Model WDW-50 Computer Control Electromechanical Universal Testing Machine

Application:

WDW-50 computer control electromechanical universal testing system is designed according to ASTM, ISO, DIN, EN etc. standards. It is computer-controlled precision testing machine, suitable for extensive metallic & nonmetallic materials for tension, compression, bending, shearing and low cycle test etc. It features as high precision, high stability as well as high reliability. Equipped with PC system & printer, graph, test result display, data processing and printing can be done easily. Complete with modulus for metal, spring, textile, rubber, plastic and other material testing. It is widely used in many fields of such as industry factories, research & development, test institutes and training centers etc.

It adopts rigid load frames, high accurate load weighting system, advanced PCI measuring & control system and intuitive modular application software. Configured with extensive range of accessories for various applications, it can provide the optimal testing solutions for your individual application needs. With abundant experience of 20 years of involvements in materials testing industry & application knowledge on all kinds of sectors,   is capable of configuring the exactly suitable solutions & more accurately test system to customer involving the choice of load frame, core measuring & control elements, software package, grip/fixture etc based on their specified test application and requirements.

Applied Standards:

Load meets or exceeds the following standards: ASTM E4, ISO7500-1, EN 10002-2, BS1610, DIN 51221.
Strain measurement meets or exceeds the following standards: ASTM E83, ISO 9513, BS 3846, EN 10002-4.
Safety: This machine shall conform to all relevant European CE Health and Safety Directives EN 50081-1, 580081-1, 73/23/EEC, EN 61010-1

Load Frame:

The frames all incorporate human factor considerations in the design to ensure safety, reduce operator fatigue, and provide the highest level of flexibility. Extremely robust crosshead guidance is incorporated in all frame designs providing the highest level of lateral crosshead stiffness.

Load cell is with high accuracy interchangeable for all frames allowing each frame to operate full capacity.

High accuracy: The preloaded precision ball-screw with high speed low noise ensures high speed and position measurement accuracy and less noise.

High stiffness: The load frame is with 4 columns and heavy duty pre-loaded bearings.
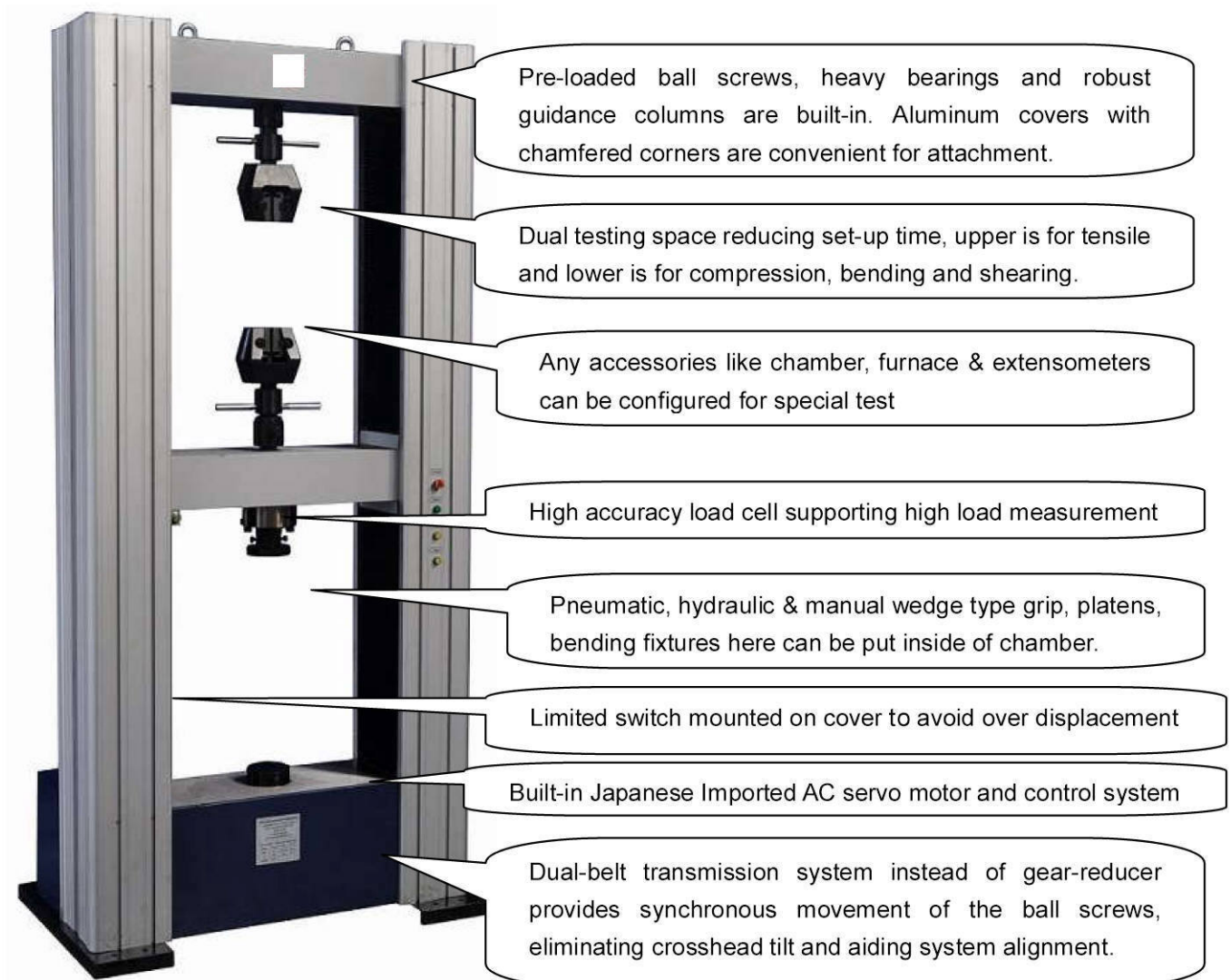
Safety features: The testing machine stops automatically when the change in the test force exceeds a specified value during operations.

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.

Pre-loaded ball screws, heavy bearings and robust guidance columns are built-in. Aluminum covers with chamfered corners are convenient for attachment.

Dual testing space reducing set-up time, upper is for tensile and lower is for compression, bending and shearing.

Any accessories like chamber, furnace & extensometers can be configured for special test

High accuracy load cell supporting high load measurement

Pneumatic, hydraulic & manual wedge type grip, platens, bending fixtures here can be put inside of chamber.

Limited switch mounted on cover to avoid over displacement

Built-in Japanese Imported AC servo motor and control system

Dual-belt transmission system instead of gear-reducer provides synchronous movement of the ball screws, eliminating crosshead tilt and aiding system alignment.

Loading weight system (50kN):

Loading weight system is the most critical aspect of mechanical testing. TE has accumulated great experience in selection of superior core loading weight system in terms of materials, design, construction technology and especially performance & accuracy. Cooperating with top-quality manufacturer of load cell, made a special customs design so that it can be optimized match with measuring & control system for most accurate test results.

With advanced PCI measuring control card, the readability can be from 0.4% to 100% of the rated capacity, Calibration within 0.5% accuracy can be carried out as per ASTM E4, ISO7500-1, EN 10002-2, BS1610, DIN 51221 standards.
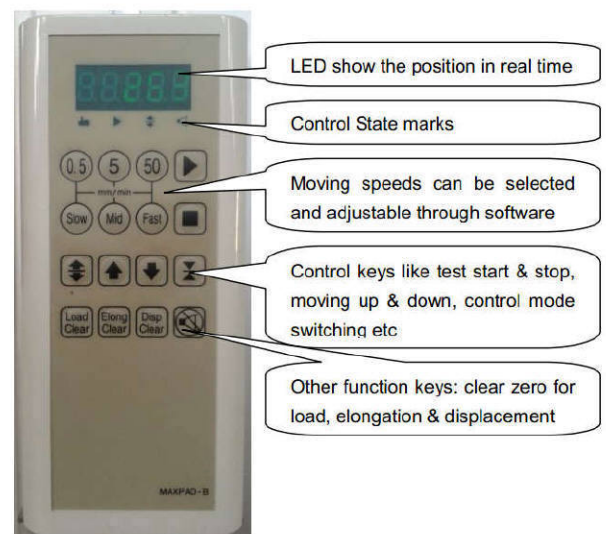
This special load cell provides excellent immunity to impact and side forces, rugged & low-profile measuring body with strictly symmetrical design is optimally suited to ensure high endurance strength. Excellent linearity guarantees highly precise measurement, additional mechanical protection of the strain gage area. It can be set for protections of 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. This meets the stringent Weights and Measures requirements throughout Europe and the USA.

Electronics and Control Part:

Self-developed & most advanced card for testing machine realizes the functions of real time data collection, communication, measuring and control etc. according to related ASTM, ISO standards. It can be inserted PCI slot of computer and connected with testing machine by data cable, then above functions can be done easily. Effective sampling rate can be up to 50Hz, which is quite enough for all kinds of applications.

A second component of this series is the manual control panel MaxPad which magnetically attached the load frame providing crosshead moving control in adjustable three speeds & LED showing in real time and some functional keys like test start & stop, moving up & down etc.

LED show the position in real time

Control State marks

Moving speeds can be selected and adjustable through software

Control keys like test start & stop, moving up & down, control mode switching etc

Patent technology of : Calibration of load and extensometer separately by electrical way and provide you a quick convenient way. No necessary to calibrate the load and extensometer by calibrators. Do the calibration whenever you need. **(Optional)**

Other function keys: clear zero for load, elongation & displacement

Main Specification

- Load capacity: 50kN
- Load measuring range: 0.4%~100% of rated capacity
- Load accuracy: Class 0.5
- Load resolution: 1/500,000FS
- Deformation accuracy: ≤±0.5% of 0.4%~100% of rated capacity
- Position resolution: 0.025μm
- Position accuracy: ±0.02mm or 0.5% of displacement (whichever is greater)
- Crosshead speed range: 0.001-500mm/min
- Crosshead speed accuracy: ±0.5% of set speed (zero or constant load)
- Maximum tensile space: 650 mm
- Maximum compression space: 1050mm
- Total crosshead travel: 1450mm
- Space between columns: 570 mm
- Stiffness of load frame: 150kN/mm
- Twin ball screw driven with close-loop and servo motor control.
- Power supply: 220VAC, 1 phase, 50Hz
- Overall dimension: 970 x 650 x 2050mm
- Weight: 700kg

Standard Accessories:

- Wedge action tensile fixtures: 50kN capacity

Inserts for round specimen: Φ4~7mm, Φ7~14mm, Φ14~20mm   1 set for each

Inserts for flat specimen: thick: 0~7mm, 7~14mm, 14~21mm; width: 50mm   1 set for each

- Compression test fixture: 1 set

Diameter platens: 100mm & ball seating assembly for lower platen:

- **Bending fixture (Optional)**   1 set

Max. Bending span: 400mm

- **Clip-on type electronic extensometer:**   1 set

Gauge length: 50mm; Travel: 10mm.

- **Computer & software**   1 set

Computer: Dell, Intel (R) Celeron (R) 2.6Ghz, 2MB processor, 2GB, DDR3 1600MHz, SDRAM Memory, HD 250G, 16X DVD-ROM Drive, Windows 7 home basic system; 19inch screen LED monitor, photoelectrical mouse, and multiple keyboard;

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

- AC Servo Control system   1 set

Annex-1

Features of   Measuring & Control software

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.
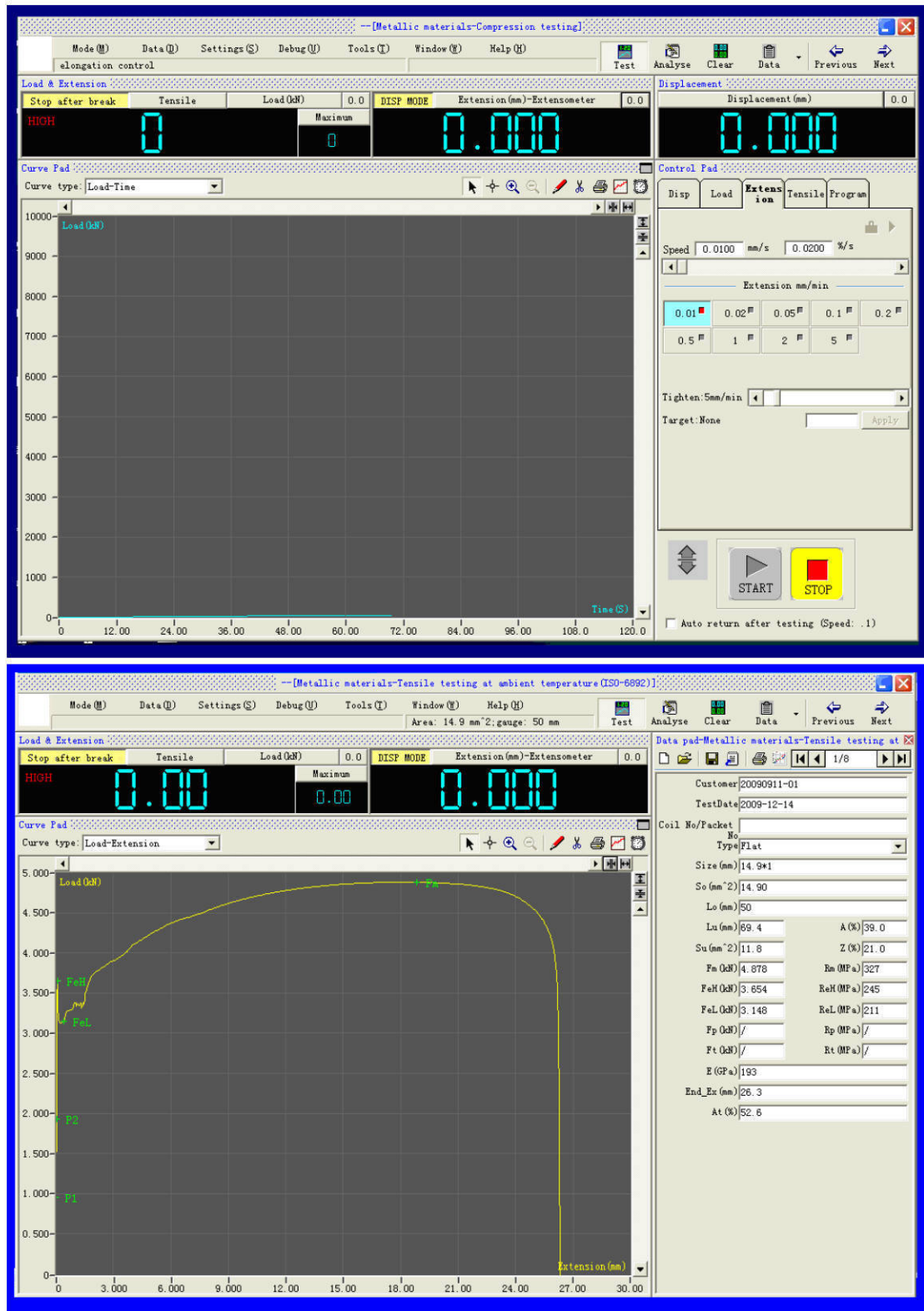
The control modes, test data and curves can be displayed in real time in the main interface and can be shifted at any time.
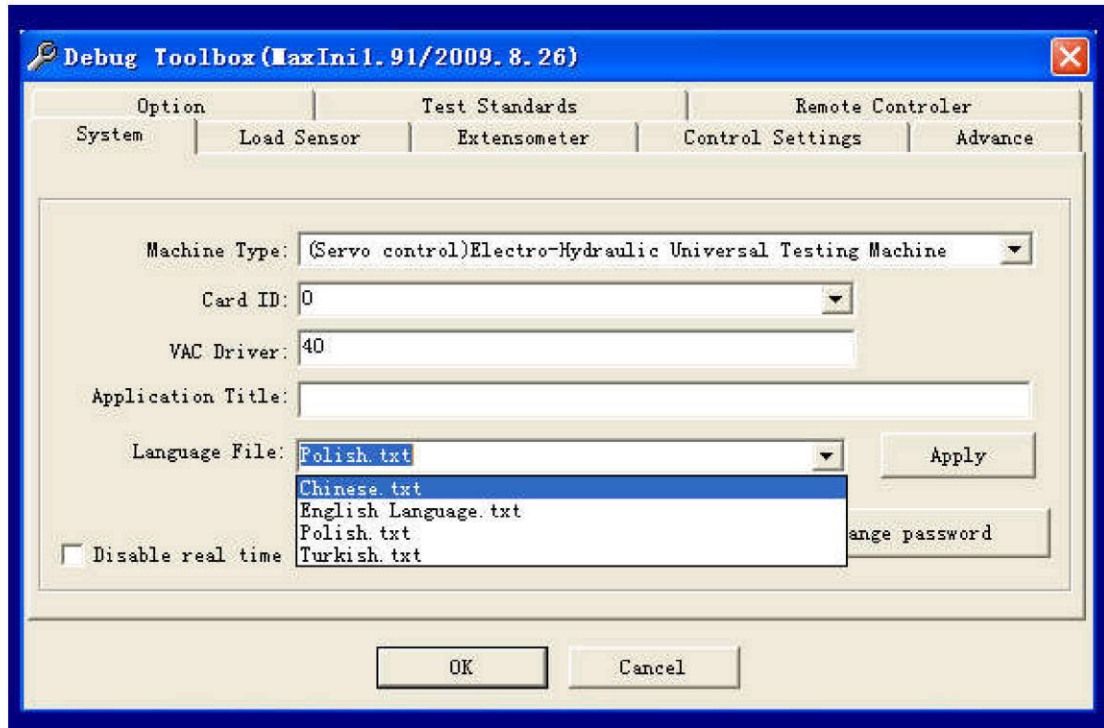
The deep-seated parameters of software are contained in Debug Toolbox

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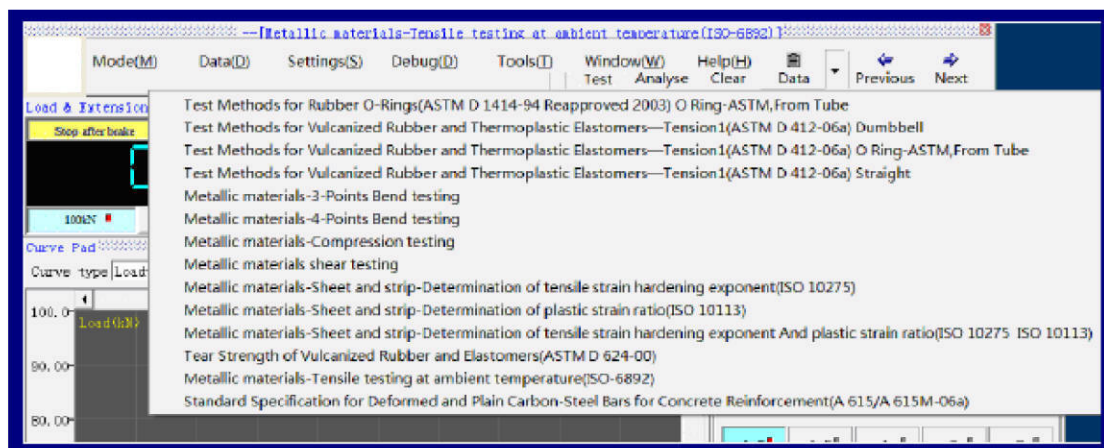
Software supports all kinds of popular testing standards i.e. ISO, ASTM, BS EN, DIN, JIS, GB etc.

Users can modify and add own testing standards and methods.

Test Standard Creater 3.0 (Standards amount = 70)

System (S)

- Modify Standard Caption and ID...
- Modify Standard Definition...
- Modify Standard Structure...
- Copy Current Standard for Creating New Standard...
- Save Current Standard as Tdf File...
- Import Form Tdf File...
- Delete Current Standard
- Find Standard...

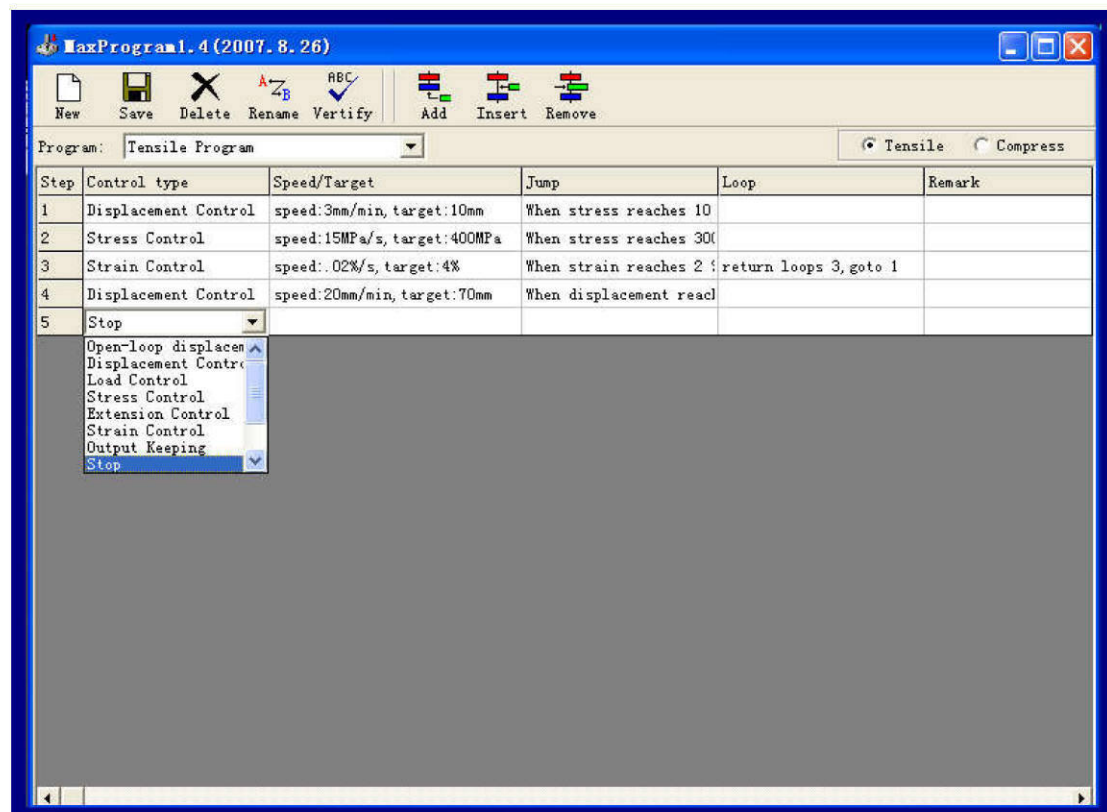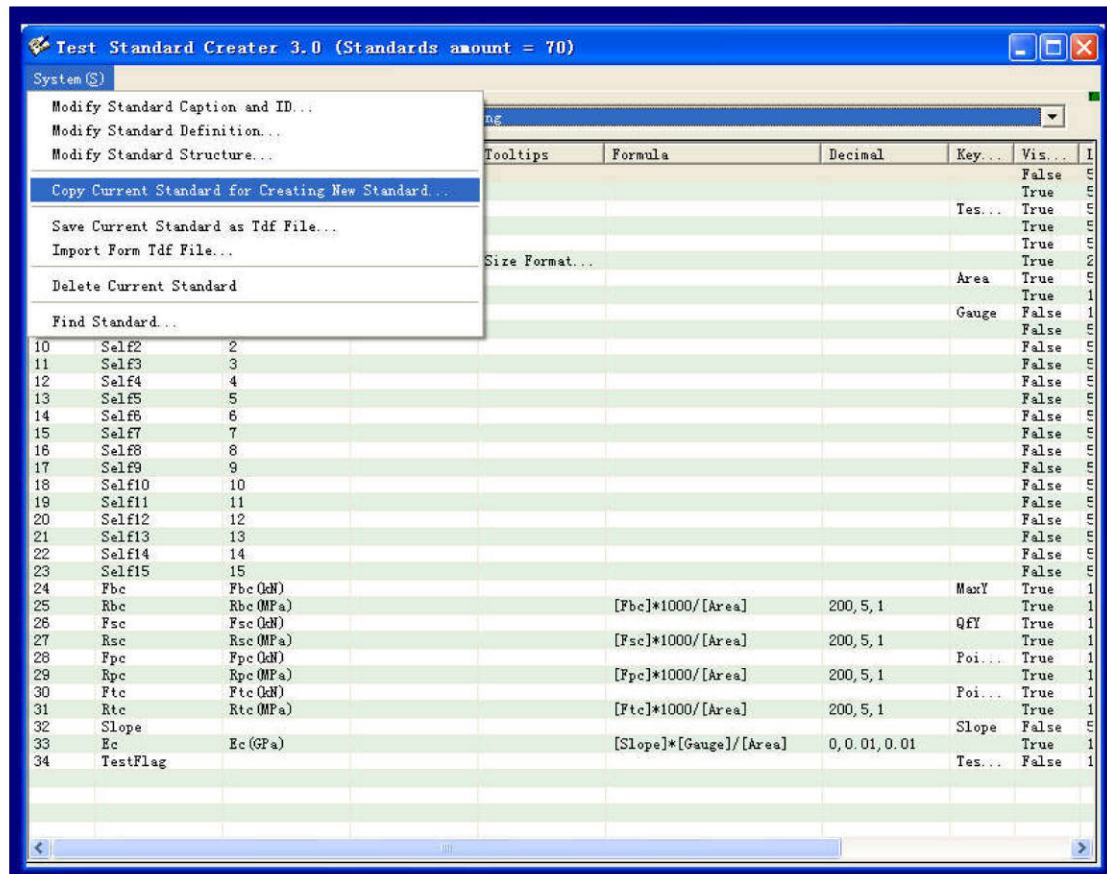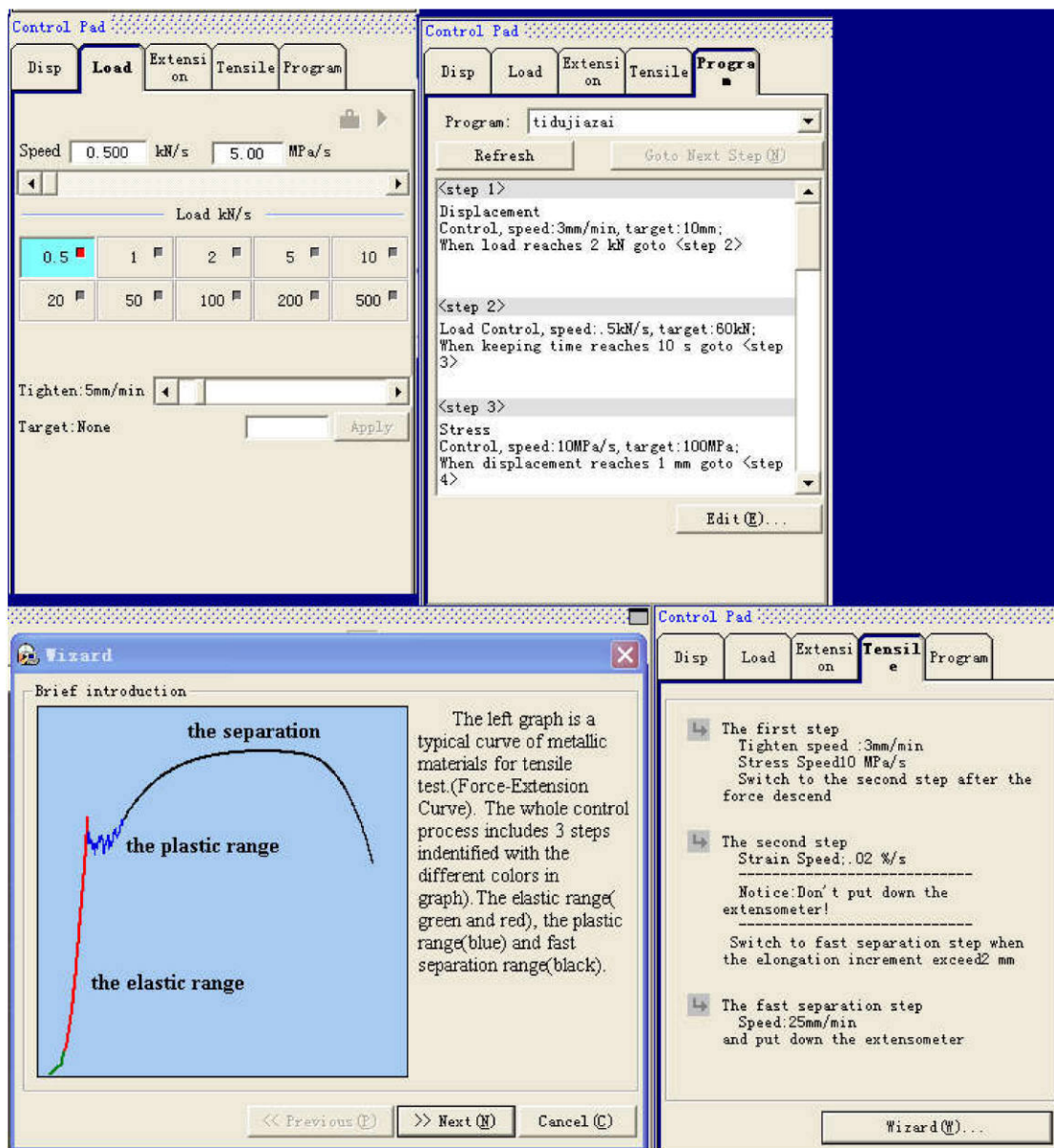|			Tooltips	Formula	Decimal	Key...	Vis...	
							False	5
							True	5
						Tes...	True	5
							True	5
							True	5
			Size Format...				True	2
						Area	True	5
							True	1
						Gauge	False	1
							False	5
10	Self2	2					False	5
11	Self4	4					False	5
12	Self4	4					False	5
13	Self5	5					False	5
14	Self6	6					False	5
15	Self7	7					False	5
16	Self8	8					False	5
17	Self9	9					False	5
18	Self10	10					False	5
19	Self11	11					False	5
20	Self12	12					False	5
21	Self13	13					False	5
22	Self14	14					False	5
23	Self15	15					False	5
24	Fbc	Fbc(kN)				MaxY	True	1
25	Rbc	Rbc(MPa)		[Fbc]*1000/[Area]	200,5,1		True	1
26	Fsc	Fsc(kN)				QfY	True	1
27	Rsc	Rsc(MPa)		[Fsc]*1000/[Area]	200,5,1		True	1
28	Fpc	Fpc(kN)				Poi...	True	1
29	Rpc	Rpc(MPa)		[Fpc]*1000/[Area]	200,5,1		True	1
30	Ftc	Ftc(kN)				Poi...	True	1
31	Rtc	Rtc(MPa)		[Ftc]*1000/[Area]	200,5,1		True	1
32	Slope					Slope	False	5
33	Ec	Ec(GPa)		[Slope]*[Gauge]/[Area]	0,0.01,0.01		True	1
34	TestFlag					Tes...	False	1

MaxProgram1.4(2007.8.26)

New Save Delete Rename Vertify Add Insert Remove

Program: Tensile Program

◉ Tensile   ○ Compress

Step	Control type	Speed/Target	Jump	Loop	Remark
1	Displacement Control	speed:3mm/min, target:10mm	When stress reaches 10		
2	Stress Control	speed:15MPa/s, target:400MPa	When stress reaches 300		
3	Strain Control	speed:.02%/s, target:4%	When strain reaches 2	return loops 3, goto 1	
4	Displacement Control	speed:20mm/min, target:70mm	When displacement reach		
5	Stop				

Open-loop displacen
Displacement Contro
Load Control
Stress Control
Extension Control
Strain Control
Output Keeping
Stop

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.

Control Pad

Disp | **Load** | Extension | Tensile | Program

Speed 0.500 kN/s   5.00 MPa/s

Load kN/s

| 0.5 ■ | 1 ▯ | 2 ▯ | 5 ▯ | 10 ▯ |
| 20 ▯ | 50 ▯ | 100 ▯ | 200 ▯ | 500 ▯ |

Tighten:5mm/min

Target:None   Apply

Control Pad

Disp | Load | Extension | Tensile | **Program**

Program: tidujiazai

Refresh   Goto Next Step (N)

<step 1>
Displacement
Control, speed:3mm/min, target:10mm;
When load reaches 2 kN goto <step 2>

<step 2>
Load Control, speed:.5kN/s, target:60kN;
When keeping time reaches 10 s goto <step 3>

<step 3>
Stress
Control, speed:10MPa/s, target:100MPa;
When displacement reaches 1 mm goto <step 4>

Edit (E)...

Wizard

Brief introduction

the separation

the plastic range

the elastic range

The left graph is a typical curve of metallic materials for tensile test.(Force-Extension Curve). The whole control process includes 3 steps indentified with the different colors in graph).The elastic range(green and red), the plastic range(blue) and fast separation range(black).

<< Previous (P) | >> Next (N) | Cancel (C)

Control Pad

Disp | Load | Extension | **Tensile** | Program

↳ The first step
    Tighten speed :3mm/min
    Stress Speed10 MPa/s
    Switch to the second step after the force descend

↳ The second step
    Strain Speed:.02 %/s

    Notice:Don't put down the extensometer!

    Switch to fast separation step when the elongation increment exceed2 mm

↳ The fast separation step
    Speed:25mm/min
   and put down the extensometer

Wizard(W)...

Through the Tensile Program Editor, user can setup test steps according to the requirements of standards.
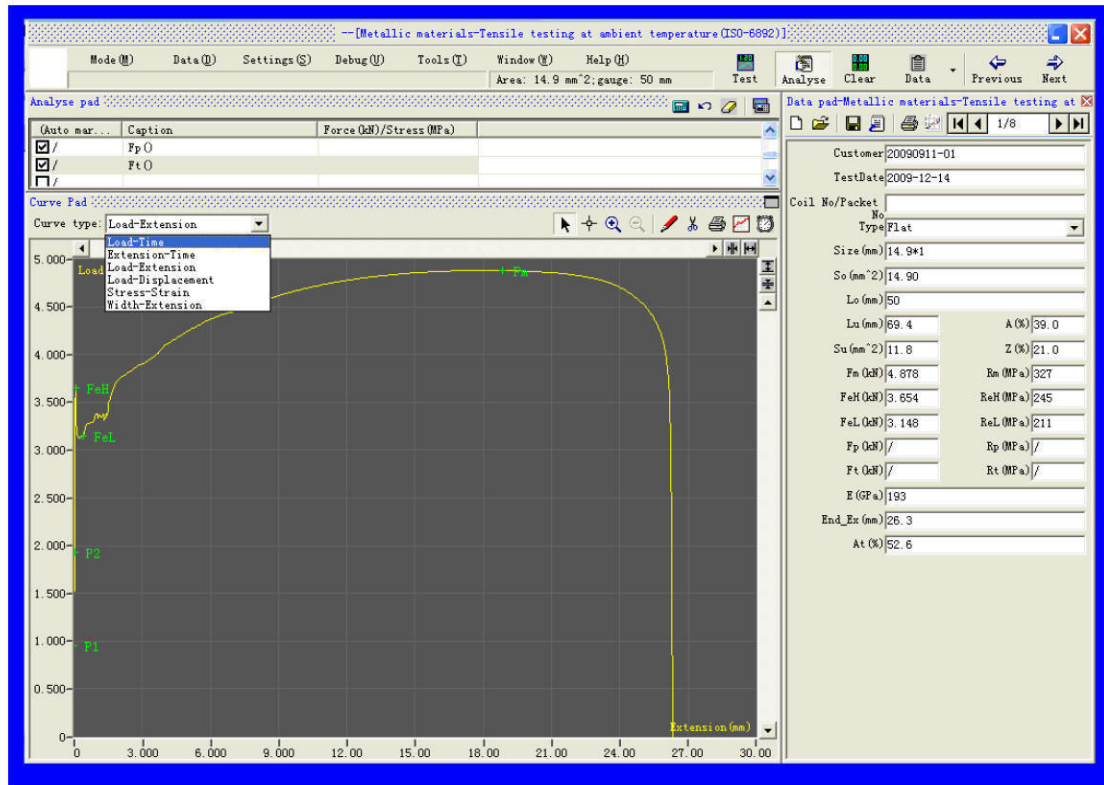
Multiple curves function in real time display including Load-Extension, Load-Displacement, Stress-Strain, Load-Time, Extension-Time, and Width-Extension.

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.
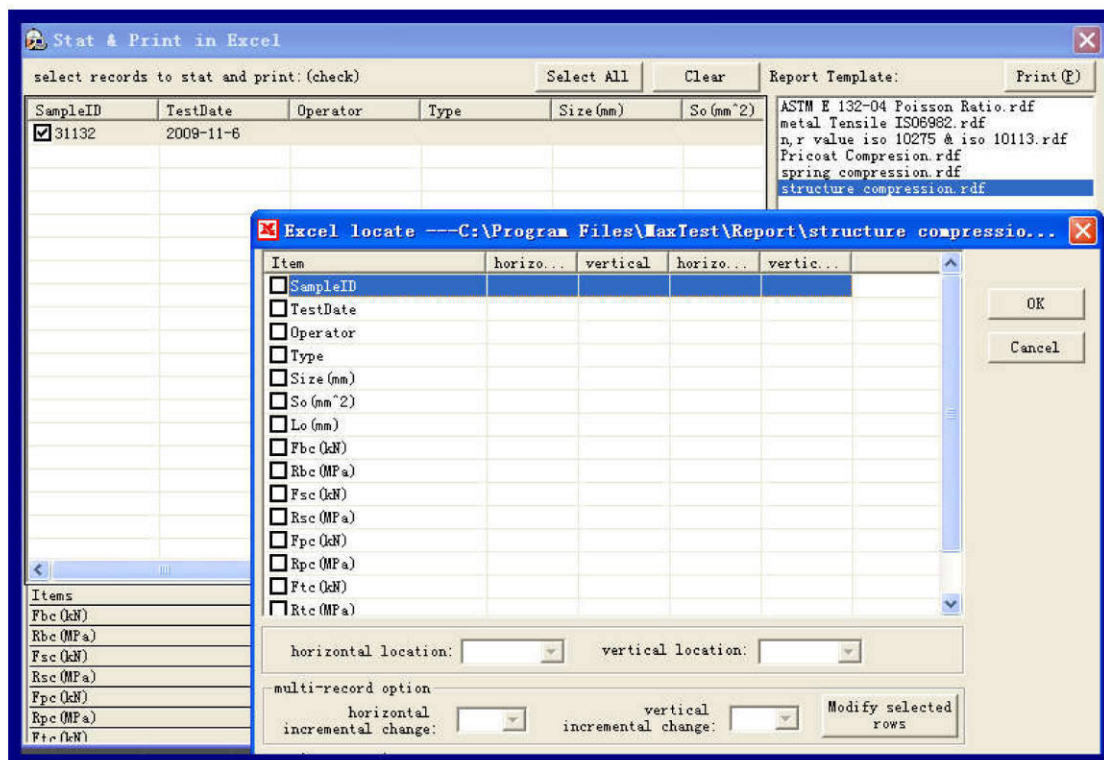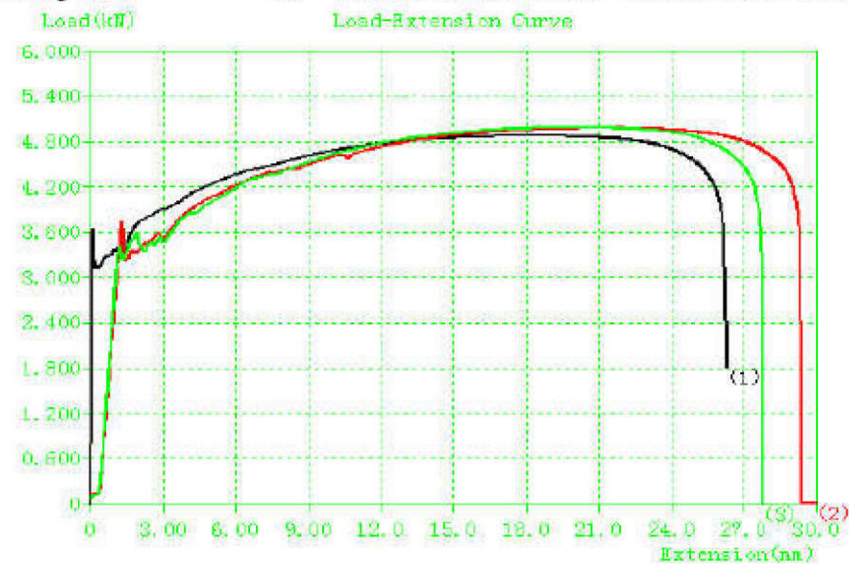

software contains all kinds of Report Templates. Customer can design various testing reports according to

the requirements. Test result and curve can be printed in Excel or the auto-creating report template.

Metallic materials -- Tensile testing at ambient temperature
ISO 6892 : 1998

TestDate	2009-9-11		Operator	LW
Temperature	20℃		Size(mm)	14.9*1
Lo(mm)	50		So(mm^2)	14.9

PrintID	SampleID	Rm(MPa)	ReH(Mpa)	ReL(MPa)	Rp(MPa)	E(GPa)	A(%)	Z(%)
1	QD01	327	245	210	233	193	39	21
2	QD02	334	251	223	234	198	42	23
3	QD03	335	240	229	228	205	38	27
4								
Max value		335	251	229	234	205	42	27
Min value		327	240	210	228	193	38	21
Average value		332	245.3333	220.6667	231.6667	198.6667	39.6667	23.667

Print Date: 2009-12-8

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

software supports four load cells.