FIBER OPTIC PIEZOMETER
MODEL FOP-MICROPZ

ROCTEST

APPLICATIONS

The FOP-MicroPZ is a fiber optic piezometer used to measure pore-water (or other fluids) pressure. Like other piezometers, it is used in various applications like tunnels, embankments, excavations, dams, water repository sites and many others. One of the main differentiator of the FOP-MicroPZ is its very small size, enabling it to be used where no other piezometers can.

DESCRIPTION

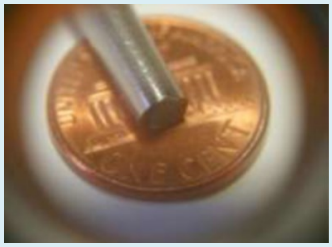
This piezometer's design is based on non-contact deflection measurement of a miniature MOMS (Micro Optical Mechanical System) pressure sensor manufactured using photolithographic techniques. The pressure transducer has a flexible diaphragm assembled on top of a sealed vacuumed cavity, and the pressure measurement is based on Fabry-Pérot white-light interferometry. Pressure creates a variation in the length of a Fabry-Pérot cavity consisting of the inner surface of the flexible diaphragm on one side and a reference optical surface attached to the lead optical fiber on the other side. The interrogation is made using field-proven and patented white-light interferometer modules manufactured by FISO Technologies.

Since fiber optic readout units and dataloggers can consistently and accurately measure the cavity length under all conditions of temperature, EMI, humidity and vibration, the system delivers reliable pressure measurements in the most adverse conditions. The mechanical robustness is assured by the stainless protection sleeve and a porous stainless steel filter which protects the sensing element from solid particles, allowing the FOP-MicroPZ to sense only the fluid pressure to be measured. The total diameter of the sensor, including the housing, is only 4.8 mm and its total length is only 54 mm, which makes it the smallest piezometer for geotechnical applications currently available.

The miniature piezometer is designed for industrial and civil engineering applications. The MOMS pressure sensor is mass-produced in batches on glass and silicon wafers using well established photolithographic technologies derived from the semiconductor industry.

FEATURES

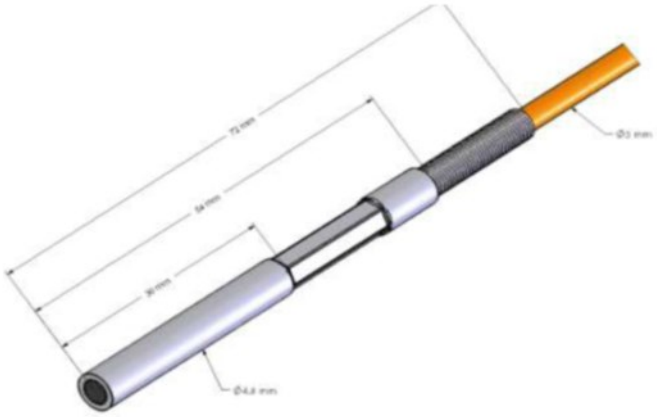
- **Intrinsically safe**
- **Immune to EMI/RF/Lightning**
- **Long-term reliability**
- **High resolution**
- **Rugged stainless steel construction for harsh environment**
- **Very small diameter (4.8 mm)**



SPECIFICATIONS

Range	50, 100, 200, 350, 500, 750, 1000 kPa
Accuracy[1]	± 1.0% F.S.
Resolution	0.025% F.S.
Overload	1.5 F.S.
Thermal shift[2]	< 0.1 %FS / °C
Outer diameter	4.8 mm
Length	54 mm
Body material	Stainless steel 316
Cable	PVC 3 mm outside diameter
Filter	Stainless steel 316 (porosity 40 µm)

[1] Specification achieved in laboratory conditions with FPI-HR-2 interrogator
[2] Determined between -20°C and +60°C, we recommend to use sensor of 50 and 100 kPa in a stable temperature environments.



ORDERING INFORMATION

Please specify the range, the cable length and the fiber optic readout unit model.

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