ENCARDIO RITE
METASENSING FOR MEGA STRUCTURES

MAGNETIC EXTENSOMETER SYSTEM

DATASHEET

MODEL EDS-91V/H



OVERVIEW

The Encardio Rite model EDS-91V/H magnetic extensometer is designed to measure vertical settlement and lateral movement in various geotechnical applications. This system provides critical data on ground movement by monitoring the position of magnetic targets positioned over a near-vertical or horizontal access tube. It is particularly effective for assessing horizontal and vertical movement in foundations and embankments, as well as the displacement of retaining walls, assessing movement in natural and cut slopes, quarry, and mining excavations, and monitoring underground cavities. Key applications of the EDS-91VH include monitoring horizontal and vertical movement in foundations and embankments, and detecting displacements around tunnels and underground cavities.

The EDS-91VH system incorporates a probe with a reed switch that travels within the access tube to sense the position of external magnets. When the probe enters a magnetic field, the reed switch closes, activating an indicator light or buzzer. The probe cable is marked at intervals for measuring the location of each magnet.

FEATURES

- **Reliable and accurate:** Provides precise readings for various geotechnical applications.
- **Flexible monitoring:** Any number of points can be monitored with ease.
- **Portability:** The probe can be moved between access locations; only the access tubes and magnets are permanently installed.
- **Various magnet options:** Includes plate magnets for fills and embankments, ring magnets for datum references, and spider magnets for installation flexibility.
- **Moisture resistant electronics:** Ensures durability and reliability in various environmental conditions.
- **User-friendly setup:** Simplified installation and configuration for efficient deployment.
- **Magnetic target sensing:** Utilizes a reed switch probe that detects the position of external magnets, ensuring reliable and accurate displacement measurements.
- **Flexible access tubing options:** Offers both standard tubing for settlement monitoring and inclinometer casing with telescopic coupling for lateral displacement, adaptable to various soil and geological conditions.
- **Durable and robust design:** Built for long-term performance in challenging environments, ensuring longevity and reliability even in harsh conditions.
- **Ease of installation:** The system features user-friendly components for quick setup, minimizing installation time and complexity.

SYSTEM COMPONENTS

The EDS-91VH Magnetic Extensometer System consists of several key components designed to monitor settlement or lateral movement:

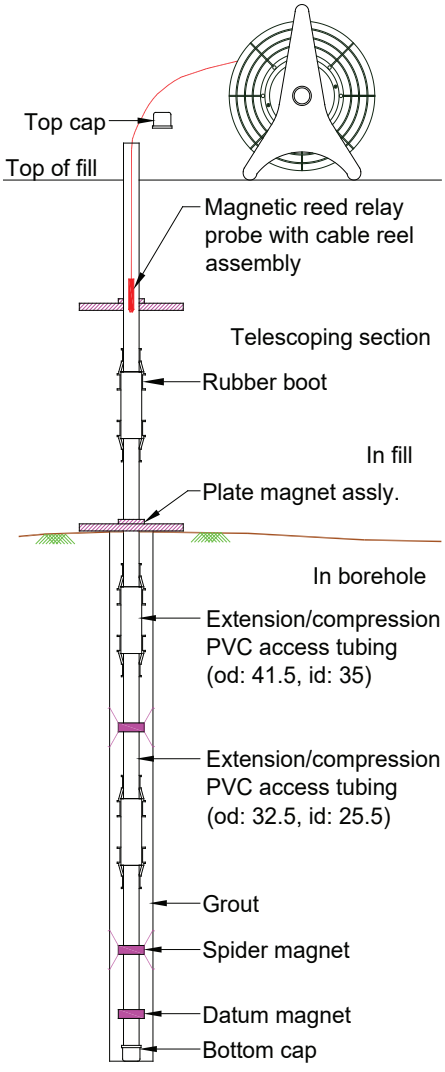
Guide tubing and coupling

Two types of access tubing are available: standard tubing for settlement monitoring and inclinometer casing with telescopic coupling for lateral displacement and settlement monitoring. The system can be installed vertically or horizontally, with magnets located centrally on the lower diameter tube or embedded in trench floors for horizontal applications. This versatility makes it ideal for a range of monitoring scenarios.

EDS-91/1.1: Vertical PVC access tubing, 26 mm i.d. and 32.8 mm o.d. Length depends on magnet spacing.

EDS-91/1.2: Extension/compression PVC telescopic coupling for above, around 35.5 mm i.d. and 41.5 mm o.d. Length depends on magnet spacing.

EAN-AT70: ABS grooved access tubing (inclinometer casing), 58 mm i.d., 70 mm o.d., length 3 m.



Installation scheme of vertical magnetic extensometer

EAN-TC70: ABS grooved telescopic coupling (allows 150 mm compression).

EDS-91/1.5: Return pipe same as EDS-91/1.1 and EDS-91/1.2 for horizontal installation

EDS-91/1.6: Rubber boot for EDS-91/1.1 tubing and EDS-91/1.2 coupling

EDS-91/1.7: Boot pusher tool for pushing rubber boot

Signal receiver and probe EDS-91/2.1

The probe, 22 mm dia x 150 mm long has a reed switch encapsulated inside it in silicon rubber for protection against shock, corrosion and ingress of water. It is connected to the signal receiver consisting of a reel with a battery pack, an on-off switch, buzzer, LED by a flat measuring tape.

The measuring tape is made of high tensile virtually non-expandable, non-stretch, insulated flat steel tape 10 mm wide x 2 mm thick. The probe is available in tape lengths of:

Length 'L' (m)	50, 100, 150, 200, 300 (Metric)
Resolution	1 mm
Length 'L' (ft)	50, 100, 150, 300, 500 (Imperial)
Resolution	0.01 in

The moisture resistant electronics and standard 9 V PP-3 size battery are housed in a hub on the cable reel. The hub can be easily removed to replace the battery or check the electronics without disassembling the entire cable reel.

EDS-91/2.2: Adapter for locating the probe centrally in larger diameter access tubing, 100 mm long with diameter 6 mm less than that of the access tubing.

Magnet targets

Plate Magnets: Used for fills, embankments, and horizontal installations.

EDS-91/3.1: Plate magnet of 300 mm square size with center hole to slide over the access tubing.

EDS-91/3.1.1: 34 mm i.d for PVC access tubing

EDS-91/3.1.2: 71 mm i.d. for ABS inclinometer tubing

Datum Ring Magnet: Fixed at the bottom of the access tube to serve as a reference point.

EDS-91/3.2: Datum ring magnet fixed permanently at tubing bottom for datum.

EDS-91/3.2.1: 34 mm i.d for PVC access tubing

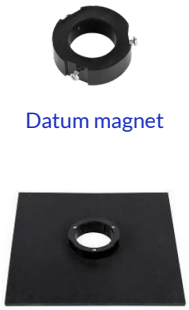
EDS-91/3.2.2: 71 mm i.d. for ABS inclinometer tubing



Spider magnet with 6 leaves



Spider magnet with 3 leaves



Datum magnet

Plate magnet

Spider Magnets: Available with 6 or 3 leaves, these magnets are designed for springing into place or pushing down over the access tube.

EDS-91/3.3: Spider magnet with 6 leaves for springing out in correct position.

EDS-91/3.3.1: 34 mm i.d for PVC access tubing

EDS-91/3.3.2: 71 mm i.d. for ABS inclinometer tubing

EDS-91/3.4: Spider magnet with 3 leaves for pushing down over access tube.

EDS-91/3.4.1: 34 mm i.d for PVC access tubing

EDS-91/3.4.2: 71 mm i.d. for ABS inclinometer tubing

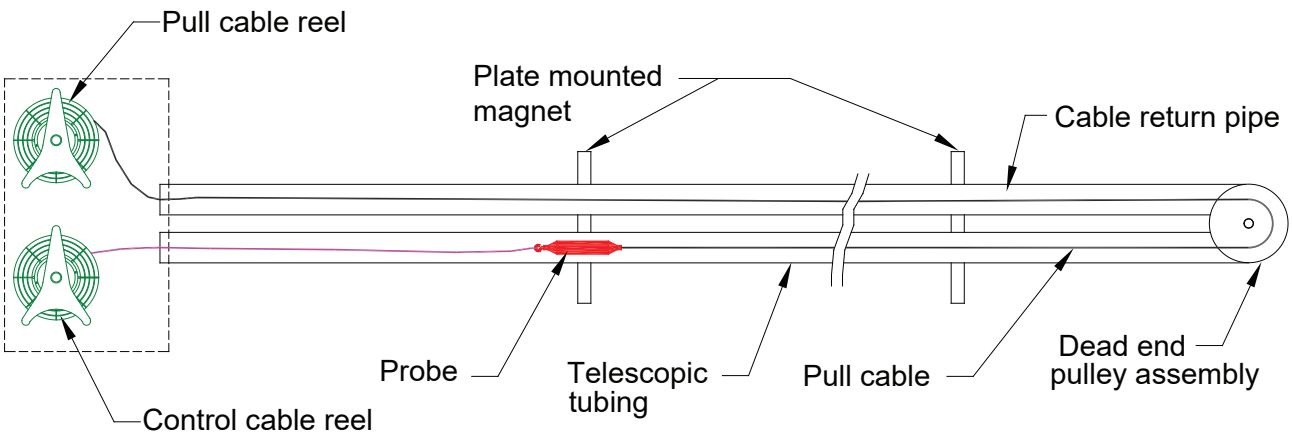
EDS-91/3.1: Plate magnet of 300 mm square size with suitable holes to slide over the access and return tubing for horizontal installation.

Dead end pulley assembly EDS-91/4.1

Dead end pulley assembly for monitoring a dead end hole in horizontal installation. Alternatively, for small length holes, a push rod may be used.

Pull cable reel EDS-91/5.1

A pull cable reel with cable return pipe is provided to assist in moving the probe backward and forward through access tubing in case of installations required for monitoring horizontal movement.



Installation scheme of horizontal magnetic extensometer

Encardio-Rite Electronics Pvt. Ltd. A-7, Industrial Estate, Talkatora Road, Lucknow, UP-226011, India | info@encardio.com | T: +91 522 2661039-320