

Model: EK.EC 10

UNIVERSAL TESTING MACHINE 100kN



ENKAY



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Microprocessor controlled Universal Testing Machine designed for determination of tensile, flexural and compressive properties of polymeric materials including plastics, elastomers, fibre / filaments / yarns, FRP's, films/sheets, woven sacks, geo-membrane, etc.

Standards:

- EN 10002-2, ISO 7500-1, BS 1610, ASTM D 638, ISO 527, ASTM E4

Capacity:

- 100kN

Low Cycle Testing upto +/- 50kN.

Control System:

- Microprocessor Controlled with 64 Bit A/D Signal Conversion

Cross Head Speed / Test Speed:

Maximum Test Speed	500 mm/min
Minimum Test Speed	≤ 0.0005 mm/min
Accuracy	0.1% of set speed
Return Speed	Up to 500 mm/min speed selection is provided via computer software and can be programmed in test cycle library.
Resolution of crosshead speed	0.05 μm/min
Jog Speed	Provision to specify jog speed to protect samples of light materials while mounting using hand held controller with rotary potentiometer.
Maximum force at full speed	100 kN
Position control resolution	0.00005 mm
Position measurement resolution	0.02 μm
Total crosshead travel	1250 mm min
Total Vertical Test Space	1000 mm min
Space between columns (horizontal daylight)	550 mm max

Load/Displacement Reading Interchangeability

Load	N, kN, g, kg, lb
Displacement	mm, cm, inch
Load Measurement	Make Interface USA (Model :1200, Capacity 100 Kn)
Load Cell Capacity	100 kN (1 no.) with provision for easy attachment as required for normal test and test using environmental chamber
Accuracy	Within ± 0.5% of indicated force
Repeatability	± 0.25% of reading or 0.005% of capacity
Resolution	0.0004% of capacity
Load Cell Calibrator	100 kN (1 no.)

Strain Measurement:

Make	Enkay
Model	EKE-EXTLR (Long Travel Extensometer)
Extensometer	Contact type extensometer for rubber sample testing at room temperature
Vertical travel	900 mm
Resolution	25 micrometer
Grips & Fixtures:	
For all load cells (100 kN, 10 kN , 1kN & 100N)	
Grips	Pneumatic & manual type wedge grips
Specimen thickness	200 μ to 10mm
Specimen length	2 cm to 20 cm
Specimen width	Upto 5 cm
Pneumatic grip	Upto 10 kN for films & fibers
Compression test fixture	Complying to ASTM D 695
Flexural	3 point bend and four point jig fixture complying to ASTM D 5943 for specimen support up to 10 kN and adjustable span 20-200 mm or equivalent
Fixtures	Tensile grips, mechanical wedge grips, pneumatic vice grips suitable for low and high temperature (-70 to 200 °C) testing & can be accommodated into environmental chamber.
Environmental Chamber	Make Enkay
Model	EKE-EC-THW
Operation Temperature range	-70° to +200°C Accuracy 1.5°C
Chamber Dimension	300 x 300 x 600 mm (W X D X H) approx. with suitable Fixing and pull in pull out arrangement.
Cooling Medium	Liquid Nitrogen (Dewar Flask of required capacity is provided) with accessories for low temp testing capabilities.
Machine Control	An integrated control system and measuring electronics with dedicated Graphical UI application software to performing the tests is supplied.
Measuring Electronics	A computerized Data Acquisition Electronics with signal conditioning amplifiers with sufficient bandwidth for measurement of Load and Strain, Cross head position with integrated application software is provided.
Data Acquisition Sampling Rate	5000 HZ using Enkay Hybrid 6 Channel DAQ 100% Designed and developed in India.
Analog Output	Analog output to connect to external recorder corresponding to measured Load, Extensometer at \pm 10V Full Scale or for auxiliary usage of this voltage output.
Remote Control	Remote Control Pendant is provided to move the Cross head, Grippers, Emergency Stop etc.



Control Mode	ENKAY –MAT BENCH 100% designed and developed in India a. Load control. b. Strain control. c. Stress-control. d. Speed control. e. Position Control
Test Mode	Tensile test / Compression test / Flexural tests
Methods	Creates variety of test methods as per the popular ASTM and ISO standard and also capable of creating customized test setups to match user unique requirements.
Graph Display on Screen	Able to plot/display real time online illustrative graph on display screen for as under: a. Load Vs Displacement (i.e. Crosshead) b. Load Vs Extension (from extensometer) c. Load Vs Time. d. Stress Vs Strain. e. Displacement Vs Time. f. Strain Vs time
Data measurement and storage	Machine measures & records following parameters, in SI units or User Selected Units. Ultimate Tensile Load (kN, N, kg) Breaking Load Yield Load Cross sectional area (mm ² , cm ² , m ²) Ultimate Tensile Strength (MPa, N/cm ² , N/m ²) Yield Stress Proof Stress Gauge Length (mm, cm, m) Elongation at specified load (%) Load at specified elongation or travel length (N / kN / kg) Elongation (%) Modulus of Elasticity After test, data sheet and graph automatically stores in defined folder (data sheet in excel and pdf format, Graph in JPEG, bitmap, pdf etc) apart from software or any external storage device.
Area Calculation	Readily accepts variety of sample geometry like, Rectangular, Cylindrical, Tube, ring etc. with option to enter the cross section area directly for irregular shaped sample. Automatic area calculation. (customized as per user requirement.)

Software and its additional Specification:

- ☑ The software has three level of user access based on login name and password protection.
- ☑ Only ADMIN control defines the access to user.
- ☑ Multiple live display windows are available fo simultaneous display.
- ☑ The software allows the user to define significant digits or decimal places for all live displays.
- ☑ Software has auto scaling plots.
- ☑ The software allow recording of a test with a USB camera device (such as a webcam).
- ☑ The software allows for result to display in the live display after test.
- ☑ The software allows peak, modulus of elasticity and yield calculation to be evaluated real-time during the test and displayed in the live displays.
- ☑ Machine - Controller Interface through USB High Speed Data Transfer rate of 5 Khz is provided.
- ☑ Software provides calculation of key test results such as Peak values, Break values, UTL, UTS, Young's Modulus, Yield stress and strain, 0.2% Proof stress and strain, Area under the curve, loads @ specified elongations, elongations @ specified loads etc.
- ☑ Software provides automatic printable view of Graph and Report with Statistical Analysis such as Mean, Min, Max, Std Deviation etc. for multi specimen testing.
- ☑ Raw test data accessible in Microsoft Excel.
- ☑ It stores test data and results to hard disk in ASCII delimited format for easy import into popular Spread-sheet and database programs.
- ☑ Software is perpetual with all latest advance modules.

Computer and Printer:

- ☑ Standard latest computer system with updated configuration (Windows 10) compatible with the current as well as the upgraded software version along with color printer and all other requisite accessories is provided.

Control panel for manual operation:

- ☑ The UTM is operable in Manual mode in case the entire computer/software crashes. The system is connected to a printer / recorder in such case and stress/strain graph or load/elongation can be recorded.

Standard Accessories:

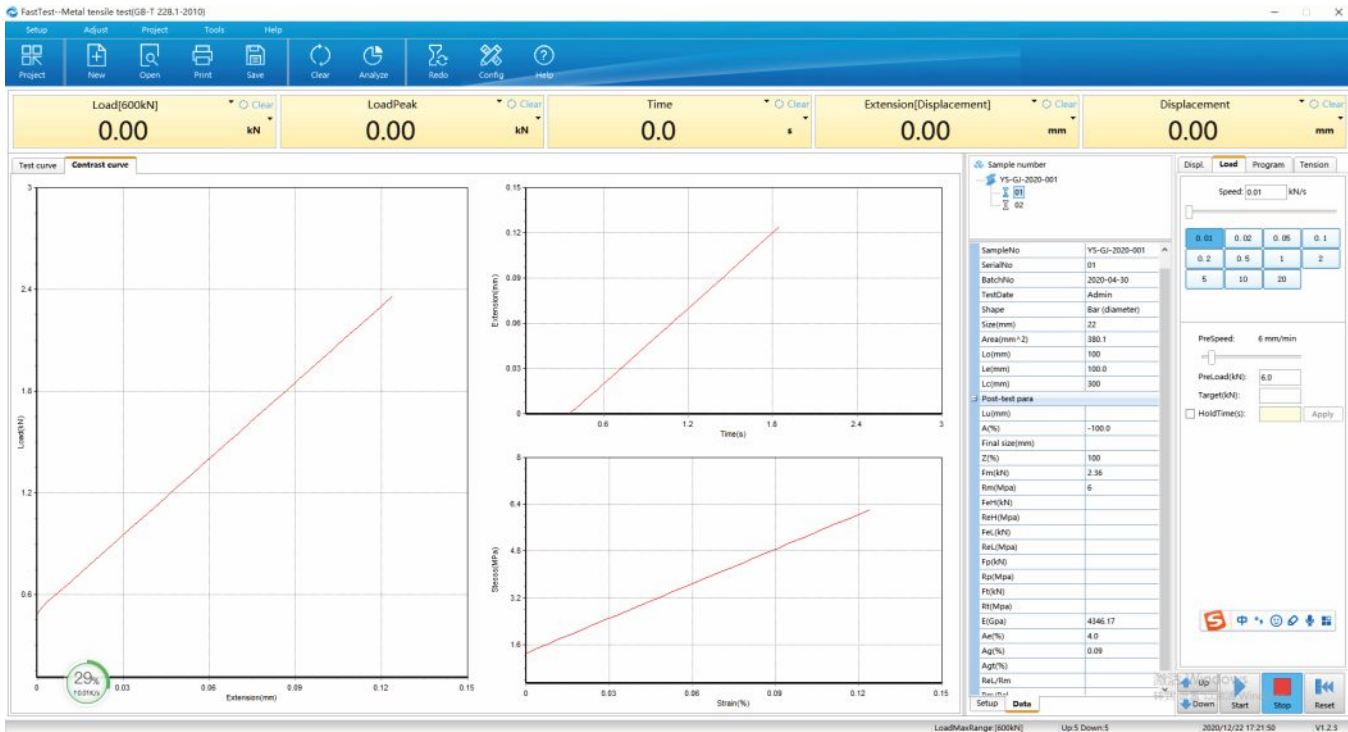
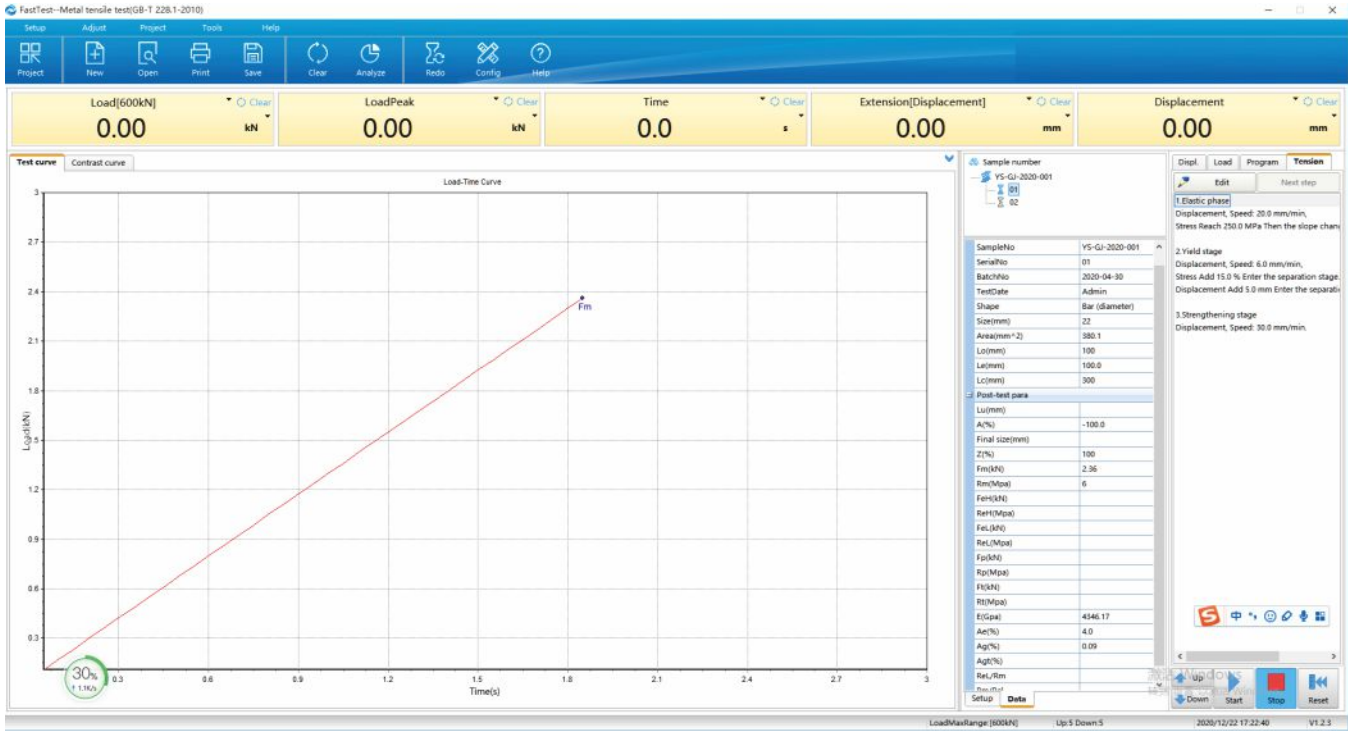
- ☑ Tensile Model, EK TT GP
- ☑ Compression, EK CT AC
- ☑ 3 Point Bending, EK BT AC
- ☑ 90° Peel tester for adhesive tapes EK PT AC
- ☑ Fixture for testing of friction of plastics films EK FT AC

All grips comply to IS / ASTM / ISO standards for Plastics, Elastomers, FRPs and filaments / Yarns.

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Software Screenshot:



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