



ENCARDIO RITE



AUTOMATIC WATER LEVEL RECORDER AND DATA RETRIEVAL SYSTEM

MODEL AWLR-10

INTRODUCTION

The Encardio-rite model AWLR-10 automatic water level recorder and data retrieval system is a single channel data logger designed for remote monitoring of ground water level in a borehole. It can also be used for recording water level in reservoirs.

It essentially consists of a vibrating wire pressure sensor connected through a vented cable to a mini logger having a storage capacity of around 2,000 readings with date and time.

PRESSURE SENSOR

The Encardio-rite pressure sensor incorporates the latest vibrating wire technology to provide remote digital readout or data logging of water pressure. The superiority of Encardio-rite diaphragm type pressure sensor for these measurements is unquestionable due to:

- ♦ Very small time lag.
- ♦ Transmission of signal as a frequency over long wire lengths.

Operating principle

The Encardio-rite 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 that 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.

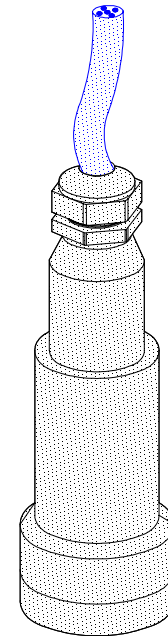
The resonant frequency with which the wire vibrates can be accurately measured by a conventional vibrating wire readout unit.

Description

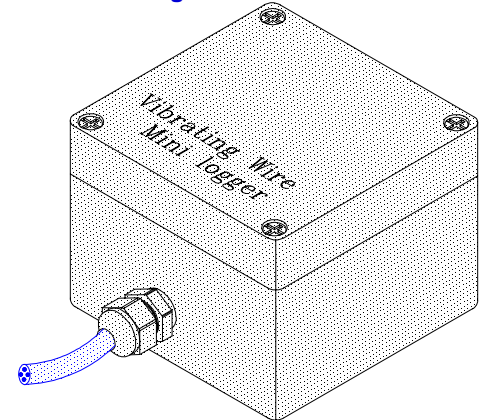
The vibrating wire and the sensor coil assembly is enclosed in a corrosion resistant stainless steel body which is electron beam welded to the diaphragm. A high air entry value sintered metal or ceramic filter of 40 micron porosity can optionally be provided. A locking nut holds the filter in position.

The leads from the sensor coil assembly are terminated on a glass to metal seal which is electron beam welded to the stainless steel body of the pressure sensor. A hole in the glass to metal seal ensures vent to the atmosphere.

Each pressure sensor is individually temperature compensated to close limits.



Vibrating wire level sensor



Sensor Specifications

Range (kg/cm²): 3, 5, 10, 20, 35, 50, specify

Accuracy: ± 0.1 % fs with data logger and operating software.

Temperature limit
Operational: -20 to 70°C
Compensated: 0 to 55°C

Temperature effect: Zero drift < ± 0.03 % fs

Over range limit: 150 % of range

Enclosure: Stainless steel

Cable: 4 core shielded with vent tube and steel strain member.

MINI LOGGER

The VW Mini Logger is a reliable, low cost data logger designed to monitor a single VW sensor, such as a piezometer, crackmeter, or displacement transducer. The Mini Logger is ideal for monitoring remote sensors that are not easily connected to a centralized data acquisition system or when only a few sensors are being monitored and a larger system is not required.

The electronics being encapsulated is impervious to humidity and condensation. Readings are stored in a secure, non-volatile memory not affected by loss of power.

Operation

Connect the Mini Logger to your computer and set the reading schedule with the Mini Logger program. In the field, just connect the sensor to the Mini Logger. To retrieve readings, you can swap logger with another one or retrieve the data with your laptop PC and the Manager program. The Manager program saves data in a comma-delimited ASCII file for use with spreadsheet.

VW Mini Logger Specifications

Excitation type

Reads one VW sensor using a sweep-type pluck. Four user-selectable sweeps cover frequencies from 450 to 6000 Hz.

Data storage

Stores 2,000 readings with date and time in secure, non-volatile memory. User-selectable setting halts recording when memory is full or allows recording to continue by overwriting earliest readings.

Reading schedule

From one every 2 seconds to one per week. Logging function starts when batteries are inserted. User can set reading schedule in advance and later insert batteries to start logging.

Power

Two D-cell batteries provide power for approximately four months when recording one reading every-half hour at temperatures from -20 to +50°C.

Data retrieval

Requires interface cable (included) and Windows 95/98/NT computer. Interface cable is connected to DB9 serial connector inside the box. As electronics is encapsulated, box can be opened in the field.

Weatherproofing

Mini Logger electronics is completely encapsulated in waterproof resin. Polycarbonate box has O-ring seal. Signal cable from sensor enters through cable gland.

Dimensions

100 x 100 x 90 mm high

Y2K

Compatible

MINI LOGGER MANAGER SPECIFICATIONS

General description

Mini Logger Manager program, supplied with Mini Logger, is used to program the logger and to retrieve data from the logger.

System requirement

Windows 95/98/NT computer, serial port, and pointing device (mouse). Program required 1 MB of disk space.

Mini logger set-up

User enters the following settings into the Manager program and then transfers them to the Mini Logger.

- ◆ Sensor ID: 11 characters
- ◆ Logger ID: 39 characters
- ◆ Reading interval: 2 seconds to 1 week, fixed
- ◆ Sweep frequency: one of four frequency ranges
- ◆ Sensor calibration: (optional) up to 6 coefficients (5th order polynomial).
- ◆ Clock: date and time

Data viewer

User can view data stored in the Mini Logger to verify logger operation.

Data retrieval

User can specify which data is retrieved and how it is stored. Options are:

- ◆ Retrieve all data or specified data.
- ◆ Generate engineering units: Output file always contains Hz readings (native units). When enabled, this function generates additional readings in engineering units using the polynomial coefficients stored in the logger. Original Hz readings are not modified.
- ◆ Output format: User can specify output for spreadsheet or for CR10 compatibility. Both formats are ASCII and provide comma-delimited values.

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