

# VW STRAIN GAUGE

## MODEL 5110 & 5120

The Geotechnical Systems Australia Pty Ltd **VW Strain Gauge** has been designed to monitor strains in mass concrete and steel structures. The instruments are rugged, accurate and can tolerate long cable lengths to the reading location. They are capable of being data logged.

## APPLICATIONS

- Measurement of strains in
- Bridges
  - Dams
  - Tunnel Linings
  - Piles
  - Caissons and Shafts



## OPERATION

Two types of gauge are available, the surface mount and embedment strain gauge. Both strain gauges consist of a high tensile steel wire tensioned between two end anchor points and protected by a stainless steel tube, which is sealed with an O-ring within the flanges. When the gauge is directly embedded into the concrete structure, or welded to a structure, any forces acting in the concrete or on the structure produce strains which directly affect the relative positions of the anchor points. This relative movement of one anchor to the other causes a change in the tension of the wire. The wire is vibrated at its resonant frequency by an external coil and magnet assembly mounted adjacent to the stainless steel tube. The coil and magnet assembly then generates an oscillating magnetic field, which acts on the wire through the stainless steel tube. The resonant frequency of the wire changes with tension and thus measurements of the period of vibration allows the strain in the structure to be measured precisely.

Both strain gauges are read using a digital readout unit Model 9120-01 or with a data logger Model 9150-02. Because the output is a frequency, contact resistance, leakage to ground and cable lead resistance does not affect the strain gauge readings and the cable need only be continuous in order to obtain readings. Cable lengths of up to 1.5 km have been measured without difficulty.

The embedment gauges can be installed by tie wiring into position or installed by direct embedment into wet concrete or alternatively they can be cast into concrete blocks prior to embedment. The surface mount gauges can be installed by arc welding the anchor blocks to the steel structure using a guide bar, then replacing the bar with the strain gauge after the anchors are welded.



ISO 9002 Lic 4022  
Standards Australia

**GEO TECHNICAL SYSTEMS AUSTRALIA PTY. LTD.**

Specialists in Geotechnical Instrumentation

ACN 006 720 887  
ABN 28 006 720 887



<b>SPECIFICATION</b>	<b>VW STRAIN GAUGE</b>	<b>Model 5110 &amp; 5120</b>
<b>Active Gauge Length</b>		140mm
<b>Maximum Strain Range</b>		3000 micro strain
<b>Sensitivity</b>		1 micro strain
<b>Temperature Range</b>		-10 to +75 Deg C
<b>Thermal Coefficient of Expansion</b>		12.0 ppm / Deg C
<b>Coil Resistance</b>		210 Ohms
<b>Weight</b>		200 grams
<b>Typical Datum Frequency</b>		800 Hz

## **SPECIAL FEATURES**

- Rugged Design
- Highly Sensitive
- Simple Installation
- Excellent Long Term Stability
- Can Tolerate Long Cable Lengths
- Waterproof Design
- Ease of Monitoring
- Used in Single or Multi Axis Configurations

## **ANCILLARY EQUIPMENT**

- Portable readout units
- Single channel dataloggers
- Multi channel dataloggers
- Terminal Boxes

## **ORDERING INFORMATION**

When ordering, please also specify

- Model Number
 

Embedment Gauge	5110
Surface Mount Gauge	5120
- Required Cable Length
- Whether thermistor option is required

Because Geotechnical Systems is continually improving its products and processes, information contained within this brochure is subject to change without notice.

**For more information or to discuss your application, contact...**

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