



TORONTECH



200KN UTM - UNIVERSAL TESTING MACHINE TTM-200

Introducing 200kN UTM - Universal Testing Machine TTM-200, your ultimate solution for comprehensive analysis and research in static property testing.

This advanced and budget-friendly instrument is ideal for evaluating tensile strength, compression, bending, shearing, peeling, tearing, loading, relaxation, and reciprocating properties in both metal and non-metal materials, including composites.

The TTM-200 stands out with its ability to automatically calculate critical parameters such as ReH, ReL, Rp0.2, Fm, Rt0.5, Rt0.6, Rt0.65, Rt0.7, Rm, and E, ensuring precise and reliable results every time. It adheres to the highest standards, performing tests and delivering data in compliance with ASTM, ISO, DIN, JIS, and other international standards.

Unlock the full potential of your materials testing with the cutting-edge TTM200, and experience unmatched accuracy and efficiency in every test.

APPLICATIONS

- ASTM E8 Standard Test Methods for Tension Testing of Metallic Materials.
- ASTM A370 Standard Test Methods and Definitions for Mechanical Testing of Steel Products.
- ASTM E9-2009 Standard Test Methods of Compression Testing of Metallic Materials at Room Temperature.
- ISO 376:2004 Metallic materials-calibration of force-proving instruments used for the verification of uniaxial testing machines.
- ISO 7500-1:2004 Metallic materials-Verification of static uniaxial testing machines-Part 1: Tension/compression testing machinesVerification and calibration of the force-measuring system.

- ISO 6892-1:2016 Metallic materials-Tensile testing-Part 1: Method of test at room temperature.
- ISO 898-1:2009 Mechanical properties of fasteners made of carbon steel and alloy steel-Part 1: Bolts, screws, and studs with specified property classes-Coarse thread and fine pitch thread.
- ISO 7438:2016 Metallic materials-Bend test.
- ISO 6935-2:2015 Steel for the reinforcement of concrete-Part 2: Ribbed bars.

Dimensions

200kN UTM - Universal Testing Machine TTM-200

Mark	A	B	C	D	E	F	G	H	I
Value (mm)	2430	1032	898	447.5	600	470	545	1481	250

FEATURES

DSC-10TT Full Digital Closed Loop Control System:

The DSC-10TT system, our latest innovation, features advanced servo motor control chips and a multi-channel data collection module for consistent sampling and high-speed control. Its hardware based design enhances stability and reliability. The system also offers special displacement, deformation, and speed closed-loop control, allowing flexible

adjustments in testing speed and methods for versatile testing projects.

High-Efficiency and Professional Control Platform:

Combining DSP and MCU technologies, the DSC-TT provides high-speed calculations and solid control. This integration offers superior performance compared to single DSP or 32-bit single-chip solutions. Built-in motor control modules like PWM and QEI ensure safe, stable operation. The system also adopts USB or serial communication for steady and reliable data transmission with strong anti-jamming capabilities.

Hardware Filtration Function for Position Pulse Signals:

The precision optical encoder position capture module features a dedicated hardware module with a 24-grade filter, preventing erroneous counting due to pulse interference. This ensures accurate and stable position pulse capture.

Advanced Sampling and Signal Processing:

The system uses a special ASIC chip for synchronous sampling of all load cell signals, eliminating asynchronous issues and enhancing accuracy. It features three high-speed 24-bit A/D switching channels with a resolution of $\pm 1/300000$, ensuring consistent results. Additionally, three pulse signal catch channels and quadruple frequency technology improve signal resolution, with a maximum catching frequency of 5MHz.

Comprehensive Multi-Layer Protection:

The TTM200 is equipped with multi-layer protection, including software and hardware safeguards, to prevent overloading, over-current, overpressure, under-voltage, over-speed, and other potential issues. This comprehensive safety protection

ensures the reliable operation of the testing machine. With these solid safety measures in place, users can confidently conduct tests knowing their equipment is well-protected against potential hazards.

Advanced Servo Motor Control:

The system includes one servo motor digital-driven signal with a maximum PWM output frequency of 5MHz and a minimum frequency of 0.01Hz, providing precise and flexible control over testing parameters.

Performance Characteristics of DSC-10TT Control System

User Authority Management:

Upon login, the system activates modules based on user authority. The super administrator can manage access and assign different modules to different operators.

Versatile Testing Management:

Testing units can be customized and programs edited to comply with standards. The system conducts tests, generates standard-compliant reports, and displays the testing process and equipment status.

Automatic Data Storage and Retrieval:

Test data is automatically stored to prevent loss. The system offers fuzzy query for quick data retrieval, redisplay of results, and comparison of data from different times. Data backup ensures accessibility.

Advanced Curve Analysis:

Users can display and compare various curves, such as load-deformation and load-time, in real-time. The system allows detailed analysis, labeling of feature points, and printing of labeled curves in reports.

MS-ACCESS Database and Software Expandability:

The DSC-10TT software, based on an MS-ACCESS database, connects with OFFICE software. Reports can be saved in WORD or EXCEL formats, Users can access original data through the database.

Automatic Return and Calibration:

The moving crosshead automatically returns to the initial testing position, and the system calibrates load and elongation automatically according to the added standard.

Automatic Calculation and Extensometer Functionality:

The system automatically calculates parameters like ReH, ReL, Rp0.2, Fm, Rt0.5, Rt0.6, Rt0.65, Rt0.7, Rm, and E, with an added extensometer. It switches from deformation to displacement collection after yield, alerting users to remove the extensometer.

Measurement Range Mode:

The system offers a full range with no classification. It features a flexible module unit for accessory exchange and modular electrical hardware for easy function extension and maintenance. The automatic switch adjusts the range based on test force and deformation.

TECHNICAL SPECIFICATIONS

MEASUREMENT PARAMETERS	
Maximum test force	200kN / 45,000 lb.f (can add load cell to extend the force range)
Accuracy class	0.5
Measuring range of test force	0.2%~ 100%FS (full scale)
Indicating error of test force	Within $\pm 0.5\%$ of indicating value
Resolution of test force	$\pm 1/300000$ of maximum test force, grade unchanged and resolution unchanged in whole process
Measuring range of deformation	0.2%~ 100%FS
Indicating error of deformation	Within $\pm 0.5\%$ of indicating value
Resolution of deformation	1/300000 of maximum deformation
Indicating error of displacement	Within $\pm 0.5\%$ of indicating value
Resolution of displacement	0.025 μ m
CONTROL PARAMETERS	
Adjustable range of force control rate	0.005~ 5%FS/s
Control accuracy of force control rate	When rate is less than 0.05%FS/s, within $\pm 2\%$ of setting value; When rate is no less than 0.05%FS/s, within $\pm 0.5\%$ of setting value.

Adjustable range of deformation rate	0.005□ 5%FS/s
Control accuracy of deformation rate	When rate is less than 0.05%FS/s, within ±2% of setting value; When rate is no less than 0.05%FS/s, within ±0.5% of setting value
Adjustable range of displacement rate	0.001□ 500mm/min
Control accuracy of displacement rate	When rate < 0.5mm/min, within ±1% of setting value; When rate ≥ 0.5mm/min, within ±0.2% of setting value.
OTHER PARAMETERS	
Effective testing width	600mm
Effective distance of tensile area	420mm (including wedge tensile fixture and can be custom-made according to user's requirements)
Distance of crosshead	1000mm
Load Frame Size (length x width x height)	(1070×920×2550)mm
Load Frame Weight	1500Kg / 3307 lb.f
Voltage	380V, 50Hz, 5kW

Machine Configurations

LOADFRAME: 200KN STRUCTURE		
Frame of machine:	TTM series frame	One set
Ball screws	High-precision and zero clearance	Two pieces
CONTROL SYSTEM AND MEASURING SYSTEM		
Servo motor, servo speed regulation and control system		One set

Synchronous belt		One set
Load Cell:	200kN Load Cell	One piece
Electronic extensometer:	Gauge length: 50mm Deformation: 10mm	One piece
DSC-10TT Full Digital Closed Loop Measuring and Control System:	- Load Measuring System - Displacement Measuring System - Deformation Measuring System	One set
DSC-10TT English Software		One set
Remote Control Unit: 200kN UTM - Universal Testing Machine TTM-200	With LCD screen, real-time display of equipment running status, testing force, and displacement, magnetic, can be adsorbed at any position of the frame	One piece
PC	Lenovo	One piece
Printer:	HP Color Ink-Jet A4	One piece
MANUAL GRIPS (Can be customized according to customer's requirements)		
Tensile Wedge Grips:	Jaw Size: flat 0-10mm, 10-20mm, 20-30mm; V $\Phi 8$ - $\Phi 16$ mm, $\Phi 16$ - $\Phi 26$ mm, $\Phi 26$ - $\Phi 36$ mm)	One set each size
Compression Plates:	Dia. of plate $\Phi 150$ mm	One set



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