

# ENCARDIO RITE



## VIBRATING WIRE PRESSURE SENSOR

Model EPP-40V

### INTRODUCTION

The Encardio-rite model EPP-40V small size vibrating wire piezometer is specially designed to measure pore water pressure in small diameter boreholes & standpipes.

Model EPP-40V provides significant quantitative data on the magnitude and distribution of pore pressure & its variations with time. It also helps in evaluating the pattern of seepage, zones of potential piping & the effectiveness of seepage control measures undertaken.

Proper evaluation of pore pressure helps in monitoring the behavior after construction & 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 pressure sensor incorporates the latest vibrating wire technology to provide remote digital readout of fluid and/or water pressure in standpipes and bore holes. The superiority of Encardio-rite diaphragm type pressure sensor for these measurements is unquestionable.

### OPERATING PRINCIPLE

Pressure sensor 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 vibrates can be accurately measured. Encardio-rite model EDI-51V VW readout logger or ESCL-10VT single channel vibrating wire data logger or EDAS-101 data acquisition system are available for monitoring pore pressure at site.

### FEATURES

- ◆ Reliable, accurate, low cost and simple to read.
- ◆ Easy installation in small diameter standpipes/boreholes.
- ◆ Very small time lag.
- ◆ Hermetically sealed under a vacuum of 0.001 Torr; with stainless steel construction.
- ◆ Thermistor provided for additional temperature measurement.
- ◆ Negative pressure measurement possible.
- ◆ Transmission of signal as a frequency over long cable lengths.
- ◆ Protected against lightning spikes.

### APPLICATIONS

- ◆ Measuring the elevation of ground water in stand pipes, bore holes and wells.
- ◆ Monitoring & control of de-watering & drainage.



## DESCRIPTION OF EQUIPMENT

The Encardio-rite pressure sensor 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 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 vibrating wire pressure sensing capsule is sealed under high vacuum. The capsule and coil magnet assembly is housed in a stainless steel body.

The pressure sensor can also be supplied with the required length of cable attached.

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

### Ceramic filter

A low air entry value ceramic filter of 40 micron porosity is provided. A filter assembly holds the filter in position. The filter assembly can be taken out for saturation.

## SPECIFICATIONS

|                              |                                  |
|------------------------------|----------------------------------|
| <b>Type</b>                  | Vibrating wire                   |
| <b>Range (MPa)</b>           | 0.35, 0.5, 0.7, 1.0, 2.0 specify |
| <b>Accuracy</b>              | ± 0.2 % fs normal                |
|                              | ± 0.1 % fs optional              |
| <b>Non linearity</b>         | ± 0.5 % fs                       |
| <b>Temperature limit</b>     |                                  |
| <b>Operational</b>           | -20 to 80°C                      |
| <b>Compensated</b>           | 0 to 80°C                        |
| <b>Insulation resistance</b> | Better than 500 M Ohm at 12 V    |
| <b>Over range limit</b>      | 150 % of range                   |
| <b>Thermistor</b>            | YSI 44005 or equivalent          |
| <b>Dimension (φ x L)</b>     | 19 x 155 mm                      |

\* All specifications are subject to change without prior notice.

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