

Model WDW-30S Computer Control Electromechanical Universal Testing Machine

(Advanced Configuration: EDC Doli Controller + Video Extensometer + Climatic Chamber etc.)



Applications:

Model WDW-30S computer control electromechanical universal testing machine is designed according to ASTM, ISO, DIN, GB etc standards. It is suitable for wide range of material for tension, compression, flexural, shearing and low cycle reverse stress loading test. It has high stability as well as high precision, equipped with PC system & printer for graph, test result display, printing & data processing. It is widely used in many fields of such as industry factories, research & development, test institutes and training centers etc.

Features:

- Pneumatic vise type grips with rubber coating inserts for polymer, polyethylene, rubber etc, which can be used with climatic chamber under temperature from -70°C to +250°C.
- Load cell of 30kN, 500N from Celtron, USA, which makes load accuracy 0.5% available.
- Video extensometer with climatic chamber from -70°C to +250°C for extension measurement of rubber or polymer specimen under above temperature range.
- EDC controller from Doli, Germany makes load measuring range from 0.2% to 100%, sampling rate upto 1000Hz, resolution of displacement upto 0.000006mm (6 nanometer)
- Special-made Mute ball lead screw for wider testing speed range 0.001-1000mm/min but with lower noise below 65db when loading speed is 1000mm/min.
- 30kN capacity load frame with higher stiffness upto 120kN/mm under 950mm larger tensile space.

Applied Standards:

- Load meets or exceeds standards: ASTM E4, ISO7500-1, EN 10002-2, BS1610, DIN 51221.
- Strain measurement meets or exceeds standards: ASTM E83, ISO 9513, EN 3846 and EN 1002-4
- Special ordered standards: ASTM D 638, 695, 882, 412, 2990 and ISO 899, 6602, R 527 etc.

Main Specification

- Load capacity: 30kN
- Load accuracy: $\leq \pm 0.5\%$ of 0.2% to 100% of Full Scale
- Deformation accuracy: $\leq \pm 0.5\%$ of 0.2 to 100% of Full Scale
- Displacement resolution: 0.000006mm
- Speed range: 0.001-1000 mm/min
- Speed accuracy: $\pm 0.1\%$
- Return speed of the crosshead: 1000mm/min
- Total Crosshead Travel: 1700mm
- Space between columns: 610 mm
- Max tensile space: 950mm
- Max compression space: 1400mm
- Sampling rate: 1kHz
- Load frame stiffness: 120kN/mm
- Double ball screws driven with close-loop and servo motor control.
- Power supply: 220VAC, 1 phase, 50Hz/110V, 1 phase, 60Hz
- Overall dimension: 900 x 650 x 2300mm
- Weight: 800kg

Configuration:

This advanced machine including the following parts: high stiffness load frame, manual wedge type tensile grip, pneumatic vise type tensile grip, compression platen, bending fixture, 30kN spoke type and 500N S type load cells from Celtron, video extensometer, climatic chamber from -70°C to +250°C, EDC 220 controller, advanced industrial computer + software, laser color printer etc. Please see below for more details of each part:

1. Load Frame:

The purpose of design with floor type load frame & double columns is to ensure safety, reduce operator fatigue, and provide the highest level of flexibility. Concretely, it features as following:

High accuracy:

The preloaded precision ball-screw ensures high speed and position measurement accuracy. A built-in scale on the frame indicated the crosshead position for verification of normal strain testing.

Safety features:

Mount with the upper and lower limit switches, the testing machine stops automatically when the change in the test force exceeds a specified value during operations.

Large space in the working area:

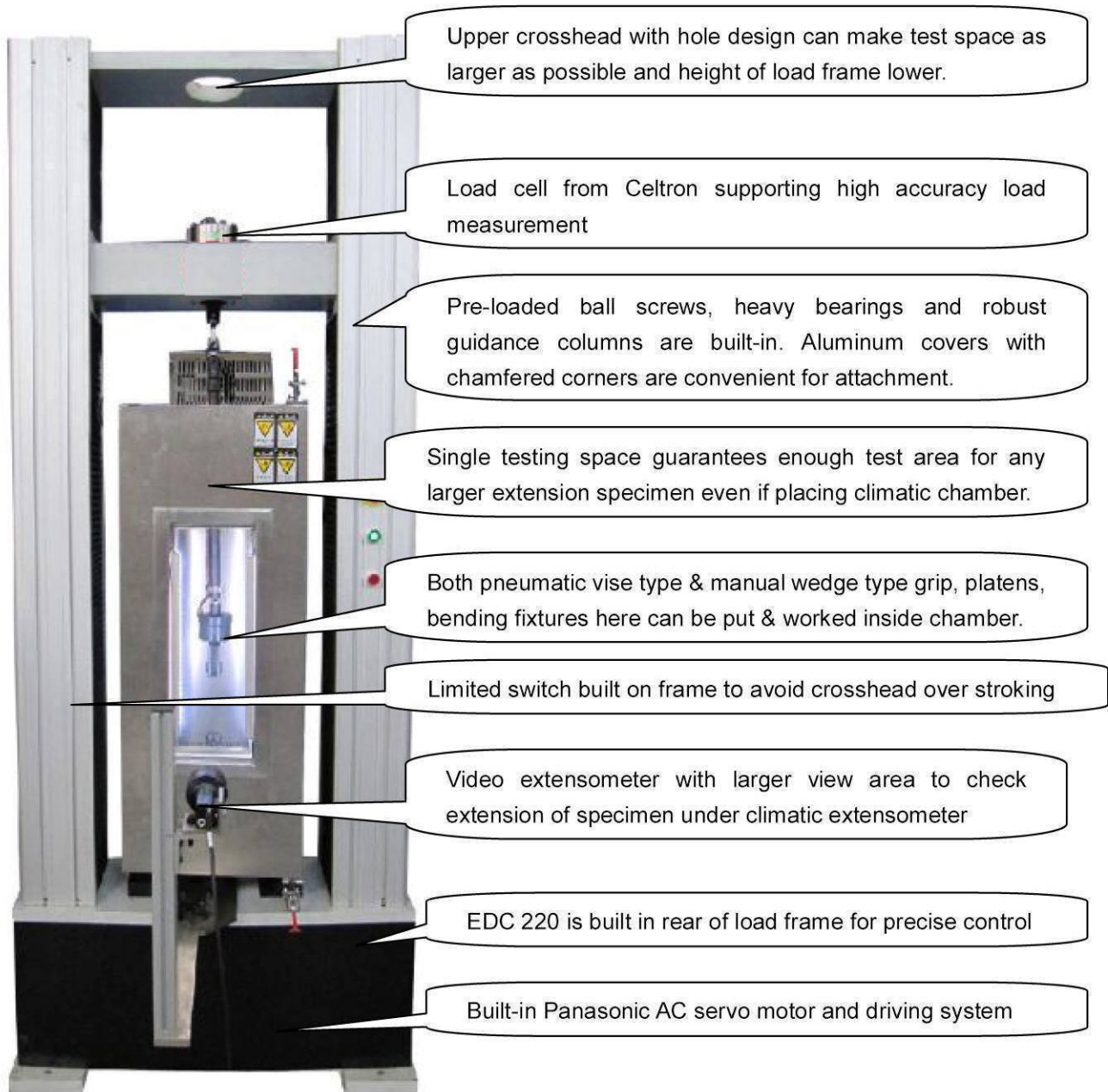
The insides of columns provide wide space for the operator.

Over-stroke limiter:

The range of the crosshead movement mechanically limited.

Comfortable working area:

The wide legroom under the load unit provides a comfortable working area for attaching and removing jigs.

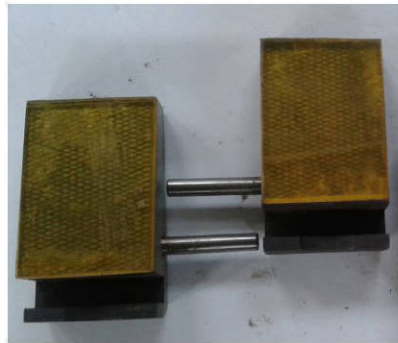


2. Manual wedge type tensile grip with over 50kN capacity, which can be used under -70°C to +250°C

Inserts for flat specimen with rubber coated face: 0-7mm 1 set

Inserts for round specimen: $\Phi 4$ - $\Phi 9$ mm 1 set

Width and Height of inserts: 40mm & 55mm



3. Pneumatic side action grips for thin films with 1kN capacity used under -70°C to +250°C

Clamping thickness from 10micro meter to 6mm with rubber coated faces

it includes the following main components:



1 set of tensile grips



1 set of pneumatic foot switch

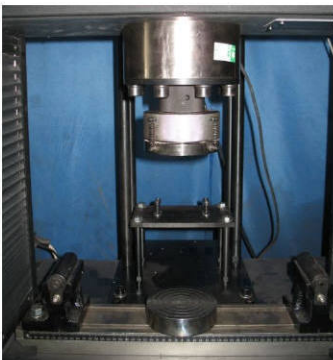


1 set of air source

4. Compression test fixture:

1 set

Diameter platens: 150mm & ball seating assembly for upper platen:



5. Flexural test fixture:

1 set

Span of bending roller: 320mm, upper anvil: $\Phi 10\text{mm}$, lower anvil: $\Phi 4\text{mm}$ & $\Phi 10\text{mm}$



6. High precision spoke & S type load cell:

1 set each

Spoke type load cell **30kN** is mounted on the top of moving crosshead for both tensile and compression, S type load cell **500N** is mounted under moving crosshead through pin structure fitting for tensile test of polymer & rubber, with Doli controller, the readability can be from 0.2% to 100% of the rated capacity, that is from 60N to 30kN and from 1N to 500N respectively, also **self-identification and auto-calibration function** can be applied in this system. Calibration can be carried out as per ISO 7500-1 standard and certificate for the same shall be provided. Meanwhile, it can be set for following protections such as 105% over range protection, over load capacity of 150% without permanent zero shift and over load projection of 300% of the rated capacity without mechanical damage. Related quick fitting assembly and adaptors will be provided for lower range of load cell that below-mentioned in optional accessories without removing the high range load cell, also software function for freely switching between low and high load cells can be available.



7. Video Extensometer

Video extensometer is a contactless optical measurement system based on a single camera and real time image processing. It measures the longitudinal and transverse strain between two applied lines with a rate of up to 4000 Hz. The strain data is transferred e.g. via an analogue signal or digital to the tensile test machines for further processing or controlling.

Application:

Measurement of material properties, true strain controlled tensile



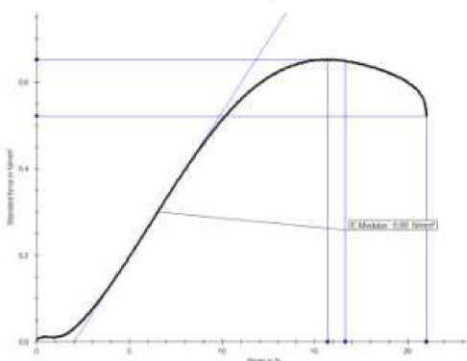
tests, exploration of cracks, investigation of strain behavior on dynamic tensile tests, dynamic and high speed tests, vibration analysis, etc.

Features:

- A modern, configurable and intuitive user interface using OpenGL
- The control from the Video extensometer by the connected testing machine allows the fully automatic operation
- Using templates for different measurement tasks
- New options for the data communication and data export
- Integrated generation of image sequences
- The multithread-analysis-kernel supports multi-core-processors and achieves a small processor load

Technical Specifications:

- Accuracy 0.002%
- Sampling rate 70 Hz
- Analogue Output +/- 10V; 16 bit
- Strain Range > 500%
- Camera res. 2.0 MPixel
- Axial measurement: view range: 500mm
 - Resolution: 5 micrometer
 - Accuracy: 0.5% of reading
 - Date rate: 70Hz
 - Maximum following speed: 1000mm/min
- Transverse measurement: view range: 30mm
 - Resolution: 5 micrometer
 - Accuracy: 0.5% of reading
 - Date rate: 70Hz
- Resolution with temperature chamber:
Axial and transverse at 23°C: 50 micrometer
1 micrometer increase per 25°C increase in temperature



Determination of young's modulus or Poisson's ratio

8. Climatic chamber from -70°C to +250°C

Applications:

This series of climatic chambers are specially used for high & low temperature test, and according to the needed temperature to equip with corresponding load frames to complete high & low temperature test for kinds of metallic materials.

The chamber usually consists of chamber body, controller, high temperature grips and rolling carriage bracket. The temperature can be controlled automatically by PID Controller with high accuracy. Also it can make data



communications with the computer. It is the ideal material test equipment used for university, research institution and enterprises.

Main Specifications:

Name	Specifications		Remarks
Chamber	Temperature range	-70℃ to +250℃	Including the corresponding pull rod
	Temp. accuracy in PID controller	±0.1℃	
	Temp. Grads	3℃	
	Internal Dimension(mm)	240(W)x220(D)x800(H)	
Heating mode	Heating by resistance, hot air recycling.		
Cooling mode	Cooling by fluid N2		
Moving Chart	Equipped according to the dimension of the load frame, adjusting height 100mm		



Temperature controller



Liquid Nitrogen Tank

9. EDC 220 controller from Ms. Doli, Germany

Application:

EDC-220 digital control system is used for adjusting load, displacement and deformation when in closed cycle of control and data acquisition. Multiple real time control system with high definition and velocity and synchronization of all channels



Specifications:

- ✧ Sampling rate: 1000Hz
- ✧ Communication Processor, 100MHz
- ✧ Load resolution 180,000 steps, two ranges 2mV/V and 4mV/V
- ✧ RS485 Interface for external keyboard/Display supports only one device
- ✧ Drive Interface $\pm 10V$ (16bit) analogue command output OR, digital command output
- ✧ Safety functions like 4DI
- ✧ Two Option slots for second analogue channel for strain gauge extensometer OR, two encoder channels for extensometer with one or two encoder.
- ✧ PC communication via USB or Ethernet
- ✧ Internal socket for serial Sensors (COM 1)
- ✧ Internal socket for Debug (COM 2)

Sensor plugs

To identify and calibrate transducers as load cells, extensometers etc., a small PCB within a plug case (15 pin SUB-D) is available. The advantage here is the use of not calibrated e.g. load cells, because the calibration has to be done in house anyway. The calibration along with other data is stored in the plug.

The EDC reads the data at switch on or at request. The features are:

- ✧ Reference bridge to adjust the transducer sensitivity
- ✧ EEPROM to store transducer data

10. Computer & software & printer**1 set**

Computer: Dell, with the following configuration: Intel Core 2 duo processor E8500 (6MB Cache, 3.16GHZ, 1333MHz FSB) at least, 2GB DDR2 SC RAM and 320GB hard drive, 16X DVD RW, RoHS mother board intel, Licensed Windows 7 professional pre-loaded, 19" Flat panel LCD with 1280x1204 resolutions at least & adjustable height. Multimedia key board and optical mouse from Dell will be attached.

Software: English Version (For details, please refer **Annex-1**)

Printer: HP Laser Color type



11. Servo Control system

1 set

Imported from Japan, Panasonic



12. Tool kit:

1 set

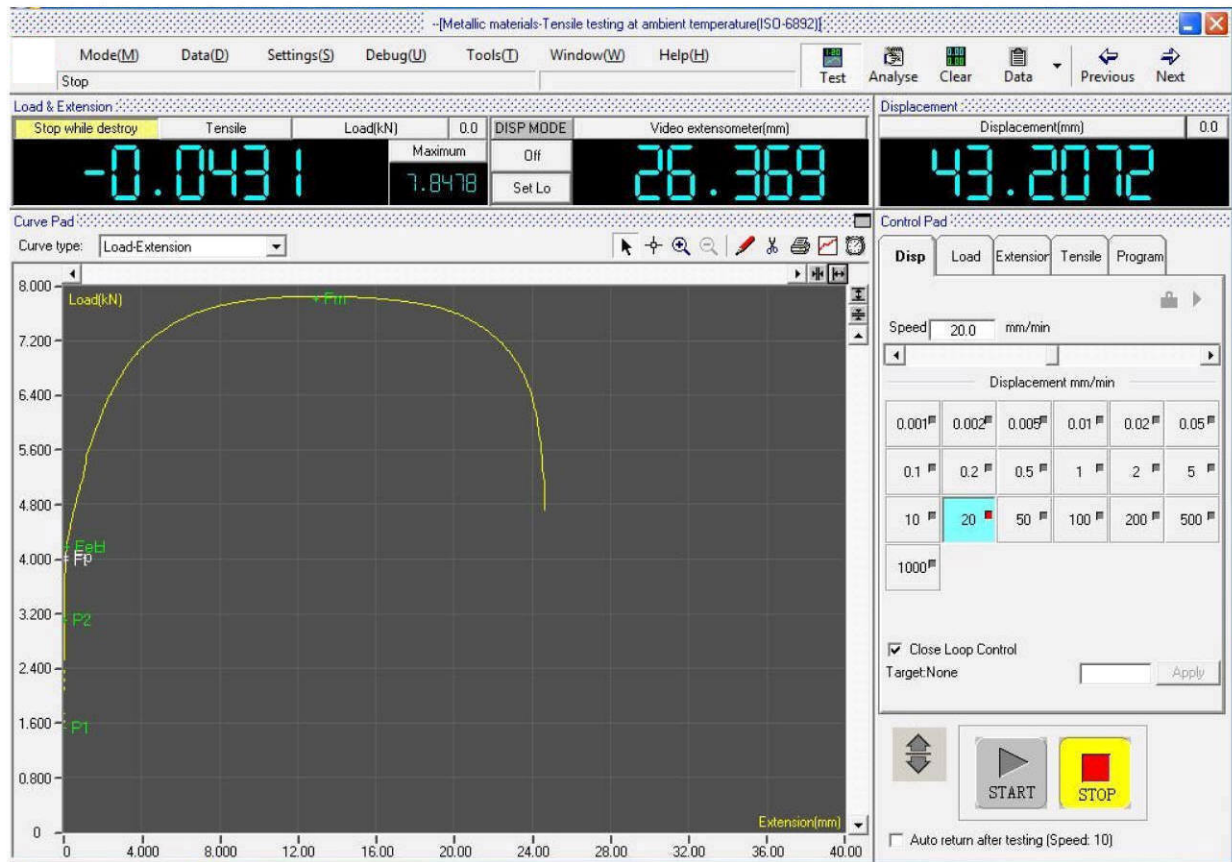
Operating environment & Pre-installation requirements

- Operating temperature: -10°C to +35°C
- Storage temperature: -20°C to +45°C
- Humidity range: +10% to +90%, non-condensing
- Atmosphere: Designed for use under normal laboratory conditions. Protective measures may be required if excessive dust, corrosive fumes, electromagnetic field or hazardous conditions are encountered.
- Electrical condition: AC 220V \pm 10%, 1 phase, 50Hz
- Air source: 0.5MPa
- Room space: 5000x3000x3000mm

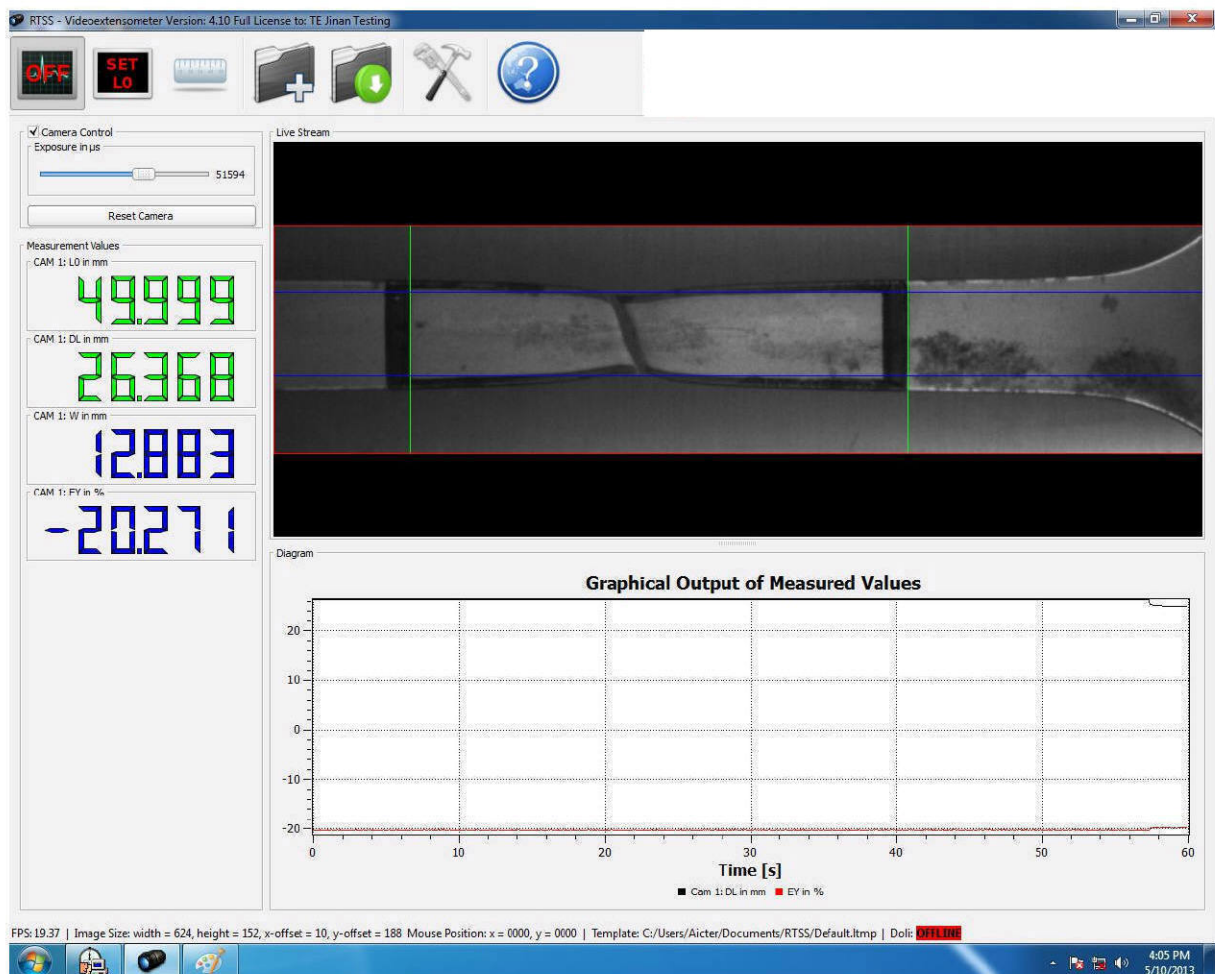
Annex-1 Software Instruction

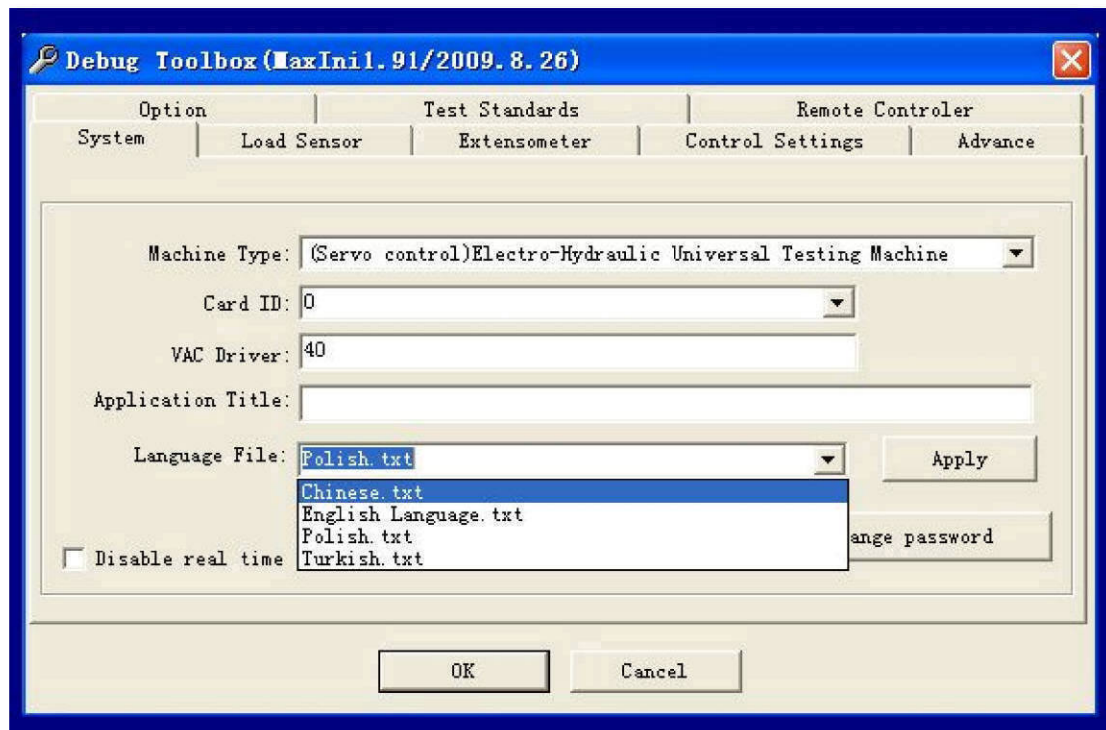
Features of Measuring & Control software

TE software refers to the software characteristics of the top manufacturers of testing machine in the world and proposals of various testing requirements from the end users, and combines all the advantages of former versions of software with lots of new features. Optimized software structure makes the testing operation easy, convenient and powerful. Main interface as following,



Control modes, test data and curves can be displayed in real time and can be shifted at any time.

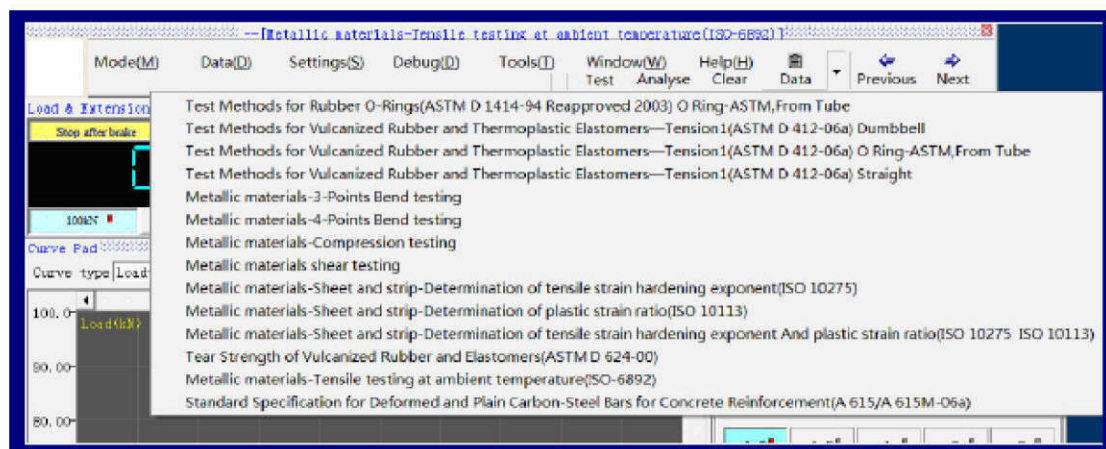




The deep-seated parameters of software are contained in Debug Toolbox

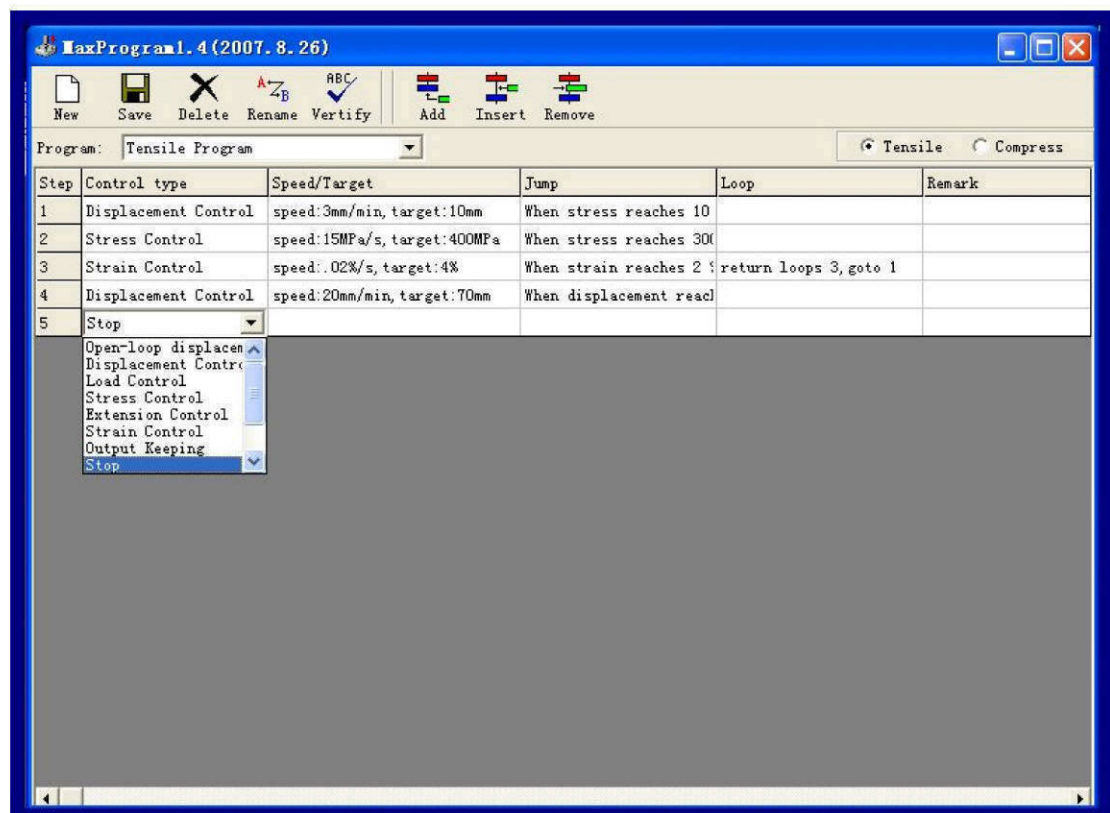
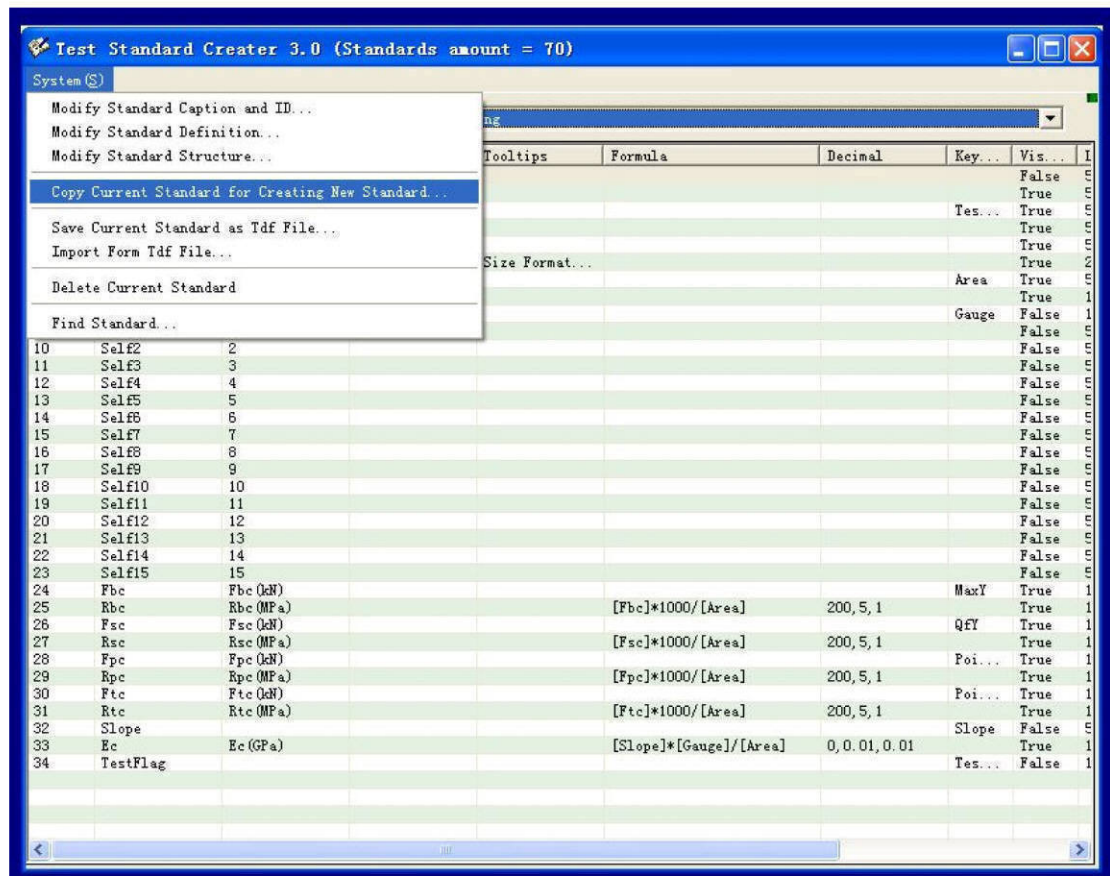
Multi-language function:

With the flexible language edited function, it can support multi-language such as English, Chinese etc. and you can translate the software language into the native language by yourself.

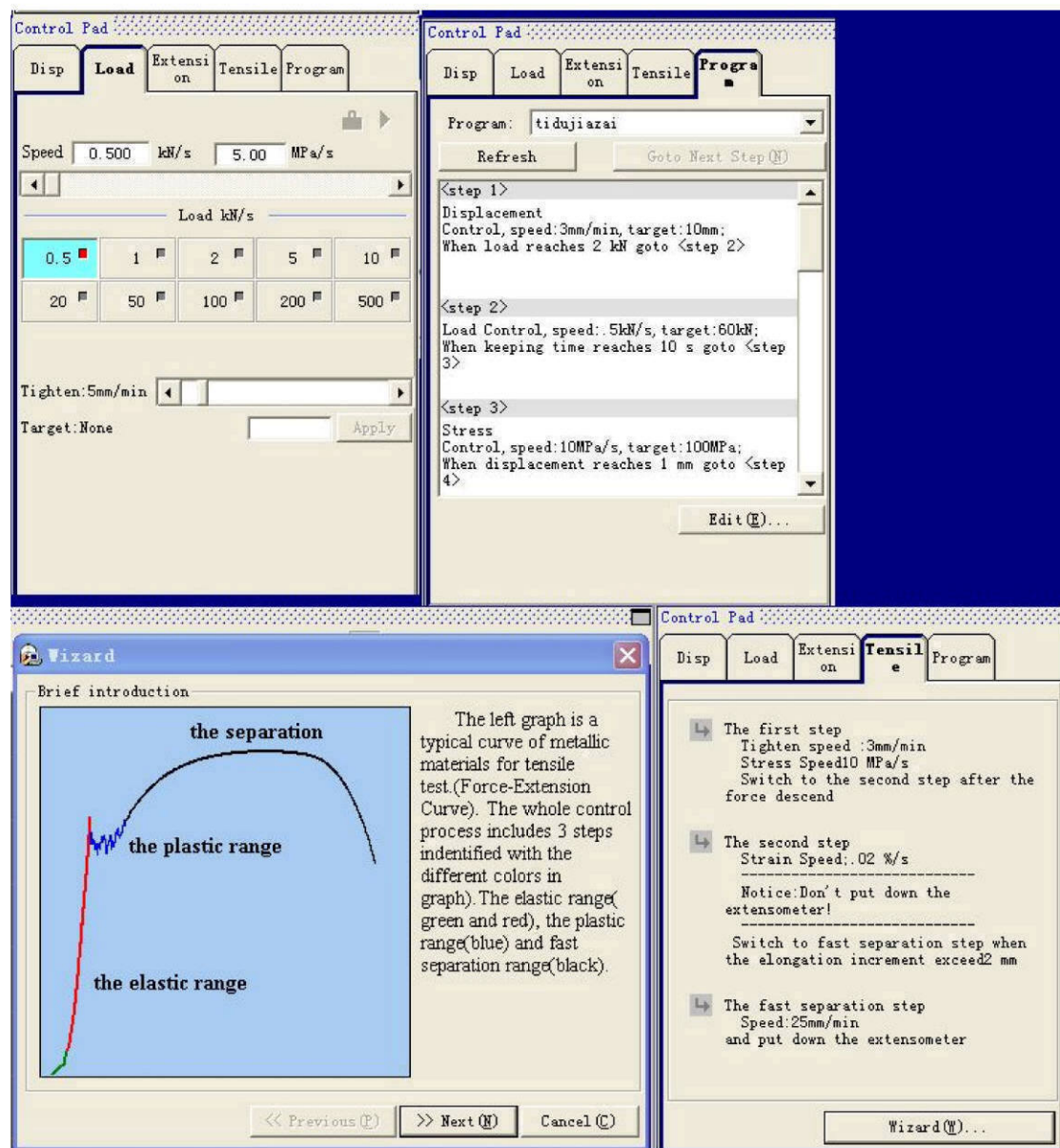


Software supports all kinds of popular testing standards i.e. ISO, ASTM, BS EN, DIN, JIS, GB etc.

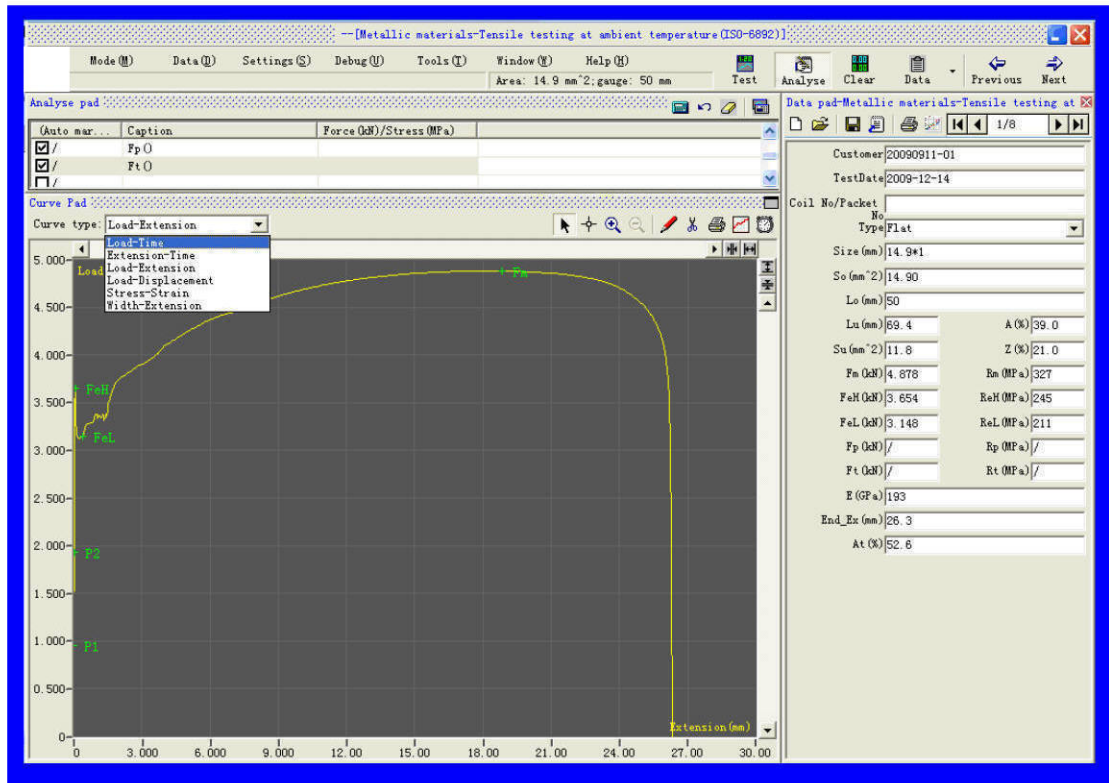
Users can modify and add own testing standards and methods.



MaxProgram Editor possesses of multiple full digital control modes, i.e Displacement control, Stress (Load) control, Strain (Deformation) control, Low cycle control. User can edit the most complex and logical procedure by MaxProgram Editor. The combination of above functions can meet all kinds of routine test purpose.



Through the Tensile Program Editor, user can setup test steps according to the requirements of standards.



Multiple curves function in real time display including Load-Extension, Load-Displacement, Stress-Strain, Load-Time, Extension-Time, and Width-Extension.

Characteristic points such as Elastic Modulus, Yield points, Rp, Rm etc. can be marked on the curves, for a highlighted and visual observation.

Test result can be obtained automatically and also it can be got from the test curves manually.

The screenshot shows two dialog boxes. The top dialog box is titled "Stat & Print in Excel" and contains a table with the following data:

SampleID	TestDate	Operator	Type	Size (mm)	So (mm ²)
31132	2009-11-8				

The bottom dialog box is titled "Excel locate" and contains a list of items to be located in the Excel file. The items are:

- SampleID
- TestDate
- Operator
- Type
- Size (mm)
- So (mm²)
- Lo (mm)
- Fbc (kN)
- Rbc (MPa)
- Fsc (kN)
- Rsc (MPa)
- Fpc (kN)
- Rpc (MPa)
- Ftc (kN)
- Rtc (MPa)

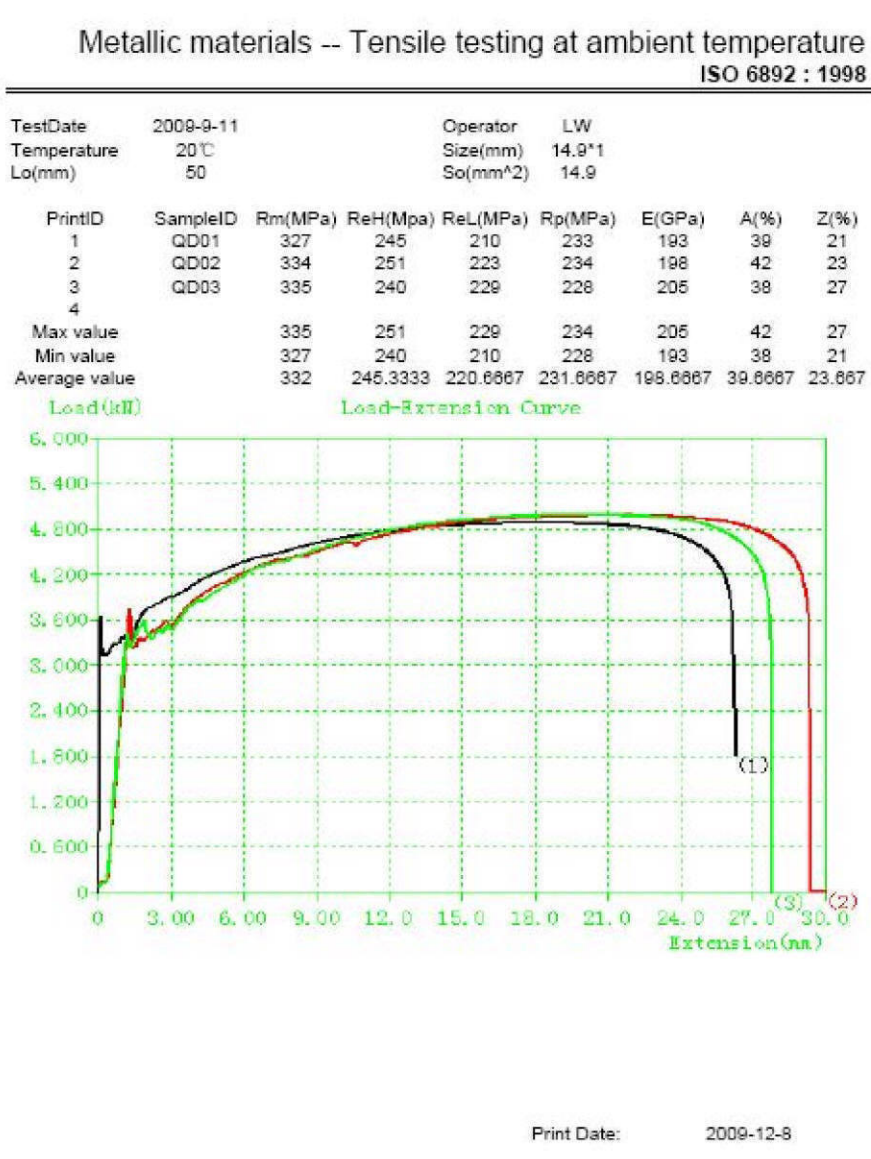
The dialog box also includes a "Report Template" section with the following options:

- ASTM E 132-04 Poisson Ratio.rdf
- metal Tensile ISO6982.rdf
- n,r value iso 10275 & iso 10113.rdf
- Pricoat Compression.rdf
- spring compression.rdf
- structure compression.rdf

The dialog box also includes a "multi-record option" section with the following options:

- horizontal incremental change: []
- vertical incremental change: []
- Modify selected rows

TE software contains all kinds of Report Templates. Customer can design various testing reports according to the requirements. Test result and curve can be printed in Excel or the auto-creating report template.



DISP MODE	Extension (mm)-Extensometer	0.0
0.000		
DISP MODE	Large Extension (mm)	0.0
0.000		
DISP MODE	Extension-MFL (mm)	0.0
0.000		
Init MFL		
Upper position	50	Gauge (mm) 40
Measurement begin		Locate
Measurement ends		Clear

Except the clip-on Extensometer, TE software supports Long Travel Extensometer, Full Automatic Extensometer, video Extensometer, laser Extensometer, and it can be added eight Extensometers at most.

Select load sensor units

Select

☐ 5kN
☒ 20kN
☐ 100kN
☐ 300kN

OK

Cancel

TE software supports four load cells.