

FIBER OPTIC PIEZOMETERS

FOP Series

APPLICATIONS

The FOP series of fiber optic piezometers is designed to measure pore-water or other fluid pressures. It is used to monitor engineering works such as hydraulic structures, foundations, retaining walls, dams, embankments, excavations, tunnels, waste repository sites, etc.

DESCRIPTION

Our unique design is based on non-contact deflection measurement of a stainless steel diaphragm, as opposed to more conventional measurement techniques.

The pressure transducer is based on Fabry-Perot interferometry. Pressure creates a variation in the length of a Fabry-Perot cavity consisting of the inner surface of the stainless steel diaphragm on one side and of an optical fiber on the other.

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 all-welded stainless steel construction, with no epoxy, sealing rubber or other sort of polymeric material.

Four models of FOP piezometers are available:

The FOP is designed to be embedded in earth fills, at concrete/earth interfaces or inserted into boreholes and small-diameter pipes. The end of the FOP is fitted with a high or low air entry filter, which protects the sensing element from solid particles, allowing this model to sense only the fluid pressure to be measured. The filter is easily removable for saturation.

The FOP-F is a thick-wall version of the FOP for use in direct burial applications.

The FOP-C is provided with a pipe thread adapter enabling the piezometer to be used as a pressure transducer.

The FOP-P is designed to be driven into unconsolidated fine grain materials such as sand, silt or clay. The external housing is a thick-wall cylinder fitted with a conical shoe at one end and an EW drill rod or standpipe thread adapter at the cable entry end.



Models FOP, FOP-C, FOP-F and FOP-P

FEATURES

- Intrinsically safe
- Immune to EMI/RFI/Lightning
- Long-term reliability
- Accuracy of $\pm 0.25\%$ F.S.
- High resolution
- Rugged stainless steel construction for harsh environments

SPECIFICATIONS

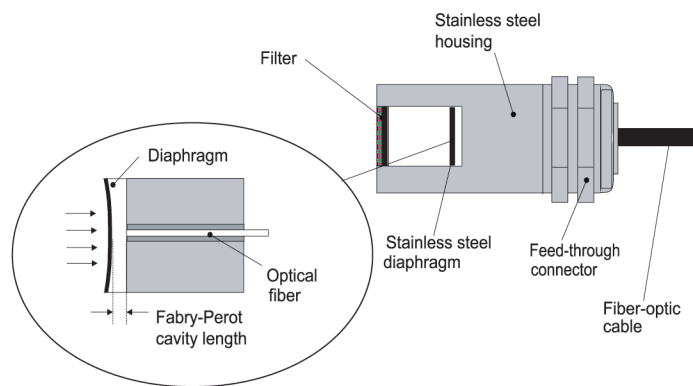
PERFORMANCE

Range ¹	200, 350, 500, 750, 1000, 1500, 2000, 3000, 5000, 7000 kPa
Accuracy ²	±0.25% F.S.
Resolution	0.025% F.S.
Overload	1.5 × F.S.

MODEL	FOP	FOP-F	FOP-C	FOP-P
Housing	Slim	Thick-wall	Threaded (STD 1/4" 18 NPT)	Push-in point with EW thread
Outside diameter	19 mm	25.4 mm	19 mm	33.4 mm
Length	100 mm	100 mm	100 mm	210 mm
Material	Stainless steel			
Filter	Stainless steel, ~50 µm, ~10 kPa low air entry Ceramic, ~1 µm, ~450 kPa high air entry			

¹ Other ranges available upon request.

² Specifications achieved in laboratory conditions.



Model FOP

ORDERING INFORMATION

Please specify:

- Model and range
- Cable length
- Filter
- Fiber optic readout instruments