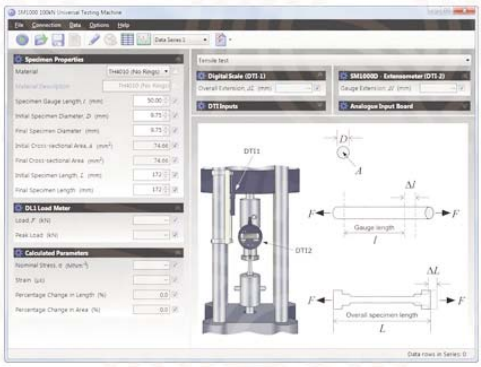
SM1000 Universal Testing Machine

A compact machine for compressive and tensile tests on different materials and structures

Works with VDAS®



Screenshot of the optional VDAS® software

- Compact bench-mounting machine, ideal for classroom demonstrations and student experiments
- Finds tensile properties and compressive properties of many materials and structures
- Can connect to TecQuipment's Versatile Data Acquisition System (VDAS®) to log experiment results, and automatically calculate answers and create charts of your results
- Includes set of tensile test specimens of different grades of steel for comparison experiments
- TecQuipment can supply range of optional parts for experiments in beam deflection, hardness testing and spring rate and deflection
- Optional Extensometer (SM1000d) available for accurate tests to find Young's modulus of tensile specimen

- TecQuipment Ltd, Bonsall Street, Long Eaton, Nottingham NG10 2AN, UK
- **T** +44 115 972 2611 • **F** +44 115 973 1520 • **E** info@tecquipment.com • **W** www.tecquipment.com
- An ISO 9001 certified company
- VDAS is a registered trademark of TecQuipment Ltd

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SM1000 Universal Testing Machine

Description

The Universal Testing Machine is ideal for classroom demonstrations and for safe use by small groups of students. It fits onto any suitable strong desk or bench top, but TecQuipment offers the optional Support Table and Cupboard (SM1000a).

A steel frame with four columns supports a hydraulic ram. The ram pushes up a loading platform. The area above the loading platform is for compression tests on a wide range of materials such as wood, brick and mortar. The space below the platform is for tensile tests.

A high-impact strength clear-plastic guard protects the user during tests.

During tests, force sensors measure the load applied by the ram. A digital load meter shows the real-time force and stores the peak force. A digital displacement indicator measures and displays the vertical movement of the loading platform or part of the structure under test.

Students use the force and the dimensions of the part under test to find the applied stress. They also use the vertical displacement to find the strain.

For accurate measurements of the small changes in length of a specimen tested in its elastic region, TecQuipment offers the optional Extensometer (SM1000d). Students use this to find the Young's modulus of a tensile test specimen.

Students can use the Universal Testing Machine to test many materials, engineering parts and structures, but TecQuipment also offers optional parts for the machine. These allow students to do Brinell hardness tests on materials, and tests on coil springs, leaf springs and beams.

Included with the Universal Testing Machine is a set of different grade steel tensile test specimens. These allow students to compare the tensile qualities of steel in its 'as drawn' state and 'normalised' steel. You can order extra specimens, and the user guide includes a diagram to help you create your own tensile test specimens from suitable materials.

For quick and reliable tests, TecQuipment can supply the optional Versatile Data Acquisition System (VDAS®). This gives accurate real-time data capture, monitoring and display, calculation and charting of all important readings on a computer (computer not included).

Standard Features

- Supplied with comprehensive user guide
- Five-year warranty
- Manufactured in accordance with the latest European Union directives

Experiments

- Tensile tests on different materials
- Compression tests on different materials

Available Experiment Modules

- Brinell Indenter (SM1000e)
- Coil Spring (SM1000f)
- Beam and Leaf Spring (SM1000g)

Recommended Ancillaries

- Bench-mounted version of the Versatile Data Acquisition System (VDAS-B)
- Support Table and Cupboard (SM1000a) – A steel-frame table with a pre-drilled work-top to accept the Universal Testing Machine. Includes a cupboard underneath.
- Extensometer (SM1000d) – A precision sliding gauge with a digital indicator
- Tensile test (TH) specimens - see separate datasheet

Essential Services

Bench space needed:
1.2 m x 800 mm

Electrical supply (SM1000):
Single Phase 100 VAC to 240 VAC
50 Hz to 60 Hz with earth

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

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Specifications

Universal Testing Machine

Nett dimensions and weight:
800 mm x 800 mm x 1500 mm maximum height and 150 kg

Packed dimensions and weight (including pump):
1.75 m^3 and 220 kg

Maximum load:
100 kN (10 tonne)

Maximum distance between compression platens:
220 mm

Tensile test specimens:
- 2 x TH4010 75A 0.1% carbon steel, as drawn
- 1 x TH4015 75AN 0.1% carbon steel, normalised

Optional Support Table and Cupboard (SM1000a)

Nett dimensions:
1230 mm x 750 mm x 980 mm high

Optional Extensometer (SM1000d)

Gauge length:
50 mm

Sound Levels

- Universal Testing Machine: Less than 70 dB(A)

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