

DATA SHEET



PIEZOMETER (VIBRATING WIRE)

MODEL EPP-30V

INTRODUCTION

The piezometer, also known as pore pressure meter, is used to measure pore water pressure in soil, earth/rock fills, foundations and concrete structures. It provides significant quantitative data on the magnitude and distribution of pore pressure and its variations with time.

The sensor helps in evaluating the pattern of seepage, zones of potential piping and the effectiveness of seepage control measures undertaken. The sensor also is used to measure water level in reservoirs, wells and boreholes.

Proper evaluation of pore pressure helps in monitoring the behavior after construction and indicates potentially dangerous conditions that may adversely affect the stability of the structure, its foundation and appurtenant. It also provides basic data for design improvement that will promote safer and more economical design and construction.



FEATURES

- Reliable, accurate, low cost and simple to read.
- Protected against lightning spikes.
- Easy installation in standpipes, pressure vessels and ideal for underground work.
- Hermetically sealed under a vacuum of 0.001 Torr; stainless steel construction.
- Thermistor provided for additional temperature measurement.
- Can measure negative pressure. Not limited to depth of water being within 5 m from the observation station as is in case of twin tube piezometers.
- Very small time lag.
- Transmission of signal as a frequency over long cable lengths.

APPLICATION

- To determine the flow pattern through earth/rock fill and concrete dams and their foundations and to delineate the phreatic line.
- Measuring the elevation of ground water in stand pipes, boreholes and wells.
- Hydrological investigation, construction control, stability investigation and monitoring of earth dams, foundations, shallow underground works and surface excavations.
- Monitoring & control of de-watering & drainage.
- Pressure and thermal cycling
- Unique method of wire clamping
- By generating a vacuum of around 1/1000 Torr inside the sensor by electron beam welding. This results in effect of oxidation, moisture, environmental conditions and any ingress of water being completely eliminated.

OVERVIEW

The Encardio-rite piezometer incorporates vibrating wire technology to provide remote digital readout of fluid and/or water pressure in standpipes, boreholes, embankments, fully and partially saturated natural soils, rolled earth fills and the interface of retaining structures.

The piezometer is also used to measure water levels/water table in various applications. The superiority of Encardio-rite piezometers for these measurements is unquestionable.

OPERATING PRINCIPLE

Encardio-rite pore pressure meter basically consists of a magnetic, high tensile strength stretched wire, one end of which is anchored and the other end fixed to a diaphragm which deflects in some proportion to the applied pressure. Any deflection of the diaphragm changes the tension in the wire, thus affecting the resonant frequency of the vibrating wire.

The resonant frequency with which the wire vibrates can be accurately measured by our model EDI-54V indicator or any vibrating wire readout unit.

The data can also be automatically collected at desired frequency, stored and transmitted to remote server by a suitable datalogger. It can be connected to our model ESDL-30 digital datalogger using a vibrating wire - SDI12 interface card, for remote and continuous readings. The datalogger can transmit the collected data to central/cloud server via cellular network.

DESCRIPTION

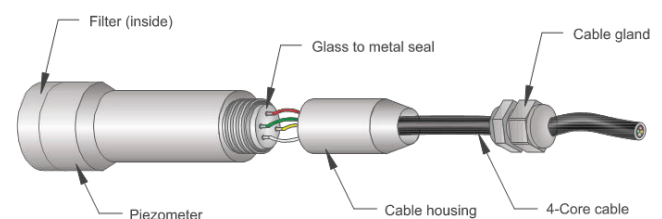
Long term stability is ensured in the model EPP-30V Encardio-rite pore pressure meter by:

- Pressure and thermal cycling
- Unique method of wire clamping
- By generating a vacuum of around 1/1000 Torr inside the sensor by electron beam welding. This results in effect of oxidation, moisture, environmental conditions and any ingress of water being completely eliminated

The pore pressure meter is individually temperature compensated making the requirement of a thermistor for temperature correction redundant. However a thermistor is provided for monitoring temperature.

EPP-30V/1 Stainless steel sensor

The vibrating wire and coil magnet assembly is enclosed in corrosion resistant stainless steel body which is electron beam welded to the diaphragm.





EPP-30V/2 Metallic/ Ceramic filter

A low air entry value ceramic filter of 40 micron porosity is provided. A locking nut holds the filter in position through a suitable 'O' ring. Metallic & other high air entry filters are available as an option.

EPP-30V/3 Cable joint housing

Leads from the coil magnet are terminated on a glass to metal seal which is electron beam welded to the piezometer body. A cable joint housing and suitable cable gland is provided for the cable connection.

EPP-30V/4 Saline protection

Specially treated piezometers are available for saline water applications, when specifically required. In these, the stainless steel diaphragm is protected with a thin layer (around 1 mm) of silicone compound. The remaining exposed cylindrical surface of the stainless steel body is wrapped with a saline resistant tape like "33 super PVC 3M tape".

Particular care is taken at site, while installation, to cover the joint between the piezometer and the cable joint housing.

SPECIFICATION

Type	Vibrating wire
Range (MPa)	0.2, 0.35, 0.5, 0.7, 1.0, 1.5, 2.0, 3.5, 5.0, 10.0, specify
Accuracy	± 0.25 % fs normal; ± 0.1 % fs optional
Non linearity	± 0.5 % fs
Temperature limit	
Operational	-20 to 80°C
Compensated	0 to 80°C
Insulation resistance	Better than 500 MOhm at 12 V
Over range limit	150 % of range
Thermistor	YSI 44005 or equivalent (3 kOhms at 25°C)
Enclosure	Stainless steel - standard, Saline protection - optional

ORDERING INFORMATION

Model: EPP-30V- Range - Filter (LAE/HAE) - Cable housing type (cable diameter 3.5-8 mm or 9-14 mm) - Saline protection required or not

*All specifications are subject to change without prior notice

DATASHEET | 1098-12 R03



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