

CONCRETE VIBRATING WIRE STRESS CELL

DATASHEET P10

PRODUCTS



FEATURES

- Simple, well proven device.
- High resolution and accuracy.
- Can be used with long cable runs.
- Fully waterproof.
- Incorporates temperature sensor.
- Easily read manually or automated.



The Soil Instruments Concrete Vibrating Wire Stress Cell is used for measuring total stress in shotcrete, concrete and rock.

It is installed either prior to shotcreting, concrete pour or within a slotted hole in the rock and incorporates a re-pressurisation tube to enable the cell face to be placed into intimate contact with the concrete should shrinkage occur during hydration, or with the rock face to take account of the slight overslotting needed to fit the cell in rock.

With over 30 years experience in Vibrating Wire technology, the Soil Instruments' sensor is robust, has excellent long term stability and can be used with long cable lengths without any signal degradation.

THE SOIL INSTRUMENTS CONCRETE VIBRATING WIRE STRESS CELL

The cell consists of a rectangular flat jack formed from two sheets of Stainless Steel welded around their periphery and filled with oil.

The cell is connected to a vibrating wire pressure transducer by a short length of stainless steel tubing forming a closed fluid system.

The cell also incorporates a compensating tube which allows adjustment of initial cell volume to offset concrete shrinkage by progressively crimping the tube from its welded end using a crimping tool. This should be done with the cell connected to a readout device so that the contact moment between the cell and the surrounding concrete is monitored (i.e. the pressure reported by the transducer starts to rise) and thus prevent the cell from being overpressured.

The cells are designed for measurements in shotcrete, concrete and rock. They are usually employed in shotcrete and concrete tunnel linings to measure radial, circumferential and axial pressures.

Cells may be used to monitor stress changes in the rock walls of underground works, in which case slots are machined by diamond wheel sawing or line drilling, the cell being embedded in cement mortar within the slot.

TYPICAL APPLICATIONS INCLUDE

- Tunnel Monitoring.
- Mass concrete monitoring.
- Rock Monitoring.

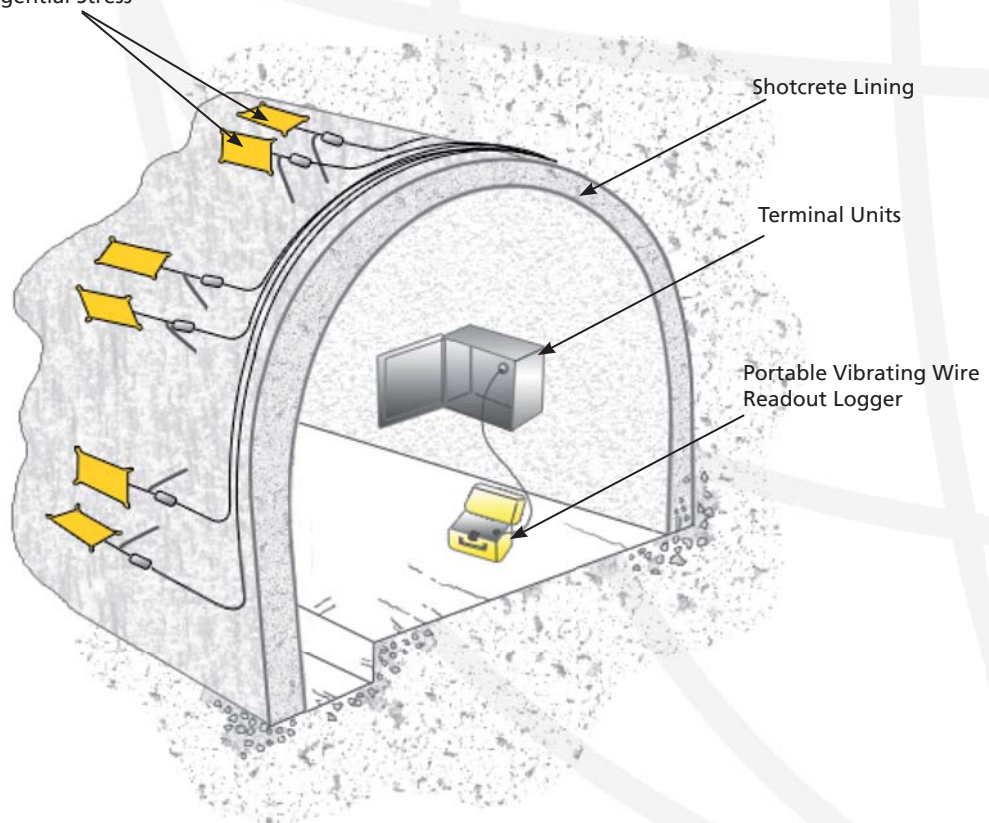


FOR DETAILS ON:

- Push-in VW Pressure Cells, see data sheet P9.
- VW Settlement Cells, see data sheet: S8.

INSTALLATION IN TUNNEL LINING

Pressure Cells For Radial & Tangential Stress



SPECIFICATIONS

STD Ranges (kPa)	300; 500; 700; 1000; 1500; 2000; 3000; 4000; 6000; 10,000; 15,000
Resolution ¹	0.025% FS (minimum)
Accuracy ²	0.1% FS
Linearity ²	0.1% FS
Temperature Range	-20 to 80° C
Over Range	150% Of Full Scale
Material	Stainless Steel
Excitation Method	Pluck or Sweep

THERMISTOR

Type	NTC 3K
Accuracy	0.5° C
Resolution ¹	0.1° C

WEIGHTS & DIMENSIONS

Cell Size Diameter	100 x 200mm	150 x 250mm	200 x 300mm
Thickness	6.25mm	6.25mm	6.25mm
Weight	2.9kg	3.7kg	4.7kg

CABLES

WITHOUT THERMISTOR

WITH THERMISTOR

Type	2 Core Armoured PVC Outer Sheath	4 Core Armoured PVC Outer Sheath
Diameter	12mm	13mm
Weight /m	220g	336g

¹Dependant On Readout

²Of The Pressure Transducer

Tangential & Radial Concrete Vibrating Wire Stress Cells



ORDERING INFORMATION

WITH THERMISTOR	WITHOUT THERMISTOR	TANGENTIAL VW PRESSURE CELLS 100 x 200mm
P10-1-SS-3-T	P10-1-SS-3	300 kPa pressure Range
P10-1-SS-5-T	P10-1-SS-5	500 kPa pressure Range
P10-1-SS-7-T	P10-1-SS-10	700 kPa pressure Range
P10-1-SS-10-T	P10-1-SS-10	1000 kPa pressure Range
P10-1-SS-15-T	P10-1-SS-20	1500 kPa pressure Range
P10-1-SS-20-T	P10-1-SS-20	2000 kPa pressure Range
P10-1-SS-30-T	P10-1-SS-40	3000 kPa pressure Range
P10-1-SS-40-T	P10-1-SS-40	4000 kPa pressure Range
P10-1-SS-60-T	P10-1-SS-60	6000 kPa pressure Range
RADIAL PRESSURE CELLS 150 x 250mm		
P10-2-SS-3-T	P10-2-SS-3	300 kPa pressure Range
P10-2-SS-5-T	P10-2-SS-5	500 kPa pressure Range
P10-2-SS-7-T	P10-2-SS-7	700 kPa pressure Range
P10-2-SS-10-T	P10-2-SS-10	1000 kPa pressure Range
P10-2-SS-15-T	P10-2-SS-15	1500 kPa pressure Range
P10-2-SS-20-T	P10-2-SS-20	2000 kPa pressure Range
P10-2-SS-30-T	P10-2-SS-30	3000 kPa pressure Range
P10-2-SS-40-T	P10-2-SS-40	4000 kPa pressure Range
P10-2-SS-60-T	P10-2-SS-60	6000 kPa pressure Range
RADIAL PRESSURE CELLS 200 x 300mm		
P10-3-SS-3-T	P10-3-SS-3	300 kPa pressure Range
P10-3-SS-5-T	P10-3-SS-5	500 kPa pressure Range
P10-3-SS-7-T	P10-3-SS-7	700 kPa pressure Range
P10-3-SS-10-T	P10-3-SS-10	1000 kPa pressure Range
P10-3-SS-15-T	P10-3-SS-15	1500 kPa pressure Range
P10-3-SS-20-T	P10-3-SS-20	2000 kPa pressure Range
P10-3-SS-30-T	P10-3-SS-30	3000 kPa pressure Range
P10-3-SS-40-T	P10-3-SS-40	4000 kPa pressure Range
P10-3-SS-60-T	P10-3-SS-60	6000 kPa pressure Range
INSTALLATION EQUIPMENT		
W6-8.4		Compensating Tube Crimping Tool
CA-4.2		Coloured Adhesive Tapes
W6-6.1		Cable Ties
CONNECTING CABLE AND FITTINGS		
CA-1.1-2-A		Cable, 2 cores, armoured
CA-1.1-4-A		Cable, 4 cores, armoured
CA-4.1		Joint Sealing Kit
CA-4.4		Crimping Sleeves
CA-4.3		Crimping Tool
CA-4.2		Coloured Adhesive Tapes

Other Ranges Available

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