

TECHNICAL SPECIFICATION OF UNIVERSAL TESTING MACHINE (UTM) FOR TESTING RANGE 0.5kN TO 200kN

Supply, Installation, Commissioning & Training of 200 kN capacity Electromechanical, Computerized Universal Testing Machine (suitable for testing Polymer Pin/Disc/Post Insulators and Aluminium Stranded Conductors Galvanised Steel Reinforced), equipped with Servo-controlled closed-loop system for Load Testing range 0.5kN to 200kN and Displacement control, driven by precision suitable mechanism.

1.0 Scope of Supply

Supply, installation, commissioning, and training of 200 kN capacity closed loop controlled electromechanical computerized Universal Tensile Testing Machine complete with computer, software, all necessary grips / fixtures, calibration, and accessories suitable for determination of Specified Mechanical Load (breaking load) of the following specimens as per WBSedCL Technical Specification:

- Aluminium Stranded Conductors Galvanised Steel Reinforced - Size SQUIRREL to PANTHER
- Polymer 11 & 33 KV Pin Insulators, Disc Insulators and Post Insulators
- Strand GI Wire and GI Stay Wire / Messenger Wires of LT AB Cables.
- Composite Hardware Fittings for used in Over Head line Disc Insulator fittings for ACSR Rabbit, Dog, Wolf Panther Conductor Stringing

Detailed Technical Specification is available in <https://www.wbsedcl.in>

2.0 Technical Parameters (Minimum Requirements)

Parameter	Specification
Maximum Capacity	200 kN
Load Range	0.5kN-200 kN (0.25% to 100% of F.S.)
Load Accuracy	±1% or better (Class 1 / Grade 1 as per IS 1608:2022 / ASTM E4 / ISO 7500-1)
Load Resolution	1/50,000 or better
Displacement Resolution	0.01 mm or better
Displacement Accuracy	±0.5%
Test Speed Range	0.1 mm/min to 250 mm/min (stepless adjustable)
Parameter	Specification
Max Tensile Stroke / Travel	Shall be adequate and determined considering specimen gauge length, expected elongation, grip length, and required clearance, in accordance with relevant provisions of IS 1608 (Part 1) 2022, to ensure suitability for testing of specified specimens.
Test Space	≥ 1500 mm (suitable for 1000 mm specimen length + grips)
Control System	Servo Closed-loop (load, displacement and Strain control)

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Parameter	Specification
Overload Protection	105% of rated capacity or better
Driver	AC servo drive
Encoder	Displacement Encoder

3.0 Gripping / Fixture Arrangements (Mandatory & Interchangeable)

The UTM shall be supplied with a complete set of interchangeable grips/fixtures suitable for testing various types of specimens (flat, round, and other geometries), ensuring firm holding without slippage or damage to the test specimen. The gripping system shall maintain proper alignment and prevent eccentric loading during testing. All mechanical tests shall be carried out in accordance with relevant WBSEDCL specifications and applicable Indian/International standards, including IS 1608 (Part 1):2022.

4.0 Control, Software & Data Acquisition (Minimum Requirements)

- Computer based Data acquisition with different test modules enabling interpretation of test results to cover the entire range of testing of materials deemed fit for the machine
- All feedback channels subject to programmable upper and lower safety limit interlocks with option of Stop. Hold with Mode Transfer and Trip.
- Window based user friendly software with easy interface Simple and user friendly, compatible to all Indian standards and other relevant international standards.
- The supplied software shall be Windows-based, user-friendly, and fully integrated with the UTM for real-time data acquisition, analysis, and reporting in compliance with relevant standards such as IS 1608 (Part 1) 2022.
- The software shall provide **minimum three (03) or more simultaneous real-time numerical displays**, including but not limited to: Load, Displacement / Extension and Stress / Strain
- The system shall generate **real-time graphical plots**, including: Load vs. Displacement, Stress vs. Strain
- The software shall automatically compute and generate test reports for:

Ultimate Tensile Strength (UTS)

Breaking / Maximum Load

Percentage Elongation

Yield Point (where applicable)

- Automatic calibration / balancing of transducer.
- Software validation certificate to be provided
- Auto release of system facility after sample failure.
- Facility to see the post failure behaviour of the specimen

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xii. Industrial PC with not less than 18" monitor, keyboard, mouse & printer where computer is suitable with latest processor. 512 GB SSD 6 GB RAM. LED Monitor, preinstalled with suitable operation system All the latest software including operating system and other operating platforms required for optimum functioning of the equipment and Latest MS Office software, inbuilt Bluetooth, Wi-Fi, USB 2.0 and LAN Ports should be included in the computer system.

xiii. The brand, model No., software versions etc. also to be declared.

xiv. Suitable and Compatible Laser Printer should be supplied to test data

5.0 Environmental Requirements

Operating Temperature: Shall be capable to operate with the mentioned accuracy anywhere in West Bengal with temperature range -4°C to 50°C

6.0 Safety & Miscellaneous Features

- Safe operation, must be ensured by means of safety devices
- Safety enclosure / guards around test area
- Limit switches, emergency stop button
- Test running indication
- Load cell & displacement transducer with traceable calibration

7.0 Accessories (Included in Scope)

- Set of all grips/fixtures mentioned in Section 3
- Standard tools for fixture
- Operation & maintenance manual (hard + soft copy)

8.0 Guarantee:

The instrument along with every gripping/fixing arrangement shall have to be guaranteed for 5 years from the date of commissioning.

9.0 Installation & Training

- The installation & commissioning of instrument at respective sites shall be done by the supplier free of cost.
- The supplier shall provide necessary training for WBSEDCL engineers at site (covering operation, grips, software & routine maintenance).

10.0 Calibration:

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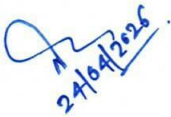
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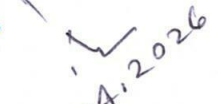
Certificate of calibration shall have to be supplied along with instrument from a NABL accredited laboratory/Govt. Test House. However, the supplier shall be responsible for periodic calibration support during Guarantee Period.


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**GUARANTEED TECHNICAL PARTICULARS (GTP)
FOR 200 kN UNIVERSAL TESTING MACHINE (UTM)**

1.0 GENERAL DETAILS

Sl. No.	Parameter	To be filled by Bidder
1	Name of Manufacturer	
2	Country of Origin	
3	Make & Model	
4	Applicable Standards	
5	Type of Machine	

2.0 TECHNICAL PARAMETERS

Sl. No.	Parameter	To be filled by Bidder
1	Maximum Capacity	
2	Load Cell detail	
3	Test Force Measurement Range	
4	Accuracy	
5	Load Resolution	
6	Displacement Resolution	
7	Displacement Accuracy	
8	Test Speed Range	
9	Test Space	
10	Overload Protection	
11	Drive Mechanism	
12	Encoder / Drive	
13	Gripping Arrangement	
14	Power Supply Requirement (Volt, KW)	
15	Dimension (HxWxD)	
16	Total Weight (in KG)	
16	Whether Software shall be provided as per WBSEDCL Technical Specification?	
17	Software validation Certificate	Submitted (Yes / No)
18	Computer System	
19	Safety Compliance	Mention Standard

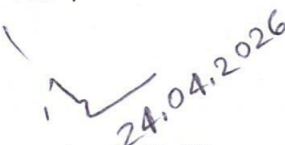
Signature with Stamp:


Abhijit Makur,
ACE, DTD

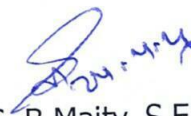

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