



ENCARDIO RITE



VIBRATING WIRE PIEZOMETER

MODEL EPP-40V-XX

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. It also helps in evaluating the pattern of seepage, zones of potential piping and the effectiveness of seepage control measures undertaken.

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.

OVERVIEW

The Encardio-rite piezometer incorporates the latest vibrating wire technology to provide remote digital readout of fluid and/or water pressure in standpipes, bore holes, embankments, fully and partially saturated natural soils, rolled earth fills and the interface of retaining structures. The superiority of Encardio-rite diaphragm type piezometers for these measurements is unquestionable.



FEATURES

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

APPLICATIONS

- ◆ 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, bore holes 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.

OPERATING PRINCIPLE

The 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.

READ-OUT UNIT/DATA LOGGER

The resonant frequency with which the wire of the piezometer vibrates can be accurately measured by a vibrating wire readout unit. Our VW readout unit model EDI-51V (datasheet # 1099) is suitable for the measurement of pore pressure at site.

The reading can also be read or logged at a remote location, either by EDI-51V read-out unit or by a data acquisition system (Encardio-rite model EDAS-10-datasheet # 1093).

DESCRIPTION OF EQUIPMENT

The Encardio-rite pore pressure meter is well known for its long term stability. This is achieved by:

- ◆ Ageing pressure and thermal cycling
- ◆ Unique method of wire clamping
- ◆ By generating a vacuum of 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 vibrating wire pressure sensing capsule is sealed under high vacuum. The capsule & coil magnet assembly is housed in a stainless steel body.

The piezometer is supplied with the required length of cable attached.

Ceramic filter


A low air entry value ceramic filter of 40 micron pore size is provided. High air entry filters are also available as an option. The filter can be taken out for saturation.

SPECIFICATIONS

Type	Vibrating wire
Range (MPa)	0.35, 0.7, 1.0, 2.0
Accuracy	± 0.2 % fs (± 0.1 % fs optional)
Non-linearity	± 0.5 % fs
Operating temperature limit	-20 to 70°C
Thermal zero shift	< 0.05 % of fs/°C
Coil resistance	140 Ohms nominal @ 25°C
Thermistor	YSI 44005 or equivalent (3 kOhm at 25°C)
Enclosure	Stainless steel
Size	19 mm ϕ x 100 mm long
Cable	4-core, standard length 1 m; for other lengths, specify
Required accessories	Portable read-out unit/logger

ORDERING CODE

Model: EPP-40V-X X X

 Range required: 0.35, 0.7, 1.0, 2.0 MPa

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