

Bending Stress in a Beam (EDC-BSBM-305)

SPECIFICATIONS:

- Fits onto the Structures platform for ergonomic and stable use.
- Includes a Vernier caliper for precise cross-section measurement.
- Strain gauge amplifier with multiple strain gauges for strain measurement at different positions around the beam section.
- Users can apply loads to an inverted T-section beam held on two supports.
- Strain gauges at different heights measure strains due to the applied load.
- A load cell measures the force applied at the mid-span of the beam.
- Works with EDAQ software for real-time data logging, display, and analysis.
- USB interface hub connectivity for easy data collection.

DESCRIPTION:

This beam strain measurement module is designed to help users understand bending stress and strain distribution across a T-section beam. The beam is mounted on two supports, and users can apply loads at the mid-span, with built-in strain gauges measuring the resulting strains at different heights along the beam. A strain gauge amplifier ensures precise strain measurement, while a load cell records the applied force. The offset neutral axis of the T-section beam allows for advanced structural analysis, making it ideal for engineering experiments in stress-strain analysis and material behavior.

The system is fully integrated with EDAQ software, allowing real-time data acquisition, analysis, and display via a USB interface hub. Users can analyze stress distribution, strain variations, and the effects of beam cross-section dimensions on bending behavior. The package includes a T-section beam with nine strain gauges, a 16-input strain gauge amplifier, a 650N load cell, nine strain gauge cables, an inclinometer, beam supports, fixing tools, a Vernier caliper, storage tray, and a comprehensive user guide. This setup is perfect for students and professionals in structural mechanics looking for hands-on experimentation.



TECHNICAL DATA:

• **Beam Specifications:**

- **Type:** T-section beam.
- **Length:** 0.85 m.
- **Span:** 0.7 m.
- **Strain gauges:** 9, positioned at different heights along the beam.

• **Measurement & Load Application:**

- **Strain gauge amplifier:** 16 input.
- **Load cell capacity:** 650N.
- **Nine strain gauge cables:** 1 m each.
- **Two additional cables** for connectivity.

• **Software & Data Acquisition:**

- Compatible with EDAQ software for real-time data logging and analysis.
- USB interface hub for data collection and display.

• **Learning Objectives:**

- Stress and strain relationship
- Strain gauges as instruments;
- Finding the neutral axis by experiment and calculation;
- How the beam cross-section dimensions affect the second moment of area (I value) and neutral axis.

• **Accessories Included:**

- Two beam supports.
- T-section beam with nine strain gauges.
- Strain gauge amplifier (16 input).
- Load cell (maximum capacity: 650N).
- Nine strain gauge cables (1 m each).
- Two additional cables.
- Hexagon tools for beam fixings.
- Vernier caliper for cross-section measurement.
- Inclinator.
- Storage tray.
- Comprehensive user guide