special version with PTFE cable can be obtained.

A hermetically sealed stainless steel case allows the pressure sensor to be immersed down to a depth of 300 m.

The inner vented connection cable makes pressure compensation of the measuring cell against the atmosphere possible and thus hydrostatic pressure measurement.

The mechanical fastening of the pressure sensor does not require any additional strain relief, as the construction of the cable is suitable to take a maximum tensile force of 1000 N. An additional weight can be screw-fitted to increase the actual weight of the sensor.

The pressure sensors special meet the electronic magnetic compatibility (EMC) requirements to EN 61326.

Features

- O intrinsically safe, zone 1
- O option: zone 0
- O finely graded selection of nominal pressure ranges according to EN
- O high long-term stability
- O high accuracy
- O corrosion resistant stainless steel design
- O good repeatability
- O high overload protection
- O for dynamic and static measurements
- O simple installation
- O CENELEC-certificate acc. to ATEX

Measuring ranges

gauge pressure

positive 0...0.1 bar to 0...25 bar

Applications

Level measurement in explosive atmosphere

Technical data

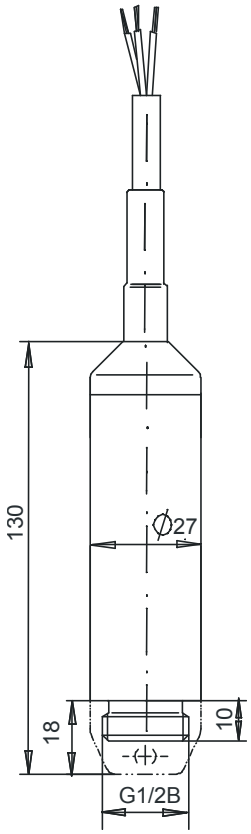
Model	E130	E131
Pressure type	positive gauge pressure	
Output signal	4...20 mA - 2-wire system	
Accuracy % of F.S. [1])	0.5	0.25
Measuring ranges acc. to EN	0 ... 0.1 bar to 0 ... 25 bar	0 ... 0.25 bar to 0 ... 25 bar
Repeatability	≤ ± 0.05 % of F.S.	
Stability (annual)	≤ ± 0.2 % of F.S. in rated conditions	
Pressure connection	G ½ B with protection cap	
Wetted parts - case - diaphr. + pressure connect. - protection cap - cable - shrink hose	 stainless steel 1.4571 stainless steel 1.4571 stainless steel 1.4571 PUR (option: PTFE up to 10 bar) Polyolefin (not for PTFE cable)	
Over load limit	≤ 1.6 bar 5-fold; >1.6 bar 3.2-fold	
Electrical connection	cable with inner ventilation, tensile strength max. 1000 N	
Protection type	IP 68 according to EN 60 529/IEC529 (depth up to 300 m)	
Power supply	10 ...30 VDC	
Power consumption	signal current	
Load	$R_A[\Omega] < (U_B[V] - 10\ V) / 0.02\ A - (0.14\ \Omega \times$ cable length in m)	
Temperature comp. range	0...50 °C	
Temperature influence [2])	≤ 0.2 % /10 K on zero and span	
Response time	≤ 1 ms (within 10 % to 90 % of F.S.)	
Emission [3]) Interference [3])	according to EN 61326 according to EN 61326	
HF immunity	10 V/m (option: 30 V/m)	
Burst	4 KV	
Electrical protection types	Reverse polarity protection	
⟨Ex⟩ Explosion proof protection type max. values - power supply - short circuit current - power restriction [4]) - media temperature - ambient temperature - storage temperature - internal capacity - internal inductivity	EEx ia I / IIC T6 (DMT 02 ATEX E 114 X) DMT <30 VDC 100 mA 1 W -10 ... 60 °C -10 ... 60 °C -10 ... 60 °C ≤ 22 nF + 0.2 per m cable ≤ 100µH + 2 per m cable	
Weight - sensor - cable - additional weight	 0.20 kg 0.08 kg per m cable 0.50 kg	

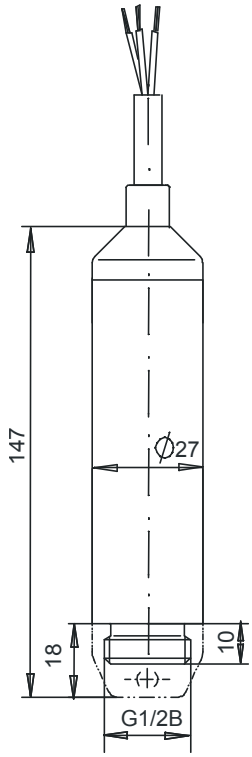
of F.S. = of full scale value

1) Terminal point adjustment according to DIN 16 086, including linearity and hysteresis
2) ≤ 0.4 % /10 K for measuring ranges 0...0.1 and 0...0.16 bar
3) Declaration of conformity on request
4) Power limitation for supply transformers

Dimensions (mm)

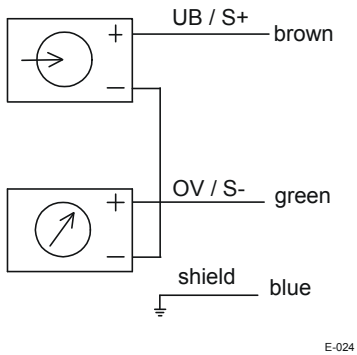
Option: PTFE cable





Electrical connection

Two-wire system



Accessories

To increase the actual weight of the sensor an additional weight can be screw-fitted.

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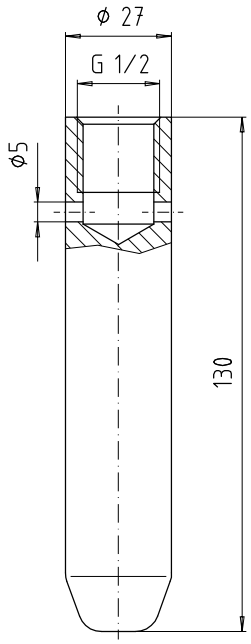

Order details:

1. Model
2. Measuring range
3. Options
4. Cable length
5. Ex-zone