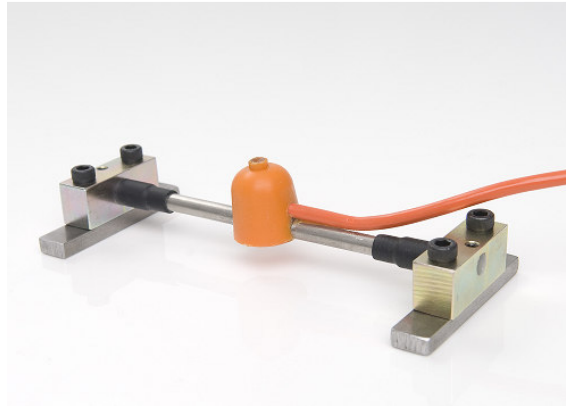
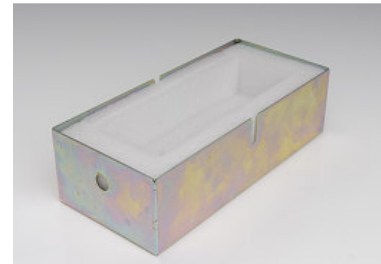




## VIBRATING WIRE SURFACE MOUNTING STRAIN GAUGE.



### RELATED PRODUCTS



### TECHNICAL SPECIFICATION

<b>Gauge Type :</b>	TSR/5.5/T surface mount vibrating wire strain gauge.
<b>Gauge Length :</b>	5.5 Inches / 134mm
<b>Gauge factor :</b>	$3.025 \times 10^{-3}$ microstrain per frequency squared.
<b>Measurement range :</b>	Greater than 3000 microstrain.
<b>Resolution :</b>	Better than 1 microstrain.
<b>Coil Resistance :</b>	Approximately 100 ohms.
<b>Operating temperature range :</b>	From $-20^{\circ}\text{C}$ to $80^{\circ}\text{C}$ .
<b>Thermal coefficient of vibrating wire :</b>	11 ppm per $0\text{C}$ .
<b>Thermistor temperature sensor :</b>	3000 ohms @ $25^{\circ}\text{C}$
<b>Cable diameter :</b>	4.5 millimetres.
<b>Cable colour code – Brown :</b>	Coil +ve.
<b>Blue :</b>	Coil -ve.
<b>Yellow :</b>	Thermistor
<b>Green :</b>	Thermistor



## THE VIBRATING WIRE EQUATION

The change in engineering units, microstrain ( $\mu\epsilon$ ), is given by the following expression: -

$$\mu\epsilon = ( F_1^2 - F_2^2 ) \times GF$$

where: -

**F<sub>1</sub>** = the initial or Datum frequency reading

**F<sub>2</sub>** = a subsequent measured frequency

**GF** = the appropriate Gauge Factor for the gauge.

This equation may be expressed in terms of period reading (T), as displayed by the GT1174 Miniature Strain Meter:

$$\mu\epsilon = \left( \frac{10^{14}}{T_1^2} - \frac{10^{14}}{T_2^2} \right) \times GF$$

**T<sub>1</sub>** = the initial or Datum period reading.

**T<sub>2</sub>** = a subsequent measured period reading.

**Note:** A positive change in microstrain indicates a compressive strain change.

### MEASUREMENT RANGE AND RESOLUTION

The following table gives typical upper limit, lower limit, mid range values to 5 significant figures, and resolutions in microstrain, for all strain gauges of the same gauge length:

#### TSR/5.5/T

Gauge Length, 5.5 inches

Gauge Factor,  $3.025 \times 10^{-3}$  Microstrain per Frequency squared

	T	F	Lin.	Change	Resolution	
				me	GT1174	GT1192
<b>Upper limit</b>	08500	1176.5	1384.1	-1489.5	0.98	0.71
<b>Mid range</b>	10590	944.29	891.68	0.0	0.51	0.06
<b>Lower limit</b>	16000	625.00	390.63	1515.7	0.15	0.04

#### NOTES

- The Period (T) is the reading as displayed by the GT1174 Miniature Strain Meter in seconds  $\times 10^7$ .
- The Frequency (F) is the reading as displayed by the GT1192/615 Geologger in hertz and is equivalent to  $10^7/T$ .
- The Linear value (Lin.) is  $F^2/1000$  and is equivalent to  $10^{11}/T^2$ .
- The microstrain Change ( $\mu\epsilon$ ) is derived from the Vibrating Wire Equation.



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- *The Resolution is given in microstrain. It is the resulting change in microstrain for a least significant digit change in the reading as displayed by the GT1174 or GT1192. Resolution varies over the frequency range of the gauge, and is related to the parameter being measured by the readout unit (period, frequency or linear value).*