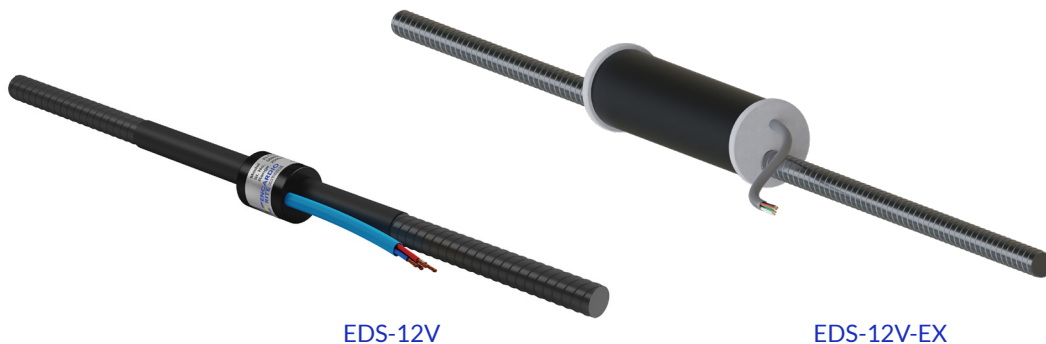


# SISTER BAR STRAIN GAGE

MODEL EDS-12V/EDS-12V-EX

## DATASHEET



EDS-12V

EDS-12V-EX

## OVERVIEW

The Encardio Rite models EDS-12V and EDS-12V-EX vibrating wire sister bar strain gages, also known as rebar strain gages, are specially designed for embedment in concrete structures. These are ideal for measuring strain in reinforced concrete elements such as diaphragm/slurry walls, bridge abutments, tunnel linings, dams, and foundations. They are commonly used for monitoring strain during pile testing in both pre-cast concrete piles and cast-in-place concrete piles.

The sister bar comprises of a vibrating wire strain gage mounted on a rebar. The strain gage features a high tensile strength magnetic wire stretched between two end blocks and sealed within a tube along with a magnet coil assembly. When the magnet coil assembly plucks the wire, it vibrates at its natural frequency, which is proportional to the tension in the wire. Structural strain causes relative movement between the end blocks, altering the wire's tension and its resonant frequency. The strain is proportional to the square of the frequency change.

The readout or datalogger generates voltage pulses in the magnet coil assembly to pluck the wire and measure its resonant frequency, displaying the strain in microstrain units. An in-built thermistor provides temperature measurement for accurate determination of effective strain.

The main purpose of the sister bar is to indirectly determine stress and its variation over time quantitatively. Change in stress is determined by multiplying the measured strain by the modulus of elasticity of the material. Both EDS-12V and EDS-12V-EX are supplied ready for embedment in concrete by tying the sister bars alongside existing rebar within the rebar cage. The strain transfer from the surrounding concrete to sister bar strain gage is uniform and equal. Sister bars can also be installed in pairs on both the sides of neutral axis to differentiate bending moments from axial loads.

## FEATURES

- **Precision:** High-tensile strength vibrating wire ensures durability and accuracy in strain measurement.
- **Durability:** Rugged construction, fully encapsulated for protection against handling and installation damage.
- **Long-term stability:** Delivers reliable performance over extended periods, crucial for long-term monitoring.
- **Long-distance signal transmission:** Maintains signal integrity over long distances, ensuring accurate data collection.
- **Integrated temperature monitoring:** Enhances measurement accuracy by accounting for temperature variations.
- **Easy installation:** Simple to install and waterproof, ensuring reliable and precise measurements.
- **Versatile datalogging:** Compatible with various readout units for manual data collection. For continuous monitoring, it can be connected to a suitable datalogger, allowing for data acquisition at desired frequencies. Encardio Rite offers a range of NexaWave dataloggers equipped with GSM/GPRS or RF communication capabilities, ensuring reliable and efficient data transmission.
- **Infrastructure data intelligence platform:** Transmit data to a local or cloud server hosting the Proqio platform for 24/7 insights. Proqio enables efficient data processing, analysis and real-time visualization. Benefit from instant alerts for critical events and automated reports, supporting informed decision-making.
- **Cross-compatibility:** The sensor can work with any manufacturer's Dataloggers and Data Management Systems.

## PRODUCT OFFERINGS

### EDS-12V SISTER BAR STRAIN GAGE

Model EDS-12V sister bar strain gage consists of a hollow bar with a vibrating wire strain gage mounted coaxially inside. The hollow bar extends on two sides with 12 or 16 mm diameter reinforced bars.

### EDS-12V-EX SISTER BAR STRAIN GAGE

Model EDS-12V-EX is designed for special applications, wherein the vibrating wire strain gage is welded onto the reinforced bar, The sensor is covered by a proper protection.

## SPECIFICATIONS

Range	2500 $\mu$ strain
Resolution	0.4 $\mu$ strain
Accuracy <sup>1</sup>	$\pm 0.25\%$ fs
Sensitivity	1 $\mu$ strain
Non linearity	<0.5% fs
Temperature limit	-10 to +55°C
Protection	IP68, waterproofing upto 30 mwc. Special sensors available at request for > 30 mwc waterproofing requirement.
Thermistor	YSI 44005 or equivalent (3 kOhms at 25°C)
Dimension $\varnothing \times L$ (mm)	26 x1400 (for 12.0 $\varnothing$ ) 30 x1400 (for 16.0 $\varnothing$ )

<sup>1</sup>Accuracy established under laboratory conditions.

\*All specifications are subject to change without prior notice

DATASHEET | 1192-13 R5



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