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

SPECIFICATIONS:

- 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 or higher.
  - **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 analysis in beams.
  - Determining the neutral axis experimentally and through calculation.
  - Understanding the effect of cross-section dimensions on the Second Moment of Area ('I' value).

- **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.
  - Inclinometer.
  - Storage tray.
  - Comprehensive user guide