



Features

- Basic introduction to measurement with strain gauges
- Electronic measurement of mechanical variables
- Test bars for tension, bending and torsion
- Universal 1-channel measurement amplifier

Strain gauges are used extensively in sensor systems to detect forces, moments and deformations. Tesca Strain Gauge Training System 32138 experimental unit provides a wide-ranging introduction to the fundamentals of measurement by strain gauges. Three test specimens for tension, bending and torsion are each fitted with four strain gauge measuring points. The strain gauges are wired in the full bridge. The specimens are loaded incrementally allowing for the strain reading to be sequentially monitored.

The specimens can be inserted quickly and precisely into the frame. The strain gauge measuring range is protected by a Plexiglas cover, which also makes it clearly visible for inspection purposes. The measurement amplifier supplies the bridge supply voltage, and displays the load-dependent "bridge detuning" digitally in voltage values. The digital display also features a zero balancing function to allow for any preloading.

The various elements of the experiment are clearly laid-out and housed securely in a storage system. Three additional tension bars are available as accessories, in brass, copper and aluminum, enabling the modulus of elasticity to be ascertained in experiments.

Note: Specifications are subject to change.

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The well-structured instructional material sets out the fundamentals and provides a step-by-step guide through the experiments.

Specifications

- Experimental unit investigating the fundamentals of strain gauge measurement
- Tension, bending and torsion tests each with strain gauge measuring points in full bridge circuit
- Strain gauge application areas protected by Plexiglas cover
- Steel test bodies
- Determination of modulus of elasticity on various materials using measuring objects: Brass Tension Rod, Copper Tension Rod & Aluminum Tension Rods
- Measurement amplifier with 4-digit digital display
- Frame to house the measuring objects
- Storage system to house the components

Technical Specifications

- Tension bar
 - Measuring length: 50mm
 - Cross-section: 2x10mm
- Bending bar
 - Length: 385mm
 - Cross-section: 5x20mm
- Torsion bar
 - Length: 500mm
 - d=10mm
- Set of weights, small: 10x 0,5N, 1x 1N (hanger)
- Set of weights, large
 - 1x 5N, 2x 10N, 1x 20N, 1x 5N (hanger)

- Strain gauge measuring point: full bridge, 350Ω Amplifier
 - measuring range: +/-2mV/V
 - resolution: 1μV/V
 - zero balancing adjustment range: +/-1mV
 - supply voltage: 10VDC
- Frame opening WxH: 480x450mm

Experiments

- Fundamentals of measuring with strain gauges
- Strain gauge types and application techniques
- Calculation of the mechanical deformations under tension, bending and torsion
- Correlation between mechanical strain and electrical resistance in a strain gauge with brass, copper and aluminum bars
- Determination of the modulus of elasticity for various materials from the measurement data of a tensile test

Scope of Delivery

- 1 Frame
- 3 Strain gauge test specimens
- 2 Sets of weights
- 2 Hexagon socket wrenches
- 1 Measurement amplifier with strain gauge connecting cable
- 1 Storage system with foam inlay
- 1 Set of instructional material

OPTIONAL ATTACHMENTS

Tension Bar – Brass Order Code - 32138A

This test specimen for tension is available as accessory for MT Strain Gauge Training System 32138. The tension bar is fitted with four strain gauge measuring points. The strain gauges are wired in the full bridge with two gauges each for linear and transverse strain. The specimen is loaded incrementally allowing for the strain reading to be sequentially monitored.

The test specimen can be inserted quickly and precisely into the frame of 32138. Both ends of the tension bar are provided with hooks for introduction of the tensile forces. The strain gauge measuring range is protected by a Plexiglas cover, which also makes it clearly visible for inspection purposes.

Two additional tension bars are available as accessories, in copper (32138B) and aluminium (32138C), enabling the modulus of elasticity to be ascertained in experiments.



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Specifications

- Brass test specimen for tensile test
- Test specimen with strain gauge measuring points in full bridge circuit
- Determination of modulus of elasticity of material brass
- Accessory for MT 015 Strain gauge training system

Technical Specifications

Tension bar

- Measuring length: 50mm
- Cross-section: 2x10mm²
- Modulus of elasticity: 88000N/mm²
- Poisson's ratio: 0,33
- Strain gauge measuring point: full bridge, 350Ω

Experiments

- With 32138 Strain gauge training system: determination of the modulus of elasticity from the measuring data of a tensile test

Tension Bar – Copper Order Code - 32138B

This test specimen for tension is available as accessory for Strain Gauge Training System 32138. The tension bar is fitted with four strain gauge measuring points. The strain gauges are wired in the full bridge with two gauges each for linear and transverse strain. The specimen is loaded incrementally allowing for the strain reading to be sequentially monitored.

The test specimen can be inserted quickly and precisely into the frame of 32138. Both ends of the tension bar are provided with hooks for introduction of the tensile forces.

The strain gauge measuring range is protected by a Plexiglas cover, which also makes it clearly visible for inspection purposes.



Specifications

- Copper test specimen for tensile test
- Test specimen with strain gauge measuring points in full bridge circuit
- Determination of modulus of elasticity of material brass
- Accessory for MT 015 Strain gauge training system

Technical Specifications

Tension bar

- Measuring length: 50mm
- Cross-section: 2x10mm²
- Modulus of elasticity: 88000N/mm²
- Poisson's ratio: 0,33

- Strain gauge measuring point: full bridge, 350Ω

Experiments

- With 32138 Strain gauge training system: determination of the modulus of elasticity from the measuring data of a tensile test

Tension Bar – Aluminium Order Code - 32138C

This test specimen for tension is available as accessory for MT Strain Gauge Training System 32138. The tension bar is fitted with four strain gauge measuring points. The strain gauges are wired in the full bridge with two gauges each for linear and transverse strain. The specimen is loaded incrementally allowing for the strain reading to be sequentially monitored.

The test specimen can be inserted quickly and precisely into the frame of 32138. Both ends of the tension bar are provided with hooks for introduction of the tensile forces. The strain gauge measuring range is protected by a Plexiglas cover, which also makes it clearly visible for inspection purposes.



Specifications

- Aluminium test specimen for tensile test
- Test specimen with strain gauge measuring points in full bridge circuit
- Determination of modulus of elasticity of material brass
- Accessory for MT 015 Strain gauge training system

Technical Specifications

Tension bar

- Measuring length: 50mm
- Cross-section: 2x10mm²
- Modulus of elasticity: 88000N/mm²
- Poisson's ratio: 0,33
- Strain gauge measuring point: full bridge, 350Ω

Experiments

- With 32138 Strain gauge training system: determination of the modulus of elasticity from the measuring data of a tensile test

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