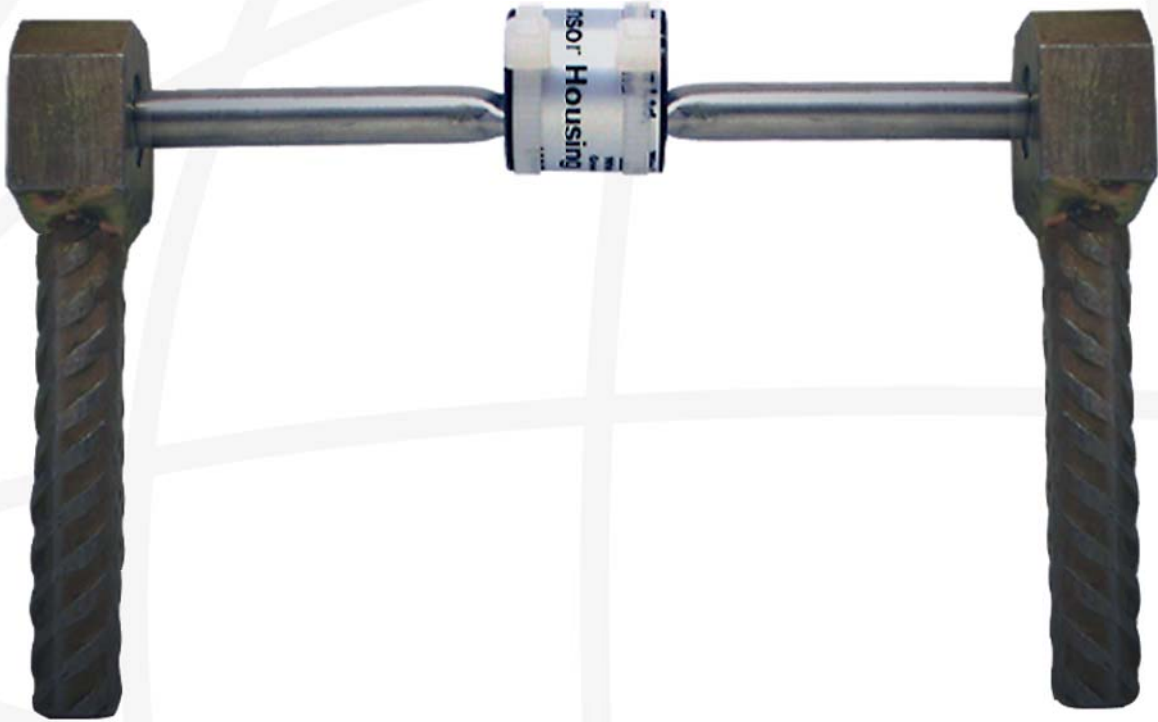


# CONCRETE SURFACE MOUNT STRAIN GAUGE

## DATASHEET ST3

### PRODUCTS



### FEATURES

- Robust, reliable and easy to use.
- Can be used with long cable lengths with no degradation of signal.
- Strain gauge can be adjusted to allow for the most effective use of the range.
- Integral thermistor.
- Gauge and coils are re-useable.
- Suitable for remote reading and data-logging.



The Soil Instruments Vibrating Wire Surface mounted strain gauge is used for measuring strain in concrete members and consists of a coil assembly, vibrating wire element and two groutable anchors for embedment in the concrete to be monitored.

O-ring seals are utilised between the protective tube and the gauge end blocks to provide waterproofing and allow the tube to remain unstressed.

After installation, changes in strain are monitored by the coil assembly mounted on the gauge.

The gauges can be read individually or remotely/automatically as part of a data collection system.

## TECHNICAL APPLICATIONS

### THE SOIL INSTRUMENTS CONCRETE SURFACE MOUNTED STRAIN GAUGE

The Concrete Surface Mounted Strain Gauge operates on the established Vibrating Wire principle, whereby a wire held under tension is read by an excitation/reading coil. Any change in the strain (tension) on the wire causes the resonant frequency of the wire to alter and is directly proportional to strain changes in the member being monitored.

The Concrete Surface Mounted gauge consists of two end bolts and a sealed tube containing the wire, which is attached via allen bolts to two removable anchors, one at either end, which in turn are site grouted using the setting bar as a template into holes drilled into the structure to be monitored. The gauge can be removed during anchor grouting to prevent damaging it.

The pickup coil is designed to simply slip over a flat in the centre of the gauge tube and therefore can be fitted after gauge installation.

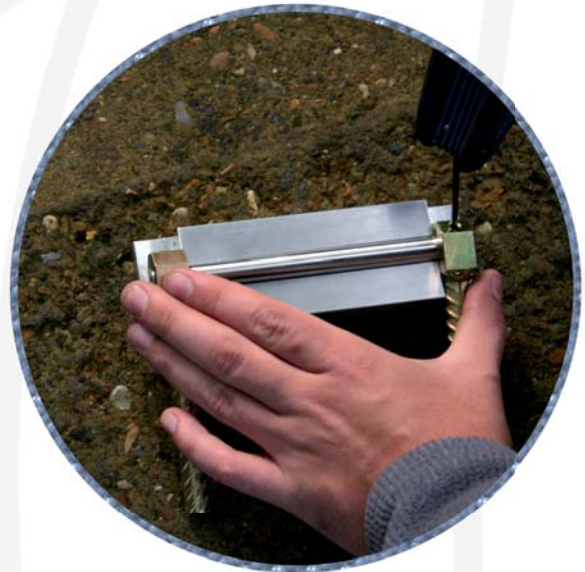
As the gauge and the coil can be demounted, they can be reused if desired.

The sensor can be read with any commercially available Vibrating Wire readout and the incorporated thermistor allows for temperature data to be recorded. As with all Vibrating Wire instruments, the use of a frequency based signal allows for long cable runs (in excess of 1000m) between the instrument and the readout point or datalogger.

and tensioned as necessary. If not already fitted, the pickup coil is then slid into place and secured with cable ties.

### TYPICAL APPLICATIONS INCLUDE

- Concrete Members and Struts.
- Monitoring of strain due to load.
- Bridges & Dams.
- Monitoring strain and load during construction and service life.
- Piles and Mass concrete.



### FOR DETAILS ON:

- VW Spot weldable Strain Gauge, see datasheet ST1.
- VW Arc Weldable Surface Mount Strain Gauge, see datasheet ST2.
- VW Embedment Strain Gauge, see data sheet: ST4.
- VW Handheld Readout, see data sheet: RO-1-VW-3.



### APPLICATIONS

The Concrete Surface Mounted gauge is designed to measure strain on concrete members on buildings, bridges, dams, pipelines or any concrete structure. The sensor is installed by removing the two mounting anchors and grouting them (using the gauge a setting bar as a template) onto the structure to be monitored. Once the anchors have been grouted into the holes the gauge is refitted into the anchors

## SENSOR

Range	3000 Microstrain
Resolution <sup>1</sup>	1 Microstrain
Accuracy <sup>2</sup>	±0.1% FS
Temperature Range	-20 to 80°C
Active Gauge Length	141.4mm
Excitation Method	Pluck or Sweep
Material	Stainless Steel
Weight	50g
Dimensions	157 x 12.7mm Ø

## COIL HOUSING

Type	Encapsulated, Detachable With Thermistor
Standard Cable Lengths <sup>3</sup>	3, 10 & 25m
Thermistor Type	NTC 3k $\Omega$
Thermistor Accuracy	± 0.5°C
Thermistor Resolution <sup>1</sup>	± 0.1°C
Weight (coil only)	12g
Cable Weight /m	30g
Cable Type	4 Core PUR Sheath, Foil Screen & Drain Wire 4mm Ø

## MOUNTING ANCHORS

Material	Steel
Finish	Zinc Plated
Dimensions	25 x 25 x 16mm Rebar 110 x 12mm Ø
Weight / Pair	300g

## OPTIONAL PROTECTIVE COVER

Material	Powder Coated Steel / Polystyrene Lining
Dimensions	280 x 100 x 60mm
Weight	670g

<sup>1</sup>Dependant On Redaout<sup>2</sup>±0.1%FS With Individual Calibration, ± 0.5%FS With Standard Batch Calibration<sup>3</sup>Other Lengths Available

## ORDERING INFORMATION

PART NO. DESCRIPTION

### CONCRETE SURFACE MOUNTED VIBRATING WIRE STRAIN GAUGE

ST3-1.1	Sensor with specified cable length
ST3-1.2	Sensor with 3metre cable length
ST3-1.3	Sensor with 10metre cable length
ST3-1.4	Sensor with 25metre cable length

### TOOLS REQUIRED FOR INSTALLATION

ST3-2.1	Installation kit (Includes setting jig, drill template jig & spacer)
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### CONNECTING CABLE AND FITTINGS

CA-3.1-4-IC	4 core, Instrument cable, 7/0.20, screened
CA-4.1	Joint sealing kit
CA-4.2	Coloured adhesive tapes
CA-4.3	Crimping tool
CA-4.4	Crimping sleeves

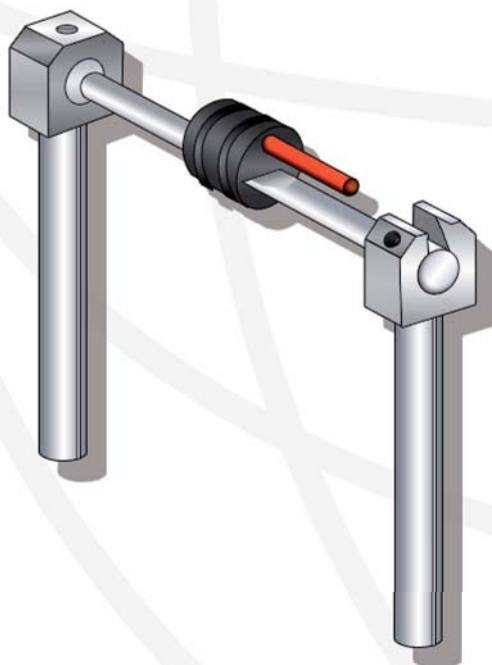
### INSTALLATION ACCESSORIES

S3-3.1	Spare groutable anchors set
ST1-3.5	Nylon ties

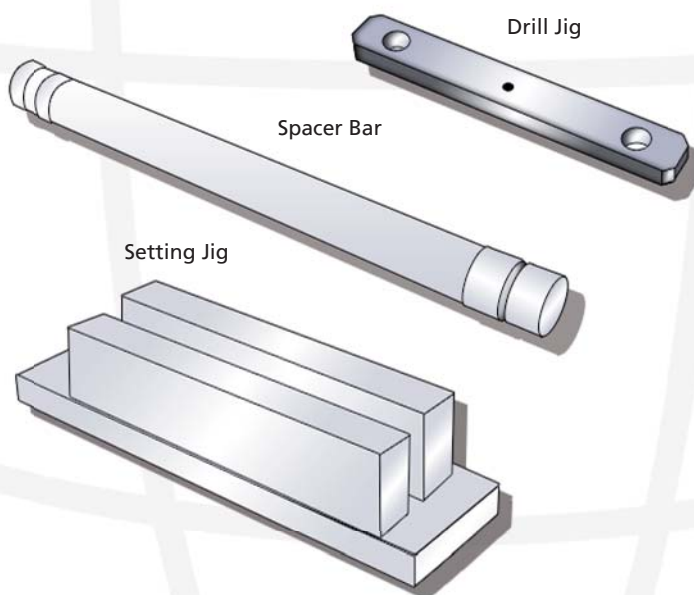
### READOUTS

RO-1-VW-3	Vibrating wire handheld readout
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CONCRETE SURFACE MOUNT STRAIN GAUGE



INSTALLATION KIT



### CONTACT DETAILS:

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