

DIGITAL SEEPAGE MONITORING SYSTEM

DATASHEET

MODEL ESM-12S



OVERVIEW

The Encardio Rite model ESM-12S digital seepage monitoring system precisely measures and monitors seepage in dams and water flow in open channels and structures in landslide areas. Monitoring water seeping through, around, or under a dam is crucial for analyzing the structural behavior of the dam and its long-term stability. The seepage or flow rate data provided by the system helps in assessing the safety and integrity of dam structures.

The ESM-12S digital seepage monitoring system consists of ESM-12S/1 sensor which is a high-precision, low-range level sensor with a built-in temperature sensor. In dam applications, drain water is collected through channels and discharged into a collection chamber, where the flow is measured using a weir (V-notch or rectangular) and a water level/seepage sensor. The sensor, installed in a slotted PVC pipe, measures the head over the weir, corresponding to the flow rate. The sensor position is kept submerged in water, lower than the vertex of weir. The system compensates for barometric variations through a vented signal cable connected to a desiccant unit. The signal cable is terminated in the terminal box or datalogger mounted adjacent to moisture trap. To avoid water level fluctuations caused by waves or turbulence, measurements are typically taken in a stilling well constructed upstream of the weir.



SPECIFICATIONS

Range	1000 mm
Sensor accuracy*	± 0.2 mm
Sensor resolution	0.025 % fs
Stability	± 0.05 % fs per year
Output	Digital - SDI-12 serial interface ModBus RS485 (optional)
Over range capacity	200%
Temperature limit	-20 to 70°C

* As tested under lab conditions

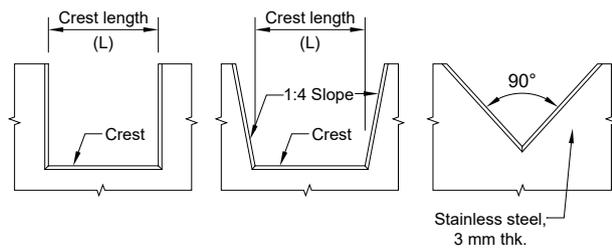
Model ESM-10 Weir or V-Notch

The seepage monitoring system can be supplied with a stainless steel V-notch or rectangular weir, if ordered separately. The weir is fabricated from durable stainless steel and is customized in size and angle to match the expected flow rate. The commonly used configurations are the 90° V-notch or rectangular weir. For low flow rates, a V-notch weir with an angle smaller than 90° is used.

Custom sizes and designs are available to meet specific site requirements. All weirs are typically manufactured in compliance with Indian Standard IS: 9117-1979.

Sizes available: 22.5°, 45°, 90° and rectangle

Range available: 10 to 70 litres/second.



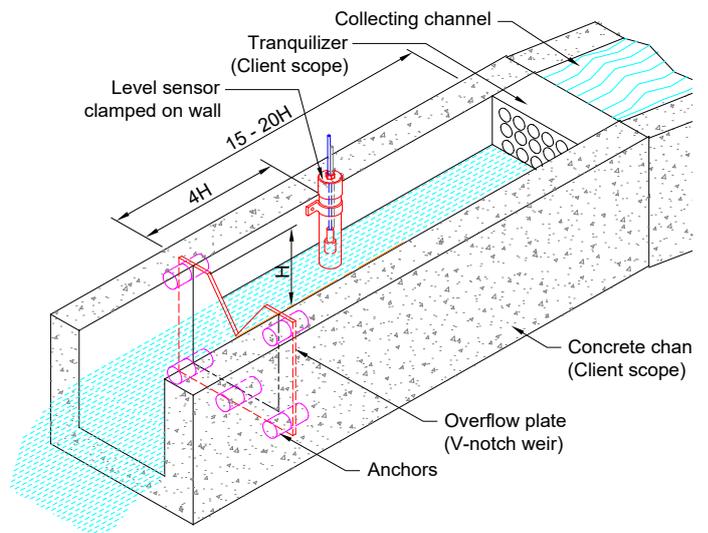
Model ESM-10 Weir - Rectangular and V-Notch type

Datalogging

The ESM-12S/1 seepage sensor with **SDI-12 output** integrates seamlessly with the **NexaWave Digilog** (ESDL-30) digital datalogger, enabling customizable data collection intervals and secure transmission to a central server or cloud via GSM/GPRS cellular network.

For **Modbus RS485 output**, the Digilog can be integrated using an optional RS485-SDI12 interface card. In this configuration, the datalogger can accommodate a maximum of seven Modbus sensors.

Encardio Rite also offers **NexaWave Wireless RF Network System**, in which sensor is connected to **DigiLink nodes**, which transmit data reliably to the **Hub** (gateway) using **LoRa RF** technology. The Hub aggregates data from nodes and securely relays it to the central server or cloud via GSM/GPRS cellular networks.



Typical installation scheme for ESM-12S seepage monitoring system in open channel with weir

*All specifications are subject to change without prior notice

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