

VW Crack Meter

Geosense® VWCM-4000 vibrating wire crack meters are used to monitor movement across surface cracks and joints in concrete, rock, soil and structures. They act as a digital crack tell-tale.

They consist of a sensor outer body tube and an inner free sliding rod which is connected at the internal end to a vibrating wire sensor by a spring. At the sensor end of the outer body and the external end of the rod anchors are attached which can be fixed either side of a crack to be monitored.

VWCM-4000 crack meters are installed by grouting, bolting, bonding or fixing expandable anchors to the structure to be monitored. The anchors incorporate ball joints where they are fixed to the gauge to accommodate any differential cross-axis movement and prevents the inner rod from binding within the outer casing.

Working principle

The crack monitor 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. 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.

A change in distance between the anchors caused by the crack opening or closing causes the inner free-sliding rod to move within the outer body which changes the tension on the spring and the vibrating wire thus altering the resonant frequency of the wire.

Temperature information can be used if logging regularly to determine swift temperature changes during which crack movement readings may be exaggerated

Anchors

The VW Crack Meter may be anchored either using the custom grout able anchors shown, or expanding bolts or other solutions can be constructed by the end user.



Features

- Simple to install and read
- High resolution & accuracy
- Internal thermistor
- Insensitive to long cable runs
- Datalogger compatible
- Ranges from 5 to 100mm
- Waterproof up to 16 bar

Applications

Measurement of crack movement in:

- Concrete structures
- Stone & brick buildings
- Dams
- Tunnels
- Construction joints
- Pipelines
- Rock formations



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Specifications

- VWCM-4000 crack meters may be read by the VW-2106 or any vibrating wire readout device and may be readily connected with data loggers with vibrating wire interface modules.
- Vibrating wire crack meters output a frequency signal and are therefore insensitive to resistance changes in connecting cables caused by contact resistance or leakage to ground.
- Cable may be readily and simply extended on site without special precautions. Gauges may be read up to 1000 metres away from their installed location without change in calibration.

Ranges (mm)	5, 12.5, 25, 50, 100, 150, 200, 300
Resolution	<0.025% FS
Accuracy	±0.1 to ±0.5% FS
Non-linearity	<0.5% FS
Frequency	2200 - 3500 Hz
Body Material	Stainless steel
Inner Rod	Stainless steel
O-Ring	Viton
Anchor Material	Mild steel, BZP
Anchor Types	Grout, bond, bolt, expandable
Waterproof Rating	16 Bar

Readout Systems

Custom datalogger systems for any number of sensors in any configuration are also available and can be designed on request. Please see our other data sheets for details of readout equipment, terminal boxes and data loggers specific to vibrating wire devices.

About PCTE

PCTE have over 30 years' experience in the measurement and testing of construction materials. PCTE can provide more than just the equipment, they can provide expert training. PCTE have a service centre in Sydney in which they can provide calibration, repairs and warranty repairs.

Other Equipment

PCTE supply three main ranges: NDT, Lab and Geotech Instrumentation.

NDT includes: Rebound Hammers, Covermeters, Ultrasonics, GPR, Corrosion Testing, Coating Testing and Foundation Testing

Lab includes equipment for: Concrete, Cement, Aggregate, Soil, Asphalt and Metal

Geotech Instrumentation includes: Strain Gauges, Piezometers, Inclometers, Extensometers, Tiltmeters, Load Cells and Dataloggers