

Sister Bar/Rebar Strain Meter

VWS-4000 SERIES



Geosense® VWS-4000 series vibrating wire Sister Bars and Rebar Strain Meters are designed to be embedded in concrete to measure strains due to imposed loads.

SISTER BAR

The VWS-4000 Sister Bar is installed by tying it alongside an existing length of rebar within the cage. Available in two diameters: 12 and 16mm.

REBAR STRAIN METER

The VWS-4001 Rebar Strain Meter is installed by welding it into the existing rebar cage at a location within the structure where loads can be accurately passed from the concrete into the gauge. Available in various sizes to match the size of the rebar cage into which it is to be welded.

They are normally installed in pairs within the structure on either side of the neutral axis to separate bending moments from axial loads.

They comprise two lengths of ribbed rebar welded to a central gauge section. The central gauge section has a miniature stainless steel, fitted along the longitudinal axis of the gauge. The strain gauge operates on the principle that a tensioned wire, when plucked, vibrates at its resonant frequency. The square of this frequency is proportional to the strain in the wire.

The gauge consists of two end blocks with a tensioned steel wire between them. Around the wire is a magnetic coil which when pulsed by a vibrating readout or data logger interface plucks the wire and measures the resultant resonant frequency of vibration. As the steel or concrete surface undergoes strain the end blocks will move relative to each other.

The tension in the wire between the blocks will change accordingly thus altering the resonant frequency of the wire.

The coil units and cable connection are encapsulated with a proprietary rigid epoxy resin to keep the gauge de-bonded from the concrete.

Applications

- ~ Pile Load Testing
- ~ Concrete Piles
- ~ Tunnel Linings
- ~ Mass concrete structures
- ~ Diaphragm walls and barrettes

Features

- ~ Built-in thermistor
- ~ Reliable long-term performance
- ~ Rugged, suitable for demanding environments
- ~ High accuracy
- ~ Insensitive to long cable lengths
- ~ Direct concrete embedment





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Specifications

Models	VWS-4000	VWS-4001
Thermistor	3k ohms at 25°C	3k ohms at 25°C
Over-range	+20%	+20%
Resolution	0.6 $\mu\epsilon$	0.6 $\mu\epsilon$
Accuracy	$\pm 0.25\%FS$	$\pm 0.25\%FS$
Non-linearity	$<0.75\%FS$	$<0.75\%FS$
Operating range	2500 $\mu\epsilon$	2500 $\mu\epsilon$
Cable	2 pair PUR outer sheath	2 pair PUR outer sheath
Installation	Direct Embedment	Direct Embedment
Effective Gauge Length	50mm (nominal)	50mm (nominal)
De-bonded Length	175mm	175mm
Overall Length	1.39m*	1.39m
Standard Diameter	12, 16mm	14, 16, 20, 25, 28, 32mm
Coefficient of thermal expansion	12ppm/°C	12ppm/°C

*Other lengths available on request

Options & accessories

- ~ In-house calibration
- ~ Readout units
- ~ Terminal units

Ordering Information

- ~ Sister Bar or Rebar Strain Meter
- ~ Cable length
- ~ Rebar size
- ~ Lightning protection



Specifications may change without prior notice