



HSM17- Calibration of Electrical Resistance Strain Gauges



Product Summary

- Self-contained, bench-mounted equipment designed for measuring the gauge factor of an electrical resistance strain gauge
- Unit used for demonstrating how structural theory is used to determine the strain on the surface of a test bar for calibration purposes
- Sturdy steel base frame with levelling feet
- The apparatus is based on a four point loading system which produces circular bending in the centre section of a precision aluminium beam of 38.1x19.05mm cross section
- The curvature is measured over 300mm of the 350mm centre span
- Introduces probability theory for quality control
- Digital Strain meter required (not supplied) to connect and measure strain gauges directly
- Digital indicator gives direct measurement of strain when mounted on top of beam
- Beam bent by fine pitch screw jack mechanism with loading handle giving accurate and smooth control throughout loading and unloading
- A comprehensive technical manual for student and lecturer provided

Tender Specification

- To be apparatus to determine gauge factor of electrical resistance strain gauges
- Introduction to calibration and standards
- Introduction to probability of production errors of batch made strain gauges
- To be a self-contained bench mounted unit
- Aluminium test beam with half bridge strain gauge attached
- To have four point loading of test beam
- Load to be applied using fine pitch screw jack mechanism and handle
- To have direct readout of strain from digital indicator and from strain gauges
- To be used with HAC20 Two channel strain meter (not supplied)
- To be supplied with comprehensive instruction manual for student and lecturer
- To be supplied with all necessary tools and accessories
- Two year warranty



Description

This gauge factor test rig is a precision item specially designed for measuring the gauge factor of an electrical resistance strain gauge. It also demonstrates how structural theory is used to determine the strain on the surface of a test bar for calibration purposes.

The apparatus is based on a four point loading system, which produces circular bending in the centre section of a precision aluminium test beam. To load the beam a fine pitch screw jack mechanism with handle is mounted centrally within the sturdy steel base frame with levelling feet. This gives smooth and accurate loading and unloading of the test beam at the test increments. An electronic measuring indicator for measuring the curvature over a length of 300mm has been calibrated to give direct readings of strain up to 1000 microstrain.

For demonstration purposes a pair of electrical resistance gauges have been bonded to the beam. One gauge on the topside and another on the bottom side forming a half bridge arrangement. For calibration work users can bond their own gauges. To obtain direct readings from the strain gauges the gauge wires must be connected to the HAC20 Two channel strain meter (not supplied). An extension from the normal technical experiment is to introduce students to probability theory to assess likely differences in gauge factor due to batch manufacture.

A comprehensive instruction manual for student and lecturer is provided along with a 2 year warranty and all necessary tools and accessories.

Experimental capabilities

- To study the application of structural theory in strain gauge calibration
- To assess the accuracy of calibration techniques
- To introduce the application of probability theory in production quality control

Specification

- Dimensions: 800(L) x 200(W) x 450(H) mm
- Weight: 24Kg
- Test beam: Aluminium alloy
- Test beam section: 38.1 x 19.05mm
- Screw jack pitch: 1mm
- Typical microstrain maximum reading: 1100microstrain
- Half bridge arrangement on test beam

Accessories and spares

- Full instruction manual which includes:
 - Operating instructions
 - Experimental set-up
 - Experiment procedure
 - Example set of results

Services Required

- 110/120V, 60Hz or 220/240V, 50Hz, single phase, live neutral and earth for HAC20 only

Operational Conditions

- Storage temperature: -10°C to +70°C
- Operating temperature range: +10°C to +50°C
- Operating relative humidity range: 0 to 95%, non condensing

Essential Extras

- HAC20 Digital Strain Meter

Recommended Extras

- HAC20K Strain gauge kit
- HAC20R Strain gauge refill kit