

Applications

Measurement of joint movement in mass concrete...

- Monitoring of movement at upstream and toe edges of concrete and rockfill dams
- Can be combined to form a tri-axis array to monitor, normal, shear and parallel movements
- Can be used fully submersed

Operating Principle

The Soil Instruments Perimetric Jointmeter is based on proven vibrating wire displacement transducer technology. Designed to be installed so they act in compression, the Perimetric Jointmeter can be used at water heads of up to 100 meters, the instrument incorporates water pressure compensation.

All exposed parts of the jointmeter are manufactured from high grade stainless steel. The instrument is designed to be installed so the measuring head is in compression with movement causing extension of the jointmeter shaft.



Perimetric Jointmeter

Advantages and Limitations

- Very well proven VW technology
- Two or three sensors can be combined to offer multi-axis measurement
- Easy to automate via data acquisition and I-Site software.
- Can be manually read.
- Very long cable runs can be accommodated without signal degradation
- Extremely robust with performance guaranteed to 100m depth of water
- Not suitable for very high $\Delta\tau$ or high vibration environments.
- Care must be taken during installation to ensure jointmeters are free to move.

A rugged, heavy duty powder coated steel cover is supplied with each jointmeter, which must be fitted during installation for protection. If pairs or trios of jointmeters are to be used for biaxial or triaxial readings, then the covers can be modified to suit at the factory.

As with any vibrating wire product, a number of readout options are available. Soil Instruments manufactures a simple hand-held readout, a logging readout, a minilogger readout and offers a full data acquisition system- please see datasheet D1

When a data acquisition system is used then Soil Instruments I-Site software can be incorporated into the instrumentation system providing real-time graphical reporting, automated alarms and full web-support - please see our website, www.soil.co.uk for details.



Top left: The jointmeter is fitted to a bracket attached to the structure.

Left: A biaxial pair of jointmeters pictured following installation, but prior to cover fitment

Above: An array of joint meters at the upstream toe of Santa Juana Dam, Chile



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**DATA SHEET
J5**

Specification

J5 Perimetric Jointmeter Components

J5.1 Jointmeter Transducer

- Vibrating wire perimetric jointmeter transducer, waterproof and compensated for up to 100m head of water.

- *Note: Cable length must be specified at time of order*

J5.2 Jointmeter Bracket

- Bracket pair to accommodate jointmeter transducer and allow fitting to structure

- *Note: Specify 'normal', 'shear' or 'parallel' at time of order*

J.3 Jointmeter Cover

- Cover for completed bracket/sensor installation, manufactured from power coated heavy duty steel

- *Note: Specify 'normal', 'shear' or 'parallel' as well as configuration (single, two or three axis) at time of order*

CA-1 Cable:

- 2core armoured cable with fully waterproof jacket. Length must be specified, per transducer, at time of order

Vibrating Wire Readout

RO1 –VW-1 Vibrating Wire Logger
Capable of reading Thermistors

RO1 –VW-2 Vibrating Wire
Unable to read Thermistors

D1-1 CR10X – Datalogger
See Data Sheet D1

2. Sensor Performance

Range:
150mm in tension, 0mm in compression

Resolution:
Better than 0.15mm

Repeatability:
Better than $\pm 0.2\%$ FS.

Accuracy:
Better than $\pm 1\%$ FS

Temperature:
-30 to +60°C

3. Ordering Information

J5.1 Jointmeter Transducer

One per measurement axis required, specify cable length per transducer

J5.2 Jointmeter Bracket

Specify orientation, normal, shear or parallel

J5.3 Jointmeter Cover

Specify number of sensors and orientation, normal, shear or parallel

CA-1 Cable

Specify length per transducer

