

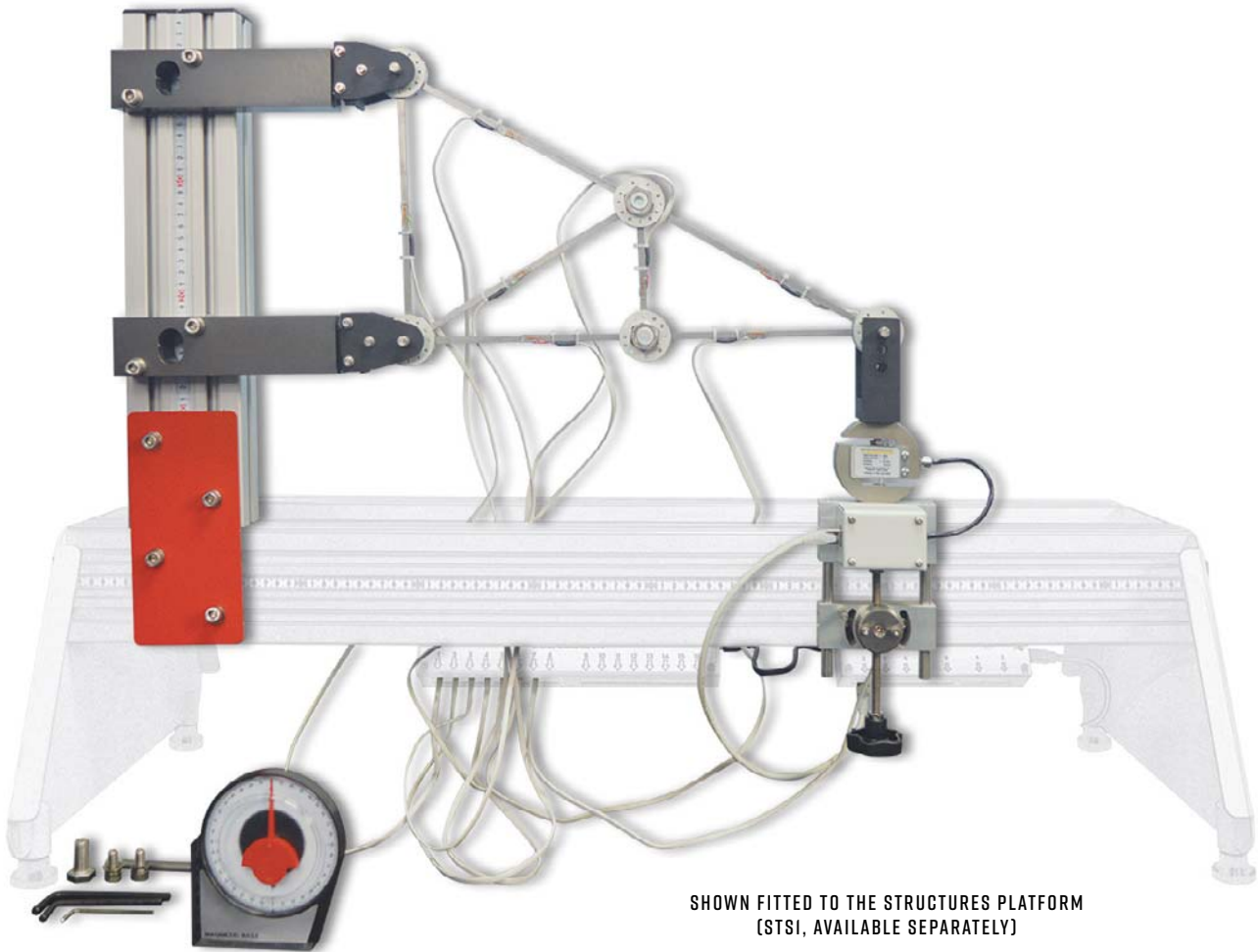


## ≡ PIN-JOINTED FRAMEWORKS



STS8

Experiment for the study of strains, stresses, forces and deflections in various pin jointed frameworks, and the study of Bow's notation. Mounts on the Structures platform and connects to Structures automatic data acquisition unit and software (VDAS® Onboard).



SHOWN FITTED TO THE STRUCTURES PLATFORM  
(STS1, AVAILABLE SEPARATELY)

### KEY FEATURES

- One of a range of experiment modules that teach structures principles
- Fits to the Structures platform for ergonomic use and space-saving storage
- Interchangeable square section structural members to allow easy construction of four different frameworks
- Strain gauge amplifier and multiple strain gauges for measurement of force in each member of the trusses
- Simplified versions of realistic structures to give students an understanding of real-life structures
- Additional load cell available for multiple experiments
- Supplied with storage trays to keep members and smaller items safe
- Works with user-friendly software (VDAS®)



# ≡ PIN-JOINTED FRAMEWORKS



## DESCRIPTION

One of a range of experiment modules that fit to the Structures platform (STS1, available separately), this product helps students to understand the forces and deflections in four popular pin-jointed frameworks, due to a load. Students use a load cell to measure and add loads to each of a choice of four frameworks, held on supports. Strain gauges on each member of the framework measure the forces due to the load. A precision digital indicator measures the deflection of each framework.

Students apply the load and measure the resulting forces and deflection. They use textbook equations to predict the forces and deflections for any given load, comparing them to measured results. This helps confirm the reliability of the textbook equations and the accuracy of the experiment results. An optional load cell (STS8a) allows students to add a secondary load to the side of the roof truss. Each load cell can apply angled loads for additional experiments or to simulate a swaying load.

The strain gauges connect to a strain gauge amplifier, which connects (with the load cell) to the USB interface hub of the Structures platform for computer display and data acquisition (VDAS® Onboard).

## STANDARD FEATURES

- Supplied with comprehensive user guide
- Five-year warranty
- Made in accordance with the latest European Union directives
- ISO9001 certified manufacturer

## LEARNING OUTCOMES

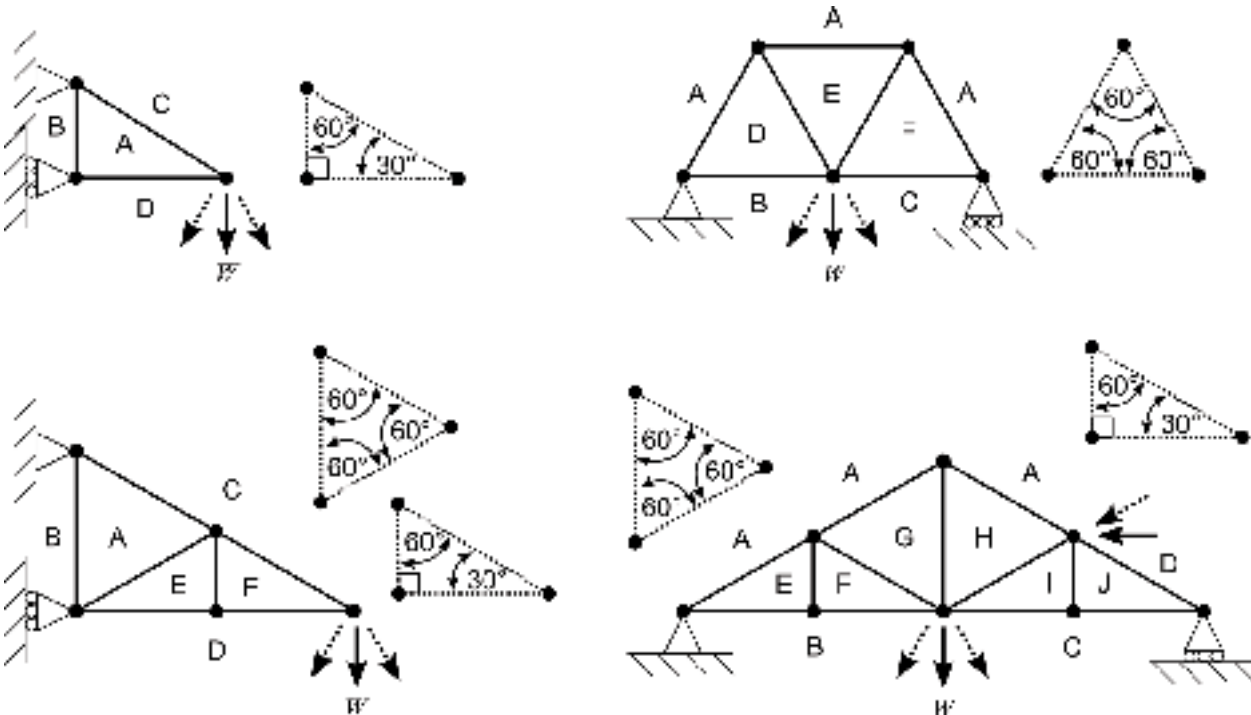
- Introduction to Bow's notation
- Strain gauges as instruments
- Forces and deflections in different frameworks
- The Warren truss
- The roof truss (or Howe/Pratt truss)
- Simple and advanced cantilever trusses
- Force analysis by method of joints and method of sections
- Deflection analysis by the strain-energy method
- Wind loads on a roof truss
- Affect of a swaying load on a cantilever truss
- The principle of superposition for multiple loads (needs additional load cell)

## ESSENTIAL ANCILLARY

- Structures Platform (STS1)

## OPTIONAL ANCILLARY

- Additional load cell for secondary loading (STS8a)



THE FOUR FRAMEWORKS

# ≡ PIN-JOINTED FRAMEWORKS



## SOFTWARE

TecQuipment has created data acquisition applications (VDAS® Onboard) for each experiment module, with additional simulated experiments.

The simulated experiments allow students to simulate the hands-on laboratory experiments, verifying their results. They also allow simulation of alternative set-ups, such as frame members of different cross-section and material, extending the learning experience beyond the practical laboratory session.

## OPERATING CONDITIONS

### OPERATING ENVIRONMENT:

Laboratory

### STORAGE TEMPERATURE RANGE:

-25°C to +55°C (when packed for transport)

### OPERATING TEMPERATURE RANGE:

+5°C to +40°C

### OPERATING RELATIVE HUMIDITY RANGE:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

## DETAILED SPECIFICATIONS

TecQuipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

### DIMENSIONS AND WEIGHT:

- Nett (assembled): 850 mm long x 80 mm front to back and 625 mm high and 17 kg
- Approximate primary packed (with storage trays): 0.08 m<sup>3</sup> and 19 kg

### SPACE NEEDED:

- 1500 mm x 600 mm, level bench or desk

### ITEMS INCLUDED:

- Strain gauge amplifier, 16 input
- Pinned and roller supports
- Additional upright
- Trammel arm with digital indicator of resolution 0.001 mm
- Three cables
- Square-section frame members: 7 x long, 4 x medium and 2 x short
- Eight joint bosses
- Load cell of maximum capacity 650 N
- Hexagon tools for fixings
- Storage trays for general items and frame members
- Inclinator
- Comprehensive user guide