ENCARDIO RITE

ONE STOP MONITORING SOLUTIONS | HYDROLOGY | GEOTECHNICAL | STRUCTURAL | GEODETIC

Over 50 years of Excellence through ingenuity

DATASHEET

VIBRATING WIRE STRAIN GAGE

MODEL EDS-20V Series

EDS-20V-E

EDS-20V-AW

EDS-20V-SW

INTRODUCTION

The Encardio-rite strain gage consists of two components – a basic gage and a sensor assembly. The basic gage incorporates a high tensile strength wire made of a magnetic material stretched between two stainless steel cylindrical end blocks. The wire is sealed in a stainless steel tube by a set of double "O" rings fixed on each end block, ensuring to a great extent resistance to corrosive, humid, wet and other hostile environmental conditions.

FEATURES

- Accurate, robust and low cost.
- Long term stability with high reliability.
- Easy installation.
- Stainless steel construction.
- Frequency signal can be transmitted over long distance.
- Temperature monitoring by thermistor

APPLICATION

- Monitoring of strain in dams and concrete structures during and after construction.
- Study of stress distribution in the underground cavities and tunnels.
- Stress distribution in concrete and masonry dams.
- Monitoring of stresses in pressure shafts.

The sensor houses a permanent magnet and a plucking coil assembly. The wire when plucked by the sensor vibrates at its natural frequency that is proportional to the tension in the wire. Any change in strain, directly effects the tension in the wire, resulting in a corresponding change in its frequency of vibration. The strain is proportional to the square of the frequency that can be measured and displayed directly in micro strain by Encardio-rite's EDI series vibrating wire indicator. The data can also be automatically collected at desired frequency, stored and transmitted to remote server by a suitable datalogger.

Main purpose of the strain gage is to indirectly determine stress and its variation with time, quantitatively. Change in stress is determined by multiplying the measured strain by the modulus of elasticity.

Following type of strain gages to suit different applications are available:

- EDS-20V-SW spot wieldable strain gage
- EDS-20V-AW arc wieldable strain gage
- EDS-20V-E embedment strain gage

EDS-20V-SW SPOT WIELDABLE STRAIN GAGE

A stainless steel foil tab fixed to each end block enables the gage to be spot-welded or fixed in place by epoxy. The gage is pre-tensioned by a small compression spring. Initial tension can be set during installation, allowing for maximum range in tension or compression as required. The gage is designed to be used only for flat surfaces.

The sensor assembly is encapsulated in a moulded protective cover. It is provided with a single part sensor coil rectangular housing suitable for mounting directly over the strain gage and completely enclosing it forming a watertight enclosure. Pair of clamps positioned between a pair of embossed locating points over the sensor coil housing is spot welded to secure the housing to the substrate.

EDS-20V-AW ARC WIELDABLE STRAIN GAGE

Model EDS-20V-AW basically consists of two end pieces joined by a tube that encloses a length of magnetic, high tensile strength stretched wire. The wire is sealed in the tube by a set of double "O" rings fixed on each end piece.

The double 'O' ring seals suitably protect the strain gage against ingress of water. An extra waterproofing is provided on the strain gage by heat shrinkable tube to prevent ingress of water.

SPECIFICATIONS

EDS-20V-SW	
Range	3000 μ strain
Sensitivity	1 μ strain
Active gage length	50.8 mm
Initial frequency	2,500-3,300 Hz
Effective gage **factor**[1]	~ 3.896 x 10^{-4} μ strain/ Hz^2
Thermistor type	YSI 44005 or equivalent (3,000 Ohm at 25°C)
Temperature limit	-20° to 80°C
Cable	4-core shielded 1 m long; specify
Gage l x b x h (mm)	62 x 12.5 x 7.5

[1] *For actual value check test certificate*

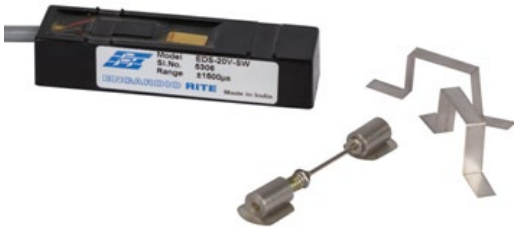
The tube is flattened in the middle to accommodate a sensor assembly in the constriction. The sensor forms an integral part with the strain gage. The strain gage is better suited for locations subjected to dripping or running water or which may submerge in water.

To mount the strain gage, two annular mounting blocks are accurately positioned and aligned with the help of a mounting jig and dummy gage and welded to the structure. The dummy gage is then finally replaced by the actual strain gage and clamped in position by a pair of set screws on each block.

Groutable reinforced bar annular mounting blocks are available for surface mounting the strain gage to a concrete structure.

Accessories for EDS-20V-AW

- Mounting blocks - weldable or groutable
- Installation kit consisting of mounting jig, dummy gage, Allen keys and grub screws (to be ordered separately)



EDS-20V-SW (Overall size 87 x 22 x 18 mm)

EDS-20V-AW (Overall size 180 x 28.5 x 30 mm)

EDS-20V-E EMBEDMENT STRAIN GAGE

Model EDS-20V-E vibrating wire strain gage is designed to measure strain in underground cavities, tunnels, buildings, concrete and masonry dams etc. The strain gage is suitable for embedment in soil or concrete.

The embedment strain gage is similar to the arc weldable strain gage except for the fact that mounting blocks are replaced with stainless steel flanges.

EDS-20V-E (Overall size 170 x 28.5 x 30 mm)

Note: Hermetically sealed, electron beam welded strain gage model EDS-11V is also available. Refer to data sheet # 1092.

SPECIFICATIONS

EDS-20V-AW & EDS-20V-E

Range	3000 μ strain
Sensitivity	1 μ strain
Active gage length	150 mm
Effective gage factor[1]	around 4.051 x 10^{-3} μ strain/ Hz^2
Thermistor type	YSI 44005 or equivalent (3,000 Ohm at 25°C)
Temperature limit	-20° to 80°C
Cable	4-core shielded 1 m long; specify
Size l x b x h (mm)	
Model EDS-20V-AW	174 x 28.5 x 30
Model EDS-20V-E	170 X 28.5 X 30

[1] For actual value check test certificate

**All specifications are subject to change without prior notice*

ENCARDIO-RITE ELECTRONICS PVT. LTD.

A-7, Industrial Estate, Talkatora Road Lucknow, UP - 226011, India | P: +91 522 2661039-42 | Email: geotech@encardio.com | www.encardio.com

International: India | UAE | Qatar | Bahrain | Bhutan | Europe | USA

India: Lucknow | Delhi | Kolkata | Mumbai | Chennai | Bangalore | Hyderabad | J&K