

Heavy-Duty and Push-In Pore Water Pressure Sensor – Piezometer

Type PP4 RS and PP4 RS E



This kind of piezometer Type PP4 RS is the heavy-duty model with an extra-large ring filter made of sintered metal. The model PP4 RS E is a push-in Piezometer which can be pushed directly into soft soils.

The piezoresistive piezometer is used to monitor pore-water pressures. The pressure sensor of the heavy-duty piezometer is encapsulated in a waterproof housing made of stainless steel with a diameter of 40 mm and a length of 230 mm. The piezometer converts pore-water pressure to an output signal proportional to the measured value via a filter and via the diaphragm of the pressure sensor.

The Push-in Type of Piezometer PP4 RS E provides a thread M36 x 1,5 for easy connection of a push-in sleeve to connect drill rods.

TECHNICAL DATA

Model

- PP 4 RS (Standard without thread)
- PP 4 RS E (with thread M36 x 1,5 for push-in sleeve)

Filter

- Sinter metal ring filter (PP4 RS) for installation in sand fills resp. groundwater measuring points

Accessories

- Press-in sleeve for PP4 RS E
- Cable type PUD (blue) type PEHD standard (black) and type PEHD with vent hose (black)
- Overvoltage protection

General Specifications

| | |
|-------------------------|--------------------------------------------------------------------|
| Dimensions, Ø / length: | 40x230 mm (PP 4 RS) 40x330 mm (PP 4 RS E, incl. push-in sleeve) |
| Material: | V4A 1.4571 |
| Weight: | 920 g (PP 4 RS) 1700 g (PP 4 RS E, incl. push-in sleeve) |
| Protection class: | IP 68 |

Filter type

| | |
|----------------------------|-----------------------------------------------------------------------------------------------------|
| Filter type: | Sintered metal |
| Filter area: | 57 cm ² |
| Density: | 4.9-5.3 g/cm ³ |
| Porosity: | 33-38 % |
| Specific flow coefficient: | 3 [m ²]x10 ⁻¹² (laminar) 8 [m ²]x10 ⁻⁷ (turbulent) |
| Porometer, Ø pore size: | 6 µm |

Technical data / variants

Pore water pressure sensors



AU
69.xx.01



AI
69.xx.02



VW
69.xx.03

AU PIEZORESISTIVE PRESSURE SENSOR, 4-CONDUCTOR SYSTEM

| | |
|--------------------------------------------------------------------|----------------------------|
| Supply | Constant current 1 mA |
| Optional supply | 4 mA or 10 V _{DC} |
| Output signal | 0 – 250 mV |
| Overload protection (1 – 50 bar) | 50 % f. s. |
| Linearity incl. hysteresis | < 0.5 % f. s. |
| Linearity incl. hysteresis (opt.) | < 0.1 % f. s. |
| Thermal zero offset | 0.025 mV/ °C |
| Operating temperature | +5 to +80 °C |
| Storage temperature (dry) | -40 to +100 °C |
| Long-term drift, temperature-dependent (at 0 °C to 50 °C), typ. | 0.25 mV |
| Max. cable lengths | 500 - 1000 m* |

AI PIEZORESISTIVE PRESSURE SENSOR WITH A BUILT-IN AMPLIFIER

| | |
|------------------------------------------------------------------|--------------------|
| Supply | 15 to 30 V |
| Output signal | 4 – 20 mA |
| Overload protection (1 – 50 bar) | 50 % f. s. |
| Linearity incl. hysteresis | < 0.5 % f. s. |
| Linearity incl. hysteresis (opt.) | < 0.1 % f. s. |
| Operating temperature | +5 to +60 °C |
| Storage temperature (dry) | -15 to +100 °C |
| Temperature coefficient | < 0,01 %/ °C f. s. |
| Load impedance (U _s -9 V) : | 20 mA |
| Initialization time after switch-on | 6 seconds |
| With optional AD 590 temperature sensor, output signal 1 µA/K | |
| Max. cable length | 1000 - 2000 m* |

*Dependent on the number of sensors and cable length

PRESSURE SENSOR WITH VW VIBRATING WIRE TECHNOLOGY

| | |
|----------------------------------------|------------------------------|
| Overload protection of measuring range | 50 % |
| Linearity incl. hysteresis | ± 0.5 % f. s. |
| Linearity incl. hysteresis (opt.) | ± 0.1 % f. s. |
| Resolution | ± 0.02 %* ¹ f. s. |
| Thermal zero offset | < 0.02 %/ °C* ¹ |

SENSOR SPECIFICATIONS

| | |
|--------------------------------------|---------------------------------|
| Temperature range | -20 to +80 °C |
| Current consumption | Impulse excitation |
| Operating frequency | 2 kHz - 3,3 kHz |
| Supply, impulse triggering | 60 V |
| Optional ex-protection* ² | EEx ib IIB T4 EEx ib IIB BT1 |
| Max. cable length | 2500 m |

*¹ Deviation during operation at high temperatures on request

*² The cable characteristics need to be taken into account for ex-versions

Pressure and measuring ranges

0 - 0.1, 0 - 0.2, 0 - 0.5, 0 - 0.5, 0 - 1, 0 - 2,
0 - 5, 0 - 10, 0 - 20, 0 - 50, 0 - 100, 0 - 200
and 0 - 400 bar

Add-ons and finishes

Resistance to seawater and brackish water
1.4439 or similar

Environmental protection: Gel pad to
protect the membrane against aggressive
chemicals and extreme pH values

Climate tested: If required, we can prepare
a temperature test for your batch or indivi-
dual sensor to provide a precise tempera-
ture quotient for your evaluation.

* PW4 RF only: With additional M36x1.5
union for press-in sleeve

All of our sensors are calibrated in defined
environmental parameters. This calibration
result is included with the actual device in
the form of a comprehensive calibration
sheet. More extensive calibrations can be
arranged at any time.

Pressure and measuring ranges

0 - 0.1, 0 - 0.2, 0 - 0.5, 0 - 0.5, 0 - 1, 0 - 2,
0 - 5, 0 - 10, 0 - 20, 0 - 50, 0 - 100, 0 - 200
and 0 - 400 bar

Measurement device and Data logging

- Handheld measuring device HMG
- Handheld measuring device for
vibrating wire transducer
- DL Data logger
- Measurement system MCC

Pressure and measuring ranges

-0.5 to +0.4, +0.7, +1.7, +3.5, +5.0, +7.0,
+10, +20, +35, +70, +100, +200, +350, +500
and 750 bar, negative pressures standard up
to -0.5 bar