

Sister Bar/Rebar Strain Meter VWS-4000 Series

Used to monitor strain along stranded anchors. The low profile design means that multiple sensors can be installed along the bonded length of strand anchors



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Overview



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.

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

GENERAL

Models	VWS-4000	VWS-4001
Thermistor	3k ohms at 25°C	3k ohms at 25°C
Over-range	+20%	+20%
Resolution	0.4 $\mu\epsilon$ *	0.4 $\mu\epsilon$ *
Accuracy	$\pm 0.25\%FS$	$\pm 0.25\%FS$
Non-linearity	<0.5%FS	<0.5%FS
Operating range	3000 $\mu\epsilon$	3000 $\mu\epsilon$
Cable	2 pair PUR outer sheath	2 pair PUR outer sheath
Cable Type	Type 900 - VW Sensor with Foil Screen & Drain Wire	
Installation	Direct Embedment	Direct Embedment
Effective Gauge Length	50mm (nominal)	50mm (nominal)
Max Load	25kN	25kN
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

* Readout dependent

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Further Information

REBAR STRAIN METERS

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.



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