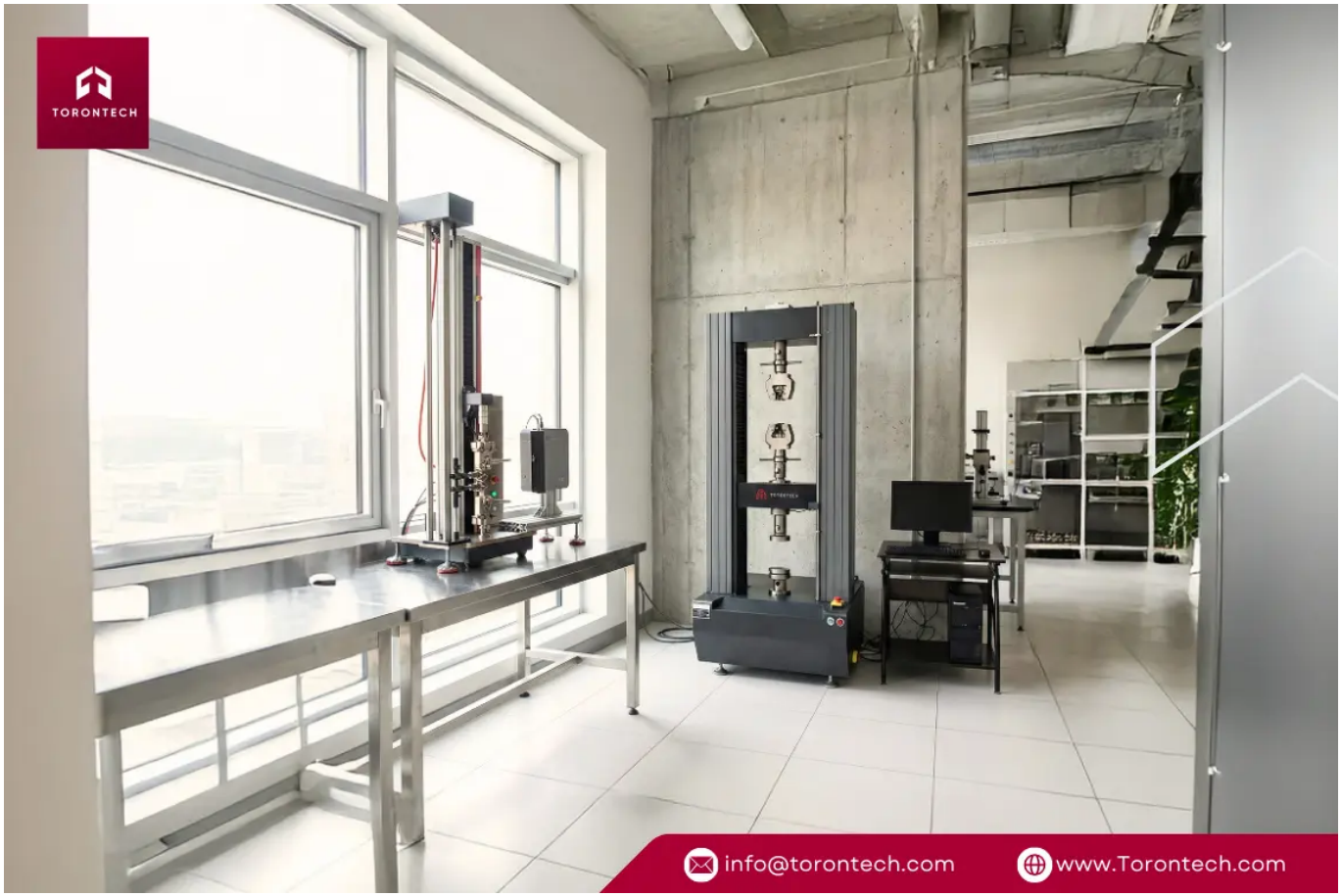
TORONTECH

ELECTROMECHANICAL UNIVERSAL TESTING MACHINE

TTM-Series Electromechanical UTM - Universal Testing Machine range from Torontech are top-quality and competitively priced universal testing machines that are used for precise and convenient tensile testing of various materials in any quality control lab environments.

These Universal Testing Machines are available from low capacities in benchtop configuration with capacity up to 600kN (Floor-Standing) with electromechanical frames, and can be equipped with a variety of accessories including: grips, fixtures, compression plates, thermal cabinets and extensometers covering all relevant applications for testing of metals, rubber, plastics, textiles, paper, foams, timber, wires or other metallic or non-metallic specimens and medical, electronic and other components.

The load frames are rigidly constructed, providing superior axial and lateral stiffness.



APPLICATIONS

An electromechanical universal testing machine (UTM) measures the mechanical properties of materials under tension, compression, bending, and shear. Its precision and clean operation make it the standard choice across research, quality control, and production testing.

Metals and Alloys

Run tensile, yield, and elongation tests to qualify metals to standards such as ASTM E8 and ISO 6892. Reliable data supports material certification and incoming inspection.

Plastics, Rubber, and Composites

Measure tensile strength, modulus, and flexural behavior to ASTM D638 and ISO 527. Accurate results guide material selection and confirm batch consistency.

Textiles, Paper, and Films

Test tensile strength, peel, and tear resistance on thin and flexible materials, supporting packaging, converting, and textile quality control.

Medical, Electronic, and General Components

Verify the strength of finished parts, joints, springs, and assemblies, helping manufacturers meet design and safety requirements.

FEATURES

1. Servo-Driven Precision Control
A servo motor and precision ball screws move the crosshead at a tightly controlled rate, which delivers smooth loading and accurate, repeatable test speeds.

2. High Force Accuracy
The system operates to 0.5 accuracy class, in line with ASTM E4 and ISO 7500-1, so measured forces are dependable across the load range.

3. Interchangeable Load Cells
Selectable load cells let one machine cover a wide span of forces, from low-force film testing to high-force metal testing, without sacrificing resolution.

4. Broad Accessory Range
Grips, fixtures, compression plates, bend fixtures, thermal cabinets, and extensometers adapt the machine to many materials and test methods.

5. Rigid Load Frame
A stiff frame provides high axial and lateral stiffness, which reduces measurement error and improves the accuracy of modulus and deformation data.

6. Standards-Ready Test Software
Integrated software runs tests to common ASTM and ISO methods, captures stress-strain curves, and exports results for reporting and traceability.

THEORY & METHOD

A universal testing machine measures how a material responds to a controlled mechanical load. An electromechanical UTM creates that load with an electric drive system, which gives precise control over speed and force.

How the Machine Applies Load

A servo motor drives one or more precision ball screws. As the screws turn, they move the crosshead up or down at an exact, controlled rate. The specimen is held between grips or fixtures, so this crosshead motion stretches the specimen in tension or presses it in compression.

How the Machine Measures the Response

A load cell mounted in the load path measures the force applied to the specimen at every instant. At the same time, an extensometer or the crosshead position measures how much the specimen deforms. The system plots force against deformation to build a stress-strain curve, which reveals properties such as tensile strength, yield point, and elastic modulus. A closed-loop controller constantly compares the actual load and position against the test program and adjusts the motor, which keeps the test accurate and repeatable. Calibration to ASTM E4 and ISO 7500-1 confirms that the measured forces are trustworthy.

TECHNICAL SPECIFICATIONS

Technical Specifications of Electromechanical Universal Testing Machine

Max. Test Force	10kN/20KN/30KN/50KN/100KN/200KN/300KN/600kN
Accuracy Class	0.5 Class
Test force measuring range	0.4%~100%FS (full scale)
Test force indicating error	Within ±0.5% of indicating value
Test force resolution	±1/300000 of maximum test force,, Grade unchanged and resolution unchanged in whole process
Deformation measuring range	0.2%~100%FS
Deformation indicating error	Within ±0.5% of indicating value
Deformation resolution	1/200000 of maximum deformation, up to 1/300000
Displacement indicating error	Within ±0.5% of indicating value
Displacement resolution	0.025μm
Control Parameters	
Force control rate adjustment range	0.005~5%FS/s

Force control rate control accuracy	When rate <0.05%FS/s, within ±2% of setting value / When rate ≥0.05%FS/s, within ±0.5% of setting value
Deformation rate adjustment range	0.005~100%FS
Deformation rate control accuracy	When rate < 0.05%FS/s, within ±2% of setting value / When rate ≥ 0.05%FS/s, within ±0.5% of setting value
Replacement rate adjustment range	0.001~500mm/min
Replacement rate control accuracy	When rate < 0.5mm/min, within ±1% of setting value / When rate ≥ 0.5mm/min, within ±0.2% of setting value
Other Parameters	
Effective test width	400mm / 550mm
Effective tensile stroke	700mm / 600mm (can be customized according to user needs)
Effective compression stroke	700mm / 600mm
Mainframe dimensions	(760 * 460 * 1900) mm / (1050 * 750 * 2100) mm / (1050*900*2400)mm
Power	220V,50Hz, 0.75kW-1kW / 380V, 50Hz, 2kW-5kW
Weight	350kg/ 1000kg / 1500kg

TORONTECH.com

TORONTECH

Torontech Inc.
251 Consumers Road, Suite 1200
Toronto, Ontario, M2J 4R3, Canada

Phone: +1 416 368 2721 | Fax: +1 416 981 7652
Email: info@torontech.com

Torontech, LLC
601 Brickell Key Drive, Suite 700
Miami, FL 33131, USA

Toll-Free: 1-866-383-7919
Email: sales@torontech.com

Torontech ME FZE
Meydan Grandstand, 6th Floor,
Meydan Road, Nad Al Sheba,
Dubai-261440, UAE

Phone: +971 488 19252
Email: me@torontech.com

USA | Canada | EU | UAE | GCC | KSA | India | Africa | Latin America | Asia