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## DATASHEET

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# SINGLE CHANNEL DATALOGGER FOR VIBRATING WIRE SENSORS

## MODEL ESCL-10VT-BX



## INTRODUCTION

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Model ESCL-10VT-BX single channel vibrating wire datalogger is designed to monitor a single vibrating wire sensor (including temperature) such as a piezometer, pressure sensor, and crack meter or displacement transducer. The datalogger can additionally monitor barometric pressure and has provision to monitor rainfall using a tipping bucket rain gage.

The datalogger has following data transmission options:

- Telemetry through GSM/GPRS modem
- Readout/data retrieval using laptop

## FEATURES

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- Easy to install, simple to use and user friendly.
- Large data storage memory allows data to be stored for longer time between retrievals.
- Weather resistant housing.
- Dataloggers with telemetry options allow data to be collected remotely from hundreds of kilometers away.

## APPLICATION

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- Underground water level and rain fall monitoring
- Geotechnical applications



## DESCRIPTION

ESCL-10VT-BX datalogger can be programmed to take a measurement from 5 seconds to 168 hours in linear mode. The number of measurements taken per day should however be kept to a minimum as higher frequency of measurement drains the power supply battery at a faster rate. The datalogger has a number of power supply options.

The datalogger has Windows based application software with features that allow the user to set the sensor calibration coefficients, recording intervals, datalogger or borehole code (identification tag numbers), sensor serial number, real time clock time etc. of the datalogger conveniently.

User can monitor readings and GPRS signal strength for diagnostic purpose. User can start or stop scan or can manage data files, download data from the datalogger, perform data correction and save and export the data files.

ESCL-10VT-BX is a rugged datalogger that can be used in a variety of application to provide accurate and reliable data. It features a wide operating temperature range, dependable stand alone operation, low power consumption, compatibility with many telecommunication options and flexibility to support a variety of measurement and control applications. It is of durable construction and very suitable for unattended applications.

## GROUNDWATER LEVEL MONITORING WITH ESCL-10VT-BX DATALOGGER

The most common use of the datalogger is for online monitoring of water level. The water level/table is monitored by using a high accuracy fluid pressure sensor installed at a depth below the minimum expected water level. A thermistor is incorporated in the sensor for measurement of water temperature.

The sensor is connected to datalogger for automatic collection of data. The data is then transferred by the datalogger to a remote server/cloud server.

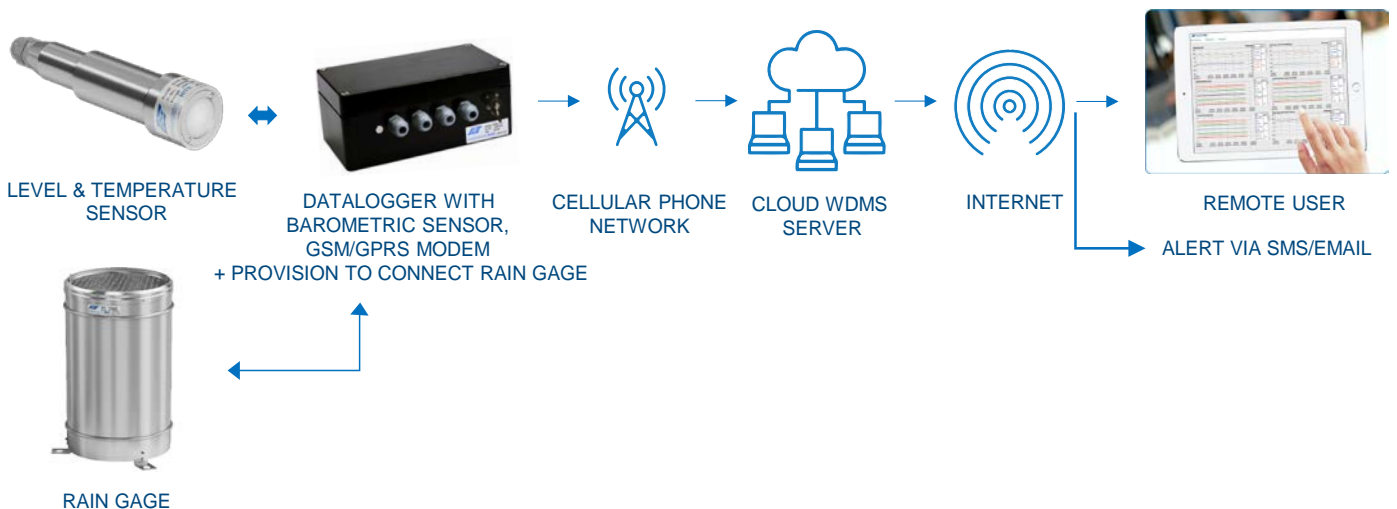
The datalogger has an inbuilt barometric sensor which allows the water level to be corrected for barometric pressure variation. The use of barometric pressure sensor eliminates the apparent variation in water level due to variation in atmospheric pressure. The system provides the correct value of water level along with barometric pressure and temperature to the user.

Water level/table reading from a pressure sensor is dependent on specific gravity of water at that location. For example if specific gravity is 1.08, the pressure sensor will give an 8 % higher output as compared to normal water which has a specific gravity 1.0. In coastal areas or in water with high dissolved solid content, the specific gravity of water will have a value higher than 1.0. The measured value of specific gravity must be entered in the datalogger so that it can provide the corrected value of water level/table.

The dataloggers measure the output from the absolute and barometric pressure sensors as well as temperature and calculates the pressure in terms of water column after correcting for the measured barometric pressure and water density. The data is stored, together with the current date, time and battery voltage, as a data record in internal non-volatile memory of the datalogger.

## RAINFALL MONITORING WITH ESCL-10VT-BX DATALOGGER

ESCL-10VT-BX datalogger has provision to attach model ERG-200/ERG-201 rain gage for simultaneous monitoring of rain fall along with the water level/table monitoring. This helps in correlating the water table data with the rainfall data.





## DATA RETRIEVAL AND TRANSMISSION

Following options are available:

- Telemetry through GSM/GPRS modem
- Readout/data retrieval using laptop/mobile

### Telemetry through GSM/GPRS modem

In a location covered by any GSM/GPRS service provider, the data from the automatic datalogger can be transmitted remotely to a PC at a central location. The user will need to arrange a data SIM card for each datalogger.

### Readout/data retrieval using laptop/mobile

The logged data from the datalogger in the field can be directly downloaded to a laptop/mobile. Data can be transferred to the central PC or server from the laptop/mobile using either an interface cable/USB pen-drive or through Internet.

## DATA PRESENTATION, ARCHIVING AND WORLD WIDE ACCESS THROUGH ENCARDIO-RITE PUBLIC CLOUD SERVICE

Encardio-rite offers public cloud based web monitoring service to its customers for retrieving data from ESDL-30 dataloggers, archiving the retrieved data in a SQL database, processing the data and presenting the processed data in tabular and most suitable graphical forms for easy interpretation of logged data. The tables and graphs related to any site or sites can be accessed by authorized personnel who can login to their site using the supplied login ID and access password from anywhere in the world over the internet. Users can have two types of access – any user with lower level access can only view or access the data whereas a higher level user has the authority to set or modify some of the settings.

No special software is needed for accessing the user sites as the information can be viewed using most standard and popular web browsers like Microsoft Internet Explorer, Mozilla Firefox, Google Chrome etc. Encardio-rite cloud services work on a rental model. User has to pay a small setup fee for first time and then a monthly rental has to be paid for accessing the data over the cloud as long as required.

## SPECIFICATIONS

Input	Pressure sensor
Resolution	18 bits (better than 1 mm for 70 m WC sensor)
Temperature measurement range	-20° to +70°C with 0.1°C resolution
Logging interval	5 seconds to 168 hours
Memory capacity	8 MB Flash RAM. Can store 3,145,728 data points
Data output format	CSV text file. Can be easily imported in many third party applications like Microsoft® Excel
Communication port	One RS-232 serial port. Interface cable for connecting to USB 2.0 port supplied as standard
Operating temperature range	- 30° to 70°C
Power supply boxed version (BX)	2 x D size 3.6 V/19 Ah Lithium cells, or 2 x D size 1.5 V Alkaline high power cells, or 12 V SMF battery chargeable from solar panels, or 12V SMF battery chargeable from the AC mains
Housing	Box version: Weather proof enclosure Cylindrical version: Corrosion resistant stainless steel, AISI grade 316L.
Dimensions (BX) (W x L x H)	120 x 220 x 91 (mm) for box version with suffix BX
Humidity	100 %
Modem (in telemetry option)	Quad Band GSM/GPRS/EDGE, 850/800/1800/1900 MHz
Antenna (In telemetry option)	Built-in or separate mounted antenna available