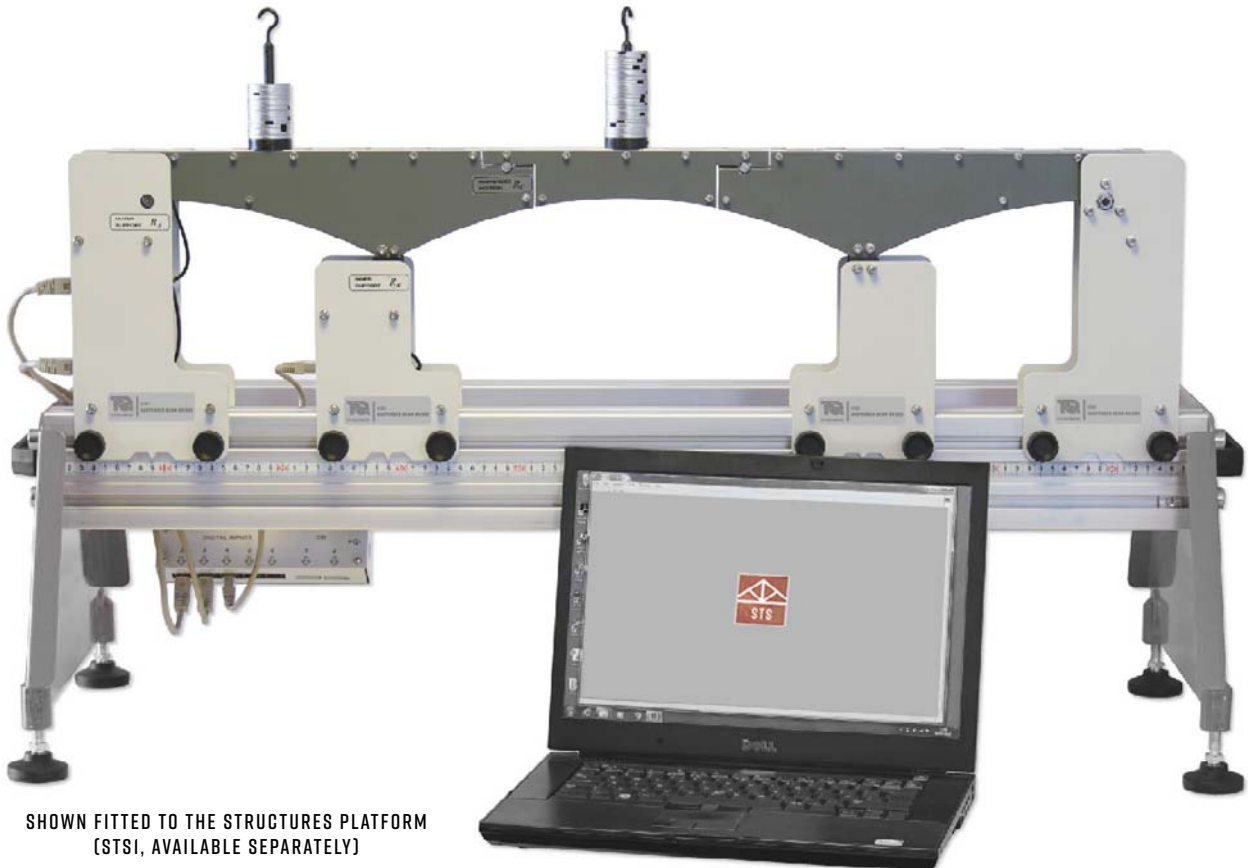




## ≡ SUSPENDED BEAM BRIDGE

**VDAS<sup>®</sup> ONBOARD** STS21

Experiment for the study of the characteristics of a suspended beam bridge. Mounts on the Structures platform and connects to the Structures automatic data acquisition unit and software (VDAS<sup>®</sup> Onboard).



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

LAPTOP NOT INCLUDED

### 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
- Simplified version of a realistic structure to give students an understanding of real-life structures
- Three load cells to measure support and internal reactions at key positions on the bridge
- Includes multiple loads for many combinations of loads including uniformly distributed loads (UDLs)
- Supplied with a storage tray to keep smaller items safe
- Works with user-friendly software (VDAS<sup>®</sup>)



# ≡ SUSPENDED BEAM BRIDGE



## DESCRIPTION

One of a range of experiment modules that fit to the Structures platform (STS1, available separately), this product helps students to understand how loads affect support reactions of a suspended beam bridge, also known as a Gerber beam bridge or articulated bridge. This bridge design differs from some others in that it is statically determinate, yet may have large central spans. This product shows students how to indicate the bridge reactions in the form of influence lines. The bridge has two outer 'anchor' sections, each on two supports. The anchor sections each have a short cantilever that supports a short central suspended section. The four bridge supports include pointers that work with the scale on the platform for accurate positioning. Load cells in the supports and bridge structure measure the reactions to the loads.

Students apply loads across to any position on the bridge and measure the resulting support reactions, and the internal reactions between the cantilever and suspended sections. They use textbook equations to predict the reactions, comparing them with measured results. This helps confirm the reliability of the textbook equations and the accuracy of the experiment results.

The load cells connect 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 the suspended beam (or Gerber) bridge
- Support reactions for an increasing point load and a uniformly distributed load (UDL)
- How loads affect bridge support reactions and internal reactions between the cantilever and suspended sections
- Influence lines for supports and internal reactions due to a load moving across the beam structure
- The Principle of Superposition

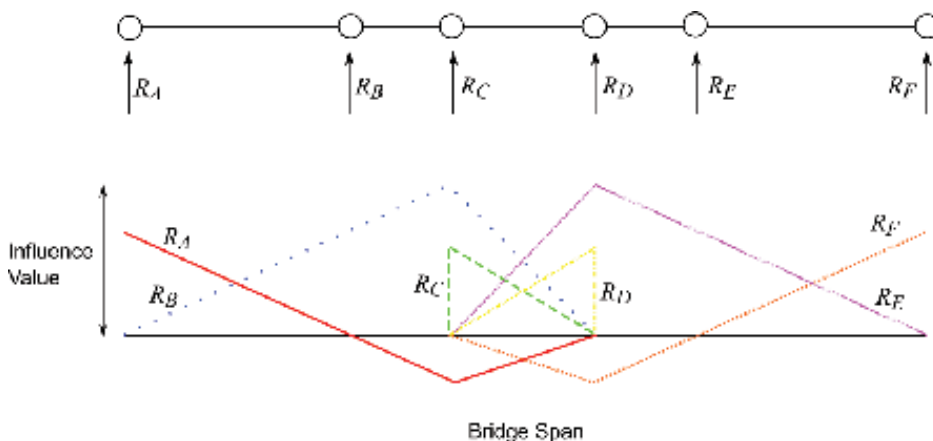
## ESSENTIAL ANCILLARY

- Structures Platform (STS1)

## SOFTWARE

TecEquipment 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 other loading conditions and portal properties, extending the learning experience beyond the practical laboratory session.



REACTION INFLUENCE LINES FOR THE SUSPENDED BEAM BRIDGE

# ≡ SUSPENDED BEAM BRIDGE



## 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

TecEquipment 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): 930 mm long x 83 mm front to back and 380 mm high and 10 kg
- Approximate primary packed (with storage tray): 0.06 m<sup>3</sup> and 12 kg

### SPACE NEEDED:

- 1500 mm x 600 mm, level bench or desk

### ITEMS INCLUDED:

- Two cantilever/anchor sections, each with the outer supports
- Suspended section
- Two inner supports
- Total bridge span 0.87 m
- Load cells built into left hand supports and anchor section
- Three cables
- Eleven mass hangers
- 50 x 20 g masses
- Storage tray
- Comprehensive user guide