



1. Equipment Description

A complete experimental apparatus designed to study **beam deflection** under various loading and boundary conditions, and to determine **Young's Modulus** for different materials.

2. Mounting / Interface

- Compatible with **Aluminium Alloy Profile Structures Test Frame**.
- Integrates with **Onboard Data Acquisition (DAQ) System**.

3. Experiments Covered

- Beam bending theory and evaluation of structural stiffness
- Deflection under **point load** and **uniformly distributed load (UDL)**
- Analysis of beam configurations:
 - Simply supported
 - Fixed (Encastre)
 - Cantilever
 - Propped cantilever
- Influence of beam shape, length, material, and cross-sectional geometry

4. Standard Features

- Tutor and Student Guides included
- 5-year warranty
- Manufactured under **ISO 9001** quality standards

5. Beam Supports

- Two universal supports enabling:
 - Simply Supported mode
 - Fixed/Encastre mode
- Compatible with cantilever mounting or between-support mounting

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



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6. Measurement System

- Digital deflection indicator with **USB interface**
- Sliding trammel for flexible positioning
- Non-spring plunger design to ensure minimal measurement loading

7. Support Alignment

- Integrated pointers and scale for precise beam alignment and positioning

8. Supplied Beams

Aluminium Beams (Min. 2 pcs or more)

- Length: **800–1000 mm**
- Width options: **18–20 mm, 25–26 mm**
- Thickness options: **3–3.5 mm, 4.5–5 mm**

Brass Beam

- Length: **800–1000 mm**
- Width: **25–26 mm**
- Thickness: **3–4 mm**

Steel Beam

- Length: **800–1000 mm**
- Width: **25–26 mm**
- Thickness: **3–4 mm**

9. Accessories

- Minimum **9 mass hangers**
- Minimum **50 weights** (20 g each)
- Maximum load: **2 kg**
- **Vernier Caliper** included

10. Digital Deflection Indicator

- Range: **12.7 mm**
- Resolution: **0.01 mm**

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- Accuracy: ≤ 0.02 mm
- Digital output enabled for data transfer

11. Mounting Hardware

- Two rigid clamps
- Two detachable knife-edge supports
- Frame-mounted scale for load/indicator positioning

12. Compatibility – Standard & Future Add-On Licenses

The Test Frame and Onboard DAQ HUB shall support:

- Future **remote operation software licences**
- Unlimited simultaneous student access for **live data acquisition**
- Customizable display tools
- Time-logged monitoring of student connections
- Suitable for remote classrooms, lab experiments, and collaborative learning

13. System Features

- Compatible with multiple structural experiment modules
- Automatic sensor detection
- Multi-channel simultaneous data acquisition
- GUI-based software with analogue/digital meters

14. Measurement Capability

DAQ must support a wide range of sensors with automatic calibration:

- Force
- Deflection
- Displacement
- Strain
- Bending moment
- Shear force
- Torque
- Angle
- Other structure-experiment sensors

15. Connectivity

- **USB 2.0 / USB 3.0** support
- **Ethernet/LAN** communication

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- Automatic SPC cable detection (no manual calibration required)

16. Software Requirements

- Real-time data logging
- Export options: **CSV, Excel**
- On-screen readings and plotting
- Graphs, charts, tables
- Automated report generation
- Apparatus mimic diagram and experiment schematic
- Manual input variables
- Tabulated and simulated results

17. Operating Environment

- Compatible with **Windows 10 and later**

18. Accessories / Scope of Supply

- Complete DAQ software
- All required cables and connectors
- User manual and installation guide

19. Environmental Conditions

- Storage Temperature: **-25°C to +55°C**
- Operating Temperature: **+5°C to +40°C**

20. Essential Base Unit

- **Structures Test Frame with HUB**, fully compatible with all current and future structural experiment modules

21. Power Monitoring / Scheduling

- High-insulation materials for remote power control
- Allows real-time monitoring of power consumption
- Supports scheduled ON/OFF switching of connected devices

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