

Serie UTM-E Universal Testing Machines

Rev. 04-2024-EN



Product Information

Universal, servocontrolled, electro-mechanical, computerized testing machines to perform load, displacement or strain-controlled tests in tension, compression, bending, and flexure with appropriate accessories, optional and/or customized on request. The machine is suitable for testing medium and low strength specimens in various areas of use such as quality control in industry, certification of materials by Accredited Testing Laboratories, research and development of new technologies in Universities and Research Centers, education in Technical Institutes.



Characteristics

Frame with 2 opposite columns, with double test space (tension and compression), movement driven by two high precision ball screws, with external covering made by aluminum profile sealed with extendable bellows to ensure cleanliness of the mechanical transmission components. The lower base accommodates the mechanical transmission system and the fast and silent brushless motor unit.

Manual, pneumatic, hydraulic or special and dedicated jaw units are available for tensile testing, depending on the required configuration. The machine is suitable for performing tensile tests on round and flat specimens, as well as FRP, FRCM, CRM, FRC, geotextiles, geogrids, fabrics and many others.

Accessories are also available for performing compression, bending and flexural tests.

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Machine Control System – Testing XE

The Testing Computerized Control System consists of a state-of-the-art datalogger (user/machine interface) equipped with an electronic module with TCP/IP network interface, analog and digital inputs and outputs of IN and OUT signals, firmware and software.

All signals related to the physical quantities coming from the machine's electronic sensors (load cell and displacement transducer), as well as those of electronic strain gauges (optional) applied to the sample for direct measurements of material deformation, are captured in real time by means of an analog/digital converter with resolution up to 24bit and sampling rate up to 1 kHz.



When the testing machine is equipped with a video extensometer, the Testing system is also capable of synchronously acquiring up to 8 different measurements from the video extensometer itself (e.g. radial and axial deformation, elongation and stretching, etc.).

The testing machine is controlled by a closed-loop P.I.D. control with a frequency of 1 kHz; the machine can perform tests in load, displacement and strain control with the possibility of modifying the control parameters in real time. It is possible to perform load and unload ramps, maintain constant load or position and perform cyclic tests.

The Software Testing allows input of the necessary test parameters, through input masks adaptable to the specific needs of the operator, then proceed to the execution and display in real time of each test parameter. The results are automatically captured and stored in a database to ensure easy traceability for subsequent processing.

Thanks to the test modules fully customizable by the user, graphically accurate document and final printout are possible, which can be used both for certification and for any internal distribution.

The database can be shared over a network (intranet) and the software can be used simultaneously on different PCs allowing the visualization and processing of test data from different locations, with automatic and advanced functions of data loading and export of the results according to the requests related to the **Industry 4.0** guidelines.



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Main reference standards

| | |
|--------------------------|--|
| ASTM A615 | Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement |
| ASTM A370 | Standard Test Methods and Definitions for Mechanical Testing of Steel Product |
| ASTM E4 | Standard Practices for Force Verification of Testing Machines |
| ASTM E8 | Standard Methods for Tension Testing of Metallic Materials |
| ASTM E9 | Standard Methods of Compression Testing of Metallic Materials at Room Temperature |
| ASTM E2658 | Standard Practices for Verification of Speed for Material Testing Machines |
| UNI EN ISO 6892 | Metallic materials. Tensile testing at room temperature |
| UNI EN ISO 6892-2 | Metallic materials. Tensile testing at high temperature |
| UNI EN ISO 7438 | Bend test |
| UNI EN ISO 7500-1 | Calibration and verification of uniaxial static test machines |
| UNI EN 15630 | Steel for reinforced concrete and prestressed concrete |
| UNI EN 10080 | Concrete reinforcing steel - Weldable reinforcing steel |
| UNI EN 2561 | Carbon fibre reinforced plastics - Unidirectional laminates - Tensile test parallel to the fibre direction |
| UNI EN 13706 | testing methods and tolerances for pultruded structural profiles |
| ASTM D3039 | Tensile testing of composite laminates |
| UNI EN ISO 10319 | Geosynthetics - Wide-width tensile test |

Technical features

| Models | UTM 50E UTM100E | UTM200E | UTM300E |
|---------------------------------|---|---|-------------------|
| Load capacity | 50 kN - 100 kN | 200kN | 300kN |
| Accuracy | Class 1 (or better) to 1 % of full scale ISO-7500 | | |
| Speed range | from 0.001 to 250 mm/min | | |
| Maximum stroke | 800 mm | 800 mm | 800 mm |
| Vertical test area space | 550 mm | 650 mm | 650 mm |
| Test area width | 420 mm | 650mm | 650 mm |
| Frame dimensions | 1050 x 620 x 2050 | 1250 x 720 x 2300 | 1250 x 720 x 2300 |
| Weight of the frame | 650 kg | 1650 kg | 1850 kg |
| Power supply | 1.5 kW 230 V / 50 Hz / single phase | 2.5 kW 400 V / 50 Hz / 3 phases (5 poles) | |
| ADC Converter | 24 bit / 1 kHz | | |



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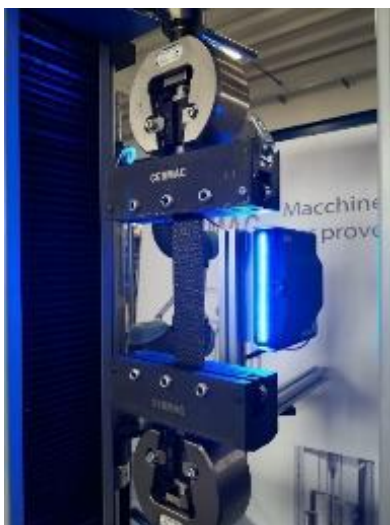
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Optional accessories

Accessories are available for every testing requirement: grips for tensile tests on round and flat specimens, dedicated grips for testing fibre-reinforced materials (FRP, FRCM, CRM), grips for geotextiles, geogrids and geotextiles, thread adapters for turned specimens, manual, automatic or video extensometers, compression and flexure fixtures.

Jaws are available with manual, pneumatic or hydraulic actuation.



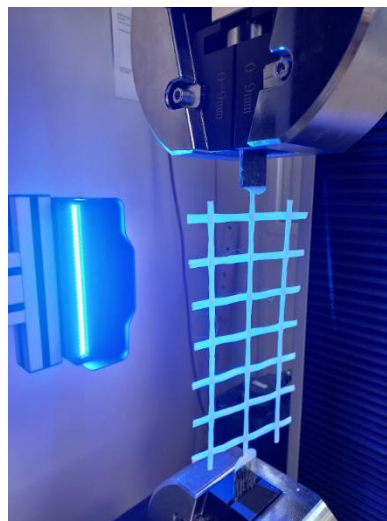
Video extensometer



Horizontal clamping
Hydraulic grips



fixture for geogrids and nets



Test set-up for performing tests on FRP and FRCM using video extensometer for strain measurement

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