

INNOVATIVE TECHNOLOGIES

5kN UTM Single Column Universal Testing Machine

TTM-5L



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5kN UTM Single Column Universal Testing Machine TTM-5L

The TTM-5L is a precision-engineered universal testing machine designed for static mechanical testing of a wide range of materials, including plastics, rubber, paper, textiles, non-metals, and composites. With a maximum capacity of 5kN, it performs tensile, compression, bending, shearing, peeling, tearing, loading, relaxation, and reciprocating tests.

This machine is widely used for:

- Calibration of load measurement instruments for uniaxial testing
- Verification and calibration of tension/compression force systems
- Tensile testing of metallic materials at room temperature
- Measuring stress-strain behavior of vulcanized or thermoplastic rubber
- Testing tensile properties of plastic films
- Conducting 180° peel tests for flexible-to-rigid adhesive bonds
- Evaluating shear impact strength of adhesive bonds

The TTM-5L automatically calculates key mechanical properties such as ReH, ReL, Rp0.2, Fm, Rt0.5, Rt0.6, Rt0.65, Rt0.7, Rm, and E. It delivers accurate and repeatable results in compliance with ISO, ASTM, and DIN standards.



FEATURES/ADVANTAGES

► Compact and Stable Design

The single-arm frame with a precision ball screw and servo motor delivers smooth, accurate motion with low noise—perfect for lab environments with limited space.

► Digital Closed-Loop Control

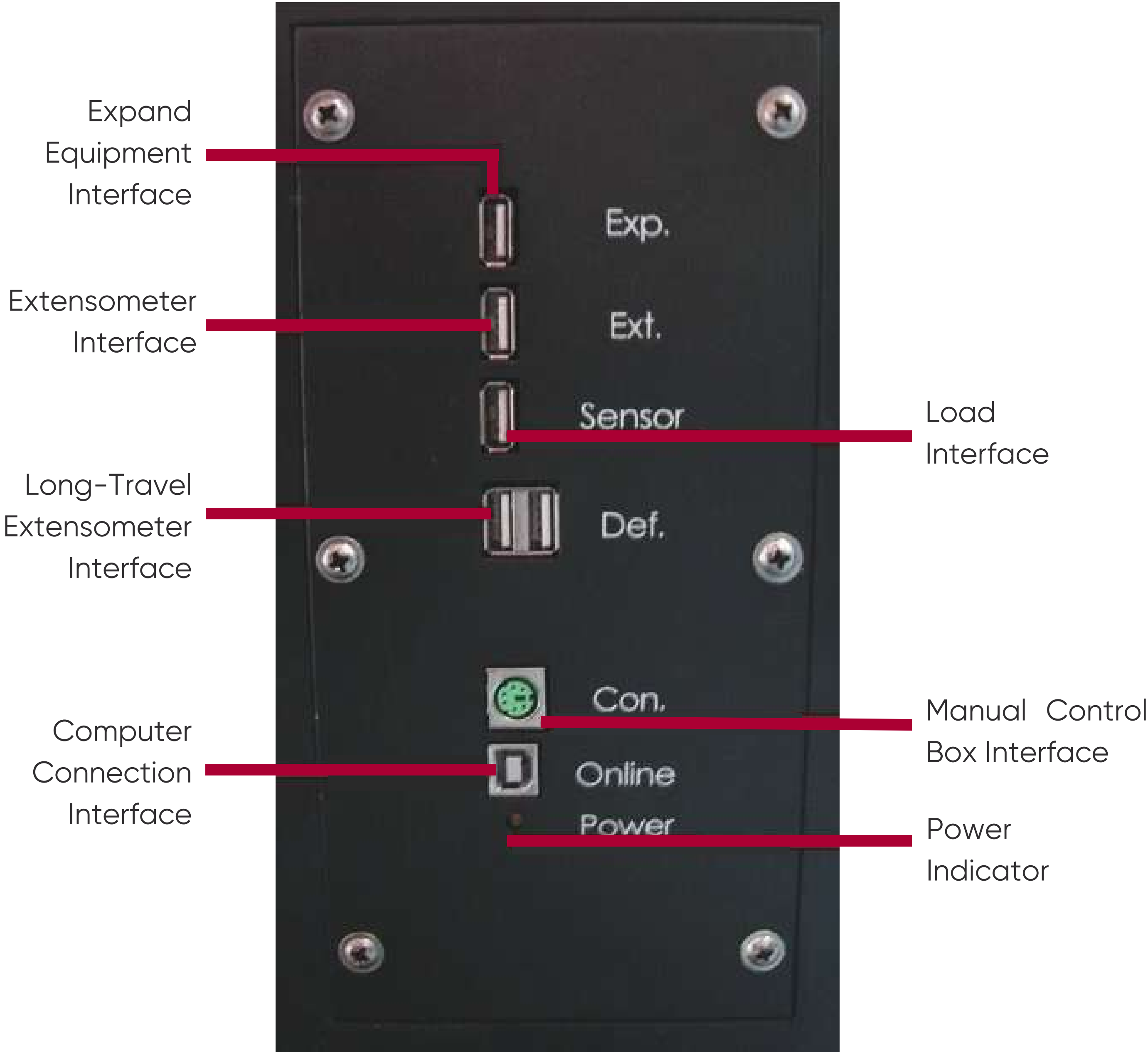
Real-time feedback system precisely manages speed, displacement, and deformation, ensuring consistent and reliable test results.

► High-Accuracy Signal Processing

Features 24-bit A/D converters with $\pm 1/300,000$ resolution and up to 5MHz signal capture, delivering fast and accurate measurements.

► Versatile Connections and Built-in Safety

Offers multiple ports for sensors and PCs, plus overload and overpressure protections to ensure safe and flexible operation.



FEATURES/ADVANTAGES

» Advanced Digital Control System

This machine utilizes DSC-10TT full digital closed-loop servo system with real-time control and high-speed signal processing for precise, stable, and consistent testing performance.

» Powerful Hybrid Control Platform

Combines a high-speed DSP and a reliable MCU to enhance data processing and control accuracy, supporting essential modules like PWM and QEI for smooth operation.

» Parallel Signal Sampling

Equipped with parallel sampling technology to collect synchronized signals across all load cells, reducing measurement errors and improving overall test accuracy.

» Precision Position Detection

Features advanced pulse filtering with a built-in 24-stage hardware filter to ensure clear signal processing and accurate position tracking during tests.

» User-Friendly Software Interface

Offers a Windows-based interface with real-time graphing, customizable test programs, and automatic report generation, making it easy to manage and analyze test data.

» Secure Data Management

Test results are saved automatically with backup options and database integration, supporting Excel and Word exports for efficient reporting and long-term data storage.

» Smart Test Functions

Includes automatic result calculation, calibration, extensometer removal alerts, and auto-return of the crosshead, improving both accuracy and operator convenience.

» Flexible Testing Capabilities

Modular design allows interchangeable accessories and auto curve range adjustment based on force or deformation—ideal for different materials and test types.

TECHNICAL SPECIFICATIONS

MEASUREMENT PARAMETERS	
Maximum Test Force	5kN / 1,125 lbf (can add load cells 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 ±0.5% of indicating value
Resolution of Test Force	±1/300000 of maximum test force, grade unchanged and resolution unchanged throughout the process
Measuring Range of Deformation	0.2%~100%FS
Indicating Error of Deformation	Within ±0.5% of indicating value
Resolution of Deformation	1/300000 of maximum deformation
Indicating Error of Displacement	Within ±0.5% of indicating value
Resolution of Displacement	0.025μm

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 ±2% of setting value When rate is no less than 0.05%FS/s, within ±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

TECHNICAL SPECIFICATIONS

OTHER PARAMETERS	
Effective Distance of Tension	700mm (can be custom-made according to user's requirements)
Removable Distance of Crosshead	900mm
Size of Main Unit (L × W × H)	(510 × 510 × 1580) mm
Weight of Main Unit	150 Kg (330.7 lbs)
Voltage	220V, 50Hz, 0.5kW (110V is also available)

Remote Control Unit



CONFIGURATION		
CATEGORY	ITEM	QUANTITY
Main Unit	TTM series frame	1 Set
	High-precision ball screw, zero - clearance (TBI)	1 Piece
Control & Measurement System	Servo motor & Speed control system	1 Set
	Synchronous Belt	1 Set
	Load cell (5kN Capacity)	1 Piece
	DSC-10TT Digital Closed-Loop Control System : - Load Measurement System - Displacement Measurement System - Deformation Measurement System	1 Set
	DSC-10TT English Software	1 Set
	Remote Control Unit with LCD display (force, displacement, system status), magnetic backing	1 Piece
	PC	1 Piece
Grips (Customizable)	HP color inkjet printer, A4 format	1 Piece
	Wave Grip Set	1 Set



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