

Tender no. NITRR/Central Store/ME/SERB-DST/LT/2017/393 Dt: 16/05/2017 Revised date of opening of bids is 22/06/2017 at 03:30PM

Technical Specification Universal Material Testing Machine

Sl. No.	Parameters	Specification
1	Machine Capacity	Up to 10kN Accurate Measuring Range 10N to 10000N is mandatory
2	Basic Frame	It should be Bench Top type with 2 columns, 2 stiffening Rod & 2 lead screws. Mechanical Overload capacity 200% or more. The width of the machine should not more than 650mm. The displacement sensor should be directly coupled to ball screws inside the machine load frame not placed outside load frame.
3	Drive	Microprocessor controlled precision DC Servo Motor .The system design should have single drive motor common for both the Lead Screws.
4	Accuracies	
a	Speed Accuracy	+/- 0.005% of set speed
b	Load Measurement Accuracy	±0.5% of applied load or better
d	Crosshead Speed Range	0.001 mm/minute to 1000 mm/minute or more
e	Crosshead Speed Resolution	0.001 mm/minute or better
f	Displacement Resolution	0.0001mm or better
5	Horizontal Test Space between columns	400mm or more
6	Vertical Test Space (Crosshead Travel)	1100mm or more

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7	Load Cell	Interchangeable, auto detectable Load cells with high resolution to be provided upto the rated capacity. Load Cell accuracy should be $\pm 0.5\%$ or better Accurate measurement range should be 2% to 100% of Capacity for each load cells
8	Control Mechanism	Computer controlled mode with local control of crosshead positioning should be offered . All of these control modes should be possible in a test- i. Position Control, ii. Load Control iii. Stress Control iv. Strain Control 15" or bigger fully touchscreen enabled control panel should be provided with Digital Display of Load, Extension and Strain Channel. It should have all machine control including zeroing of load and extension value before testing.
9	Features of Software	i) Machine control interface and test interface should be integrated on windows 8/10 compatible computer. ii) User calculation function for creation of custom calculations and results. Those results should be directly displayed automatically for a material immediately after each test. iii) Display of results in Graphical format. iv) Graphical display of Test curve (multiple curve simultaneously) of specimen during test. v) Data analysis and management of reports. Should allow to create a consolidated report including entered data from other test machines. vi) Control segment for adding as many control sequence as desired by user including cyclic test. viii) Saving and Retrieval of test methods and data. ix) ERP and Network compatibility

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		x) Online support /debugging facility . xi) Multi level access control and logging of activity like change in settings should be provided. xii)Following Results must be reported directly after each test : •E Modulus. •Maximum Load/Stress/Strain /Extension •Yield Point Load/Stress/Strain/Extension •Breaking Point Load/Stress/Strain/Extension •Energy at Maximum/Yield/Break •Proportional Limit Load/Stress/Strain/Extensions
10	Safety features	i)Termination of test at a % of load (should be programmable). ii)Programmable Position Limit switches; user selectable travel limits (upper/lower) of the crosshead; must stop the machine immediately any limit is reached. iii)Low Speed Alarm to indicate the machine is running iv)Emergency Stop Switch in front of machine
11	Computer System	Compatible PC with following or higher specification:- Intel core i3, 500 GB HDD, 4 GB RAM, Combo RW-DVD drive, 4 USB port, key board, optical mouse and 19 inch TFT monitor /20 inch TFT monitor , Original Windows 8/10 OS Printer : Color Printer UPS: UPS for PC and Printer Table for UTM and Computer
12	Grips& Attachment	(Item wise price should be quoted for final selection)
a	Grip Rigid Material	Self tightening wedge grips; wedges to remain stationary when applying initial force on the specimen via the hand wheel, thus avoiding excessive compression of specimen prior to test. Capacity: 10 kN or more Gripping Length: 50 mm or more Specimen Thickness: 1mm to 12mm

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b	Grips for Soft Material	Rubber coated Vice clamps with hinged front specimen clamping plate for easy loading and unloading of test specimens. Gripping pressure should be applied additionally .via a screw action. Specimen Width should be up to 60mm
13	Calibration	The Machine shall be provided with a Calibration Certificate conforming to the accuracy class from an NABL or ISO/IEC 17025: 2005 accredited laboratory.
14	Power Supply	220-230VAC, 1Ph, 50Hz. The equipment shall be capable of withstanding supply voltage fluctuations, spikes and surges either with in-built features or through any external device which shall be provided with the machine.
15	Spare Parts	Sufficient spare parts should be quoted for smooth running of machine for five years after expiry of warranty period.
16	Conditions of Supply :	
a		Two copies of Operation & Service Manual with electrical/electronics circuit diagrams should be provided along with the Machine.
b		Details of Service Facility in India should be provided with address of service centre, contact details and experience of Service Person. Proof of UTM calibration by this service person(s) ; at least 5 cases in last 2 years should be submitted duly signed by user.
c		Attachments like grips, fixture, platen etc. & accessories like PC, Printer, UPS, Load Cells are to be quoted with break up cost.
d		Pre-installation requirements should be enclosed in the offer.
e		Necessary consumables and accessories, required for installation should also be quoted.
f		The Machine is to be installed and commissioned at NIT Raipur free of cost.

g		Two persons should be trained free of cost for all types of Machine related works viz. operation, servicing, maintenance etc., at NIT Raipur
h		AMC for servicing the machine after expiry of warranty period is to be quoted.
i		The manufacturer/supplier should submit the name of institute / organization from Govt. Sector, with "Performance Certificate" where machine of similar type & capacity has been supplied
j		The offer should be complete in all respect. Proper justification should be given for non-offering of any parts/accessories etc. in the technical compliance statement categorical reply to all the points from serial numbers 1 to 15 as also those mentioned under "Conditions of supply" are essential.