

# HST-EGD Series Computer control high and low temperature Electromechanical testing machines



**HST** **HST GROUP**  
Focus In Material Test

*Do Our Best for Your Test*

## 1. Application

This series testing machines is mainly suitable for rubber, plastic profile, plastic pipe, sheet, film, wire and cable, waterproof coil, wire and other materials in high temperature or low temperature environment, tensile, compression, bending, peeling, tearing, shear and other mechanical properties of the test; It is very convenient for users to carry out research and development, quality control work, and is an ideal testing instrument for industrial and mining enterprises, commodity inspection arbitration, scientific research units, colleges and universities, engineering quality departments.

## 2. 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

### **Metal:**

ASTM E8, ISO 6892, BS EN 10002-1, ASTM E21, ISO 783, EN ISO 7438, ISO 14589, ASTM F606

### **Plastics/ Composites:**

ASTM D638, EN ISO 6259, EN ISO 527-1, ISO 604, ASTM D695, ASTM D3846, EN ISO 844, EN ISO 13968, EN ISO 9969, etc.

### **Geo-textiles:**

ASTM D3950, ASTM D 6775-02, BS EN ISO 10319, JBT 8521(EN 1492-2).Rubber: ISO 37, ASTM D41

## 3. 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. Preloaded ball screws, precision guidance columns, and a symmetrical drive system improve frame stiffness and alignment

**Safety features:** The testing machine stops automatically when the change in the test force exceeds a specified value during operations.

### **Over-Travel Limits**

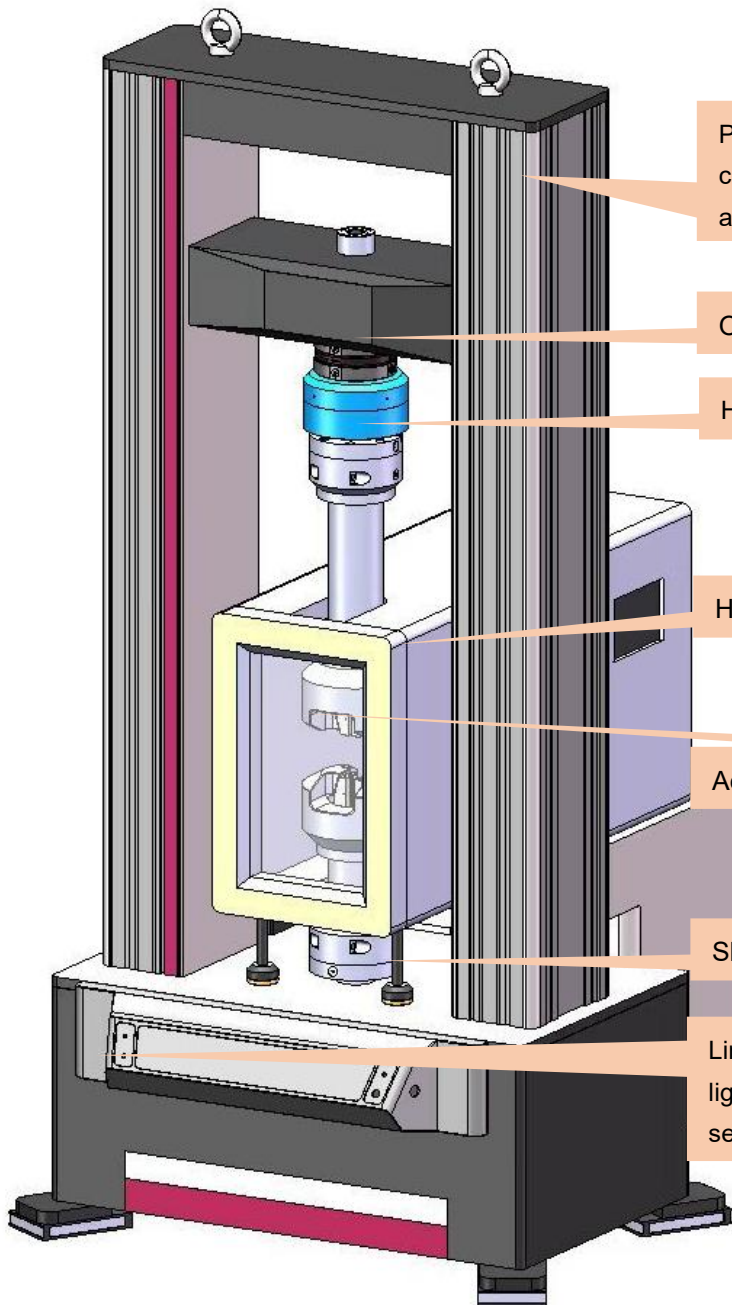
Dual over-travel limits, located on the front console, help prevent crosshead overshooting and sensor overloads. A graduated rule along the column can be used to preset these limits to specific distances.

**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 jig



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

Optional Align the system regulating ring

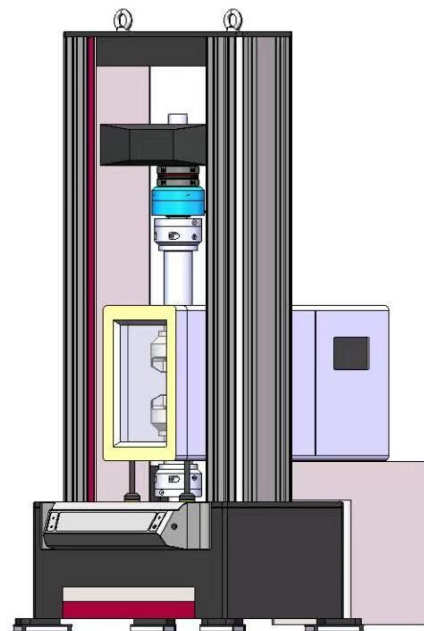
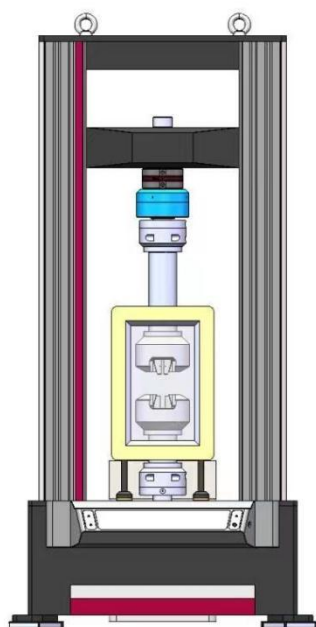
High accuracy USA load cell supporting high load

High and Low temperature environmental test chamber

According to customer material and temperature

Slide rail

Limit indicator: touching the electronic limit, upper and lower light will be on to prevent the equipment from overloading sensor damage and so on



## 4. Specifications

MODEL	HST-100EGD
<b>Testing Machine Specifications</b>	
Load Capacity (kN)	100
Load accuracy	Class 0.5
Testing Load Accuracy	±0.5%
Testing Load Range(FS)	0.2%-100%
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	0.001-500
Crosshead speed accuracy	±0.5% of set speed (zero or constant load)
Crosshead Travel(mm)	1100
Room temperature Tensile Space(mm)	650
Room temperature Compression Space(mm)	1000
Room temperature Test width (mm)	550
Load cell	High-precision USA load cell
Position limit switch	Upper and lower lights
Power Supply	AC220V±10%, 50Hz/60Hz
Overall Dimensions (L*W*H: mm)	According to the size of High and Low temperature test chamber
Weight(kG)	According to the size of High and Low temperature test chamber
<b>Note:Extra wide and/or extra height frames are available.Power supply system is completely customizable.Tensile space, test width, and speed is completely customizable.</b>	
<b>High and low temperature environmental test chamber Specifications</b>	
Operating temperature range	-40 -150℃
Cooling system	compressor
Temperature uniformity	< 200 ≤±2℃ , ≥ 200 ≤±3,5℃
Temperature Fluctuation	≤±1℃
Heating rate	2-3℃/min
Power	220V
Material of inner box	stainless steel
Outer box material	stainless steel
Heating system	Nickel-chromium alloy heating wire heater
Insulation Materials	Ultra-fine glass wool or rigid foam
Air supply circulation system	a: motor b: lengthened shaft c: centrifugal fan
Chamber Door	Monolithic door
Controller	Temperature Controller
Control panel	Rotary switch
Inside dimensions(mm)	350*260*400
Outside dimensions(mm)	1100*420*560

## 5. Loading weight system (standard):

Loading weight system is the most critical aspect of mechanical testing. HST 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, HST made a special customs design so that it can be optimized match with measuring & control system for most accurate test results. Measuring load 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.



## 6. Testing machine electronics and Control Part:Our Controller EDCH 550 (Standard)

### 6.1 Application:

EDCH 550 controller measurement and control software independently developed by our company. The measuring unit adopts high-precision load sensor, rotary photoelectric encoder (or AC servo motor encoder) and electronic extensometer, which can realize three closed-loop control of load, displacement and deformation of electronic universal testing machine, and can realize three kinds of control Smooth switching between modes has the characteristics of high control accuracy, reliability and stability.



### 6.2 Main performance features:

- 6.2.1 There are three analog input channels: 1 load, 1 electronic extensometer, and 1 expansion channel. All three channels use independent 24-bit A/D conversion chips for high-precision data sampling, and the highest resolution can reach  $\pm 1/500000$ , the full resolution remains unchanged. There are up to 15 segments of linear compensation and correction functions, which greatly improves the measurement range and measurement accuracy of the sensor;
- 6.2.2 It has three channels of photoelectric encoders and four frequency multiplication counting input channels: 1 channel of cable-pull displacement sensor, 2 channels of large deformation extensometer;
- 6.2.3 It has 8 switch input interfaces: 8 switch input signals can be connected externally;
- 6.2.4 The EDCH controller adopts 1-way USB plug-and-play (driver-free) communication interface (STC measurement and control card acquisition PCIE interface), realizes high-speed data communication with the PC, and realizes the functions of real-time uploading of collected data and real-time delivery of control instructions. , so as to achieve the purpose of real-time control of the testing machine by the PC;
- 6.2.5 Multiple force sensors and multiple deformation sensors can be configured, and users can switch to use according to their needs;

## 7. EDC i20 controller from Doli, Germany (Optional):

This machine can also be configured with intelligent & powerful EDCi controller from Germany for data acquisition and close loop control with features of stable control, fast response, high speed acquisition and exceptional reliability. This controller is with measuring channels for synchronous acquisition of load, position and strain from transducers like load cell, encoder and extensometer and supports additional channels for future expansion. Communicated with intuitive software for all machine control & data acquisition, and sampling rate up to 2.5kHz (optional 10kHz) ensures to obtain more accurate & repeatable test results. With special plug stored sensor data, it can self-identify and



auto-calibrate the sensors of load & extensometers configured with testing system. Up to now, it is most reliable device to be used extensively for static and dynamic testing machines.

**Specifications:**

Sampling frequency upto 2.5kHz, 100 μ s steps, and 24bit A/D converter  
 Communication and control processor VortexDX86, 800MHz  
 Load resolution ±25000,000 steps, ranges from 1mV/V up to 640mV/V and ± 10V RS485 interface for external keyboard/display supports a maximum of four devices Drive interface ±10V (±15bit) analogue command output, digital command output and safety functions PC communication via USB or Ethernet  
 Three iSI extension slots  
 Internal socket for serial sensors



Internal socket for synchronizing several EDCs  
 Internal socket for servo valve amplifier

**8. Handheld Unit controller (Standard)**

320 x 240 LED display, which can quickly adjust the test space. It also has the functions of test start, test stop, test zero clearing and so on. It can display the running state of the equipment in real time, test data, make the sample clamping more convenient and easy to operate.

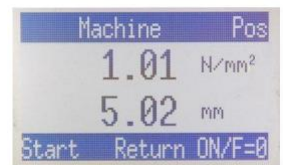


**9. RMC-7 Handheld Unit (optional part from Doli, Germany)**

With the help of DOLI RMC-7 handheld unit the user can perform test speed control, grip movement controls, load/deformation, and strain, observe real time strain values, control movement/position of grips, assign max.-min. limit etc.

The most important property provided by DOLI handheld unit is that the user does not have difficulty when placing the specimen into the grips because of the mobility of the unit. Handheld unit comes with a magnet attached and can be placed easily on metal surfaces.




In an emergency case, test can be stopped immediately by pushing the red emergency button on the RMC-7 (which is located on the upper right side of the handheld unit).



**10. High temperature environmental test chamber**

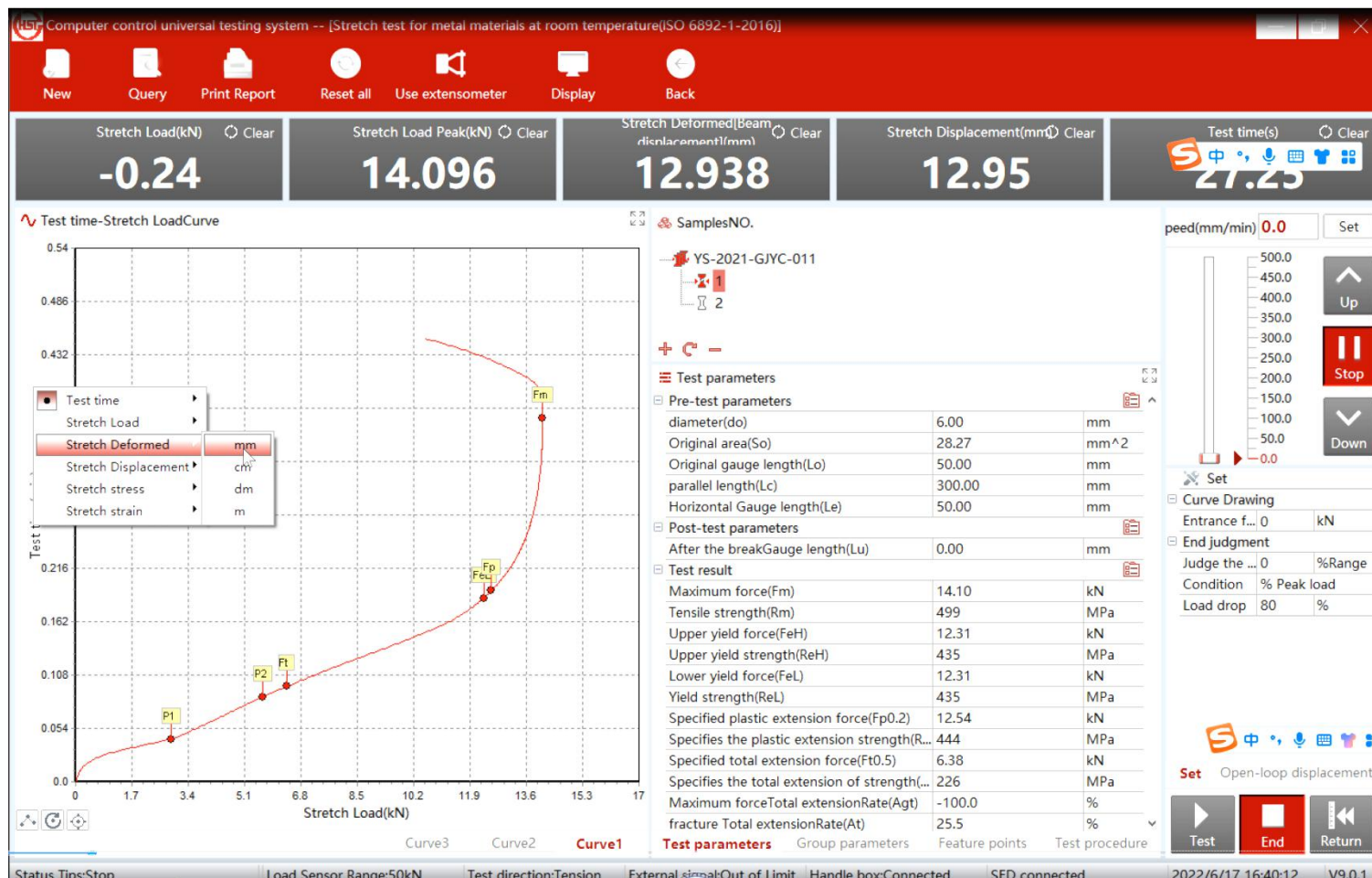


## 11. Standard Accessories:

Machine configuration	Configuration Details
<b>Testing machine unit</b>	
Main frame	HST-4 columns and 2 ball
Wedge action tensile fixtures (1 set for each) <b>(Code:945)</b>	Inserts for round specimen: standard: $\Phi 4\text{-}\Phi 9\text{mm}$ <b>Optional: <math>\Phi 9\text{-}14, \Phi 14\text{-}20\text{mm}</math></b> Inserts for flat specimen Thick: $0\text{-}7\text{mm}$ <b>Optional: <math>7\text{-}14\text{mm}; 14\text{-}21\text{mm};</math></b>
Compression test fixture <b>(Code:1087)</b>	$\Phi 100\text{mm}$ 
TECO AC Servo Control system	Taiwan TECO <b>Optional: Japan panasonic</b> 
USA load cell	Calibration within 0.5% accuracy can be carried out as per ASTM E4, ISO7500-1, EN 10002-2, BS1610, DIN 51221 standards. 
Handheld Unit controller <b>(Code:159)</b>	HST-320 x 240 LED display: Can display Load, displacement, speed. Can control test start, test stop, test zero clearing and so on 
EDCH550 Multichannel Controller	By USB contact computer
English operation software and CD	Language supports: English (standard), Russia, Turkish, Spanish, etc.
USB Cable connect with PC	HST
Computer and printer	Brand China
High temperature environmental test chamber	$-40\text{-}300^{\circ}\text{C}$ (According to the order)

## 12. Software Instruction

HST 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, Computer software interface, display test data, setup method, sample size



### Features:

#### 1. Full digital control

The whole measuring and control system adopts the special controller, which can achieve the digital adjustment of zero point and gain of load, deformation and displacement, and it's easy to operate and possesses the high reliability.

2. Possess the functions of storage, setting and loading for various kinds of parameters, which make it convenient to connect multiple transducers with one load frame.

3. Realize the close-loop control, and show the reference curve during the executive operator adjusting the close-loop parameters, so the user can observe the close-loop effect caused by the parameters.

4. Perfect graphic function to complete the functions of the reappearance, amplification, reduction, self-adaptation, lapping of the curves, display and print the curve at the appointed range, observe the coordinate of the test point.

5. Data processing supports automatic analysis and graphic man-machine mutual processing, which is convenient to check and compare the test results.

#### 6. Multilevel identity management

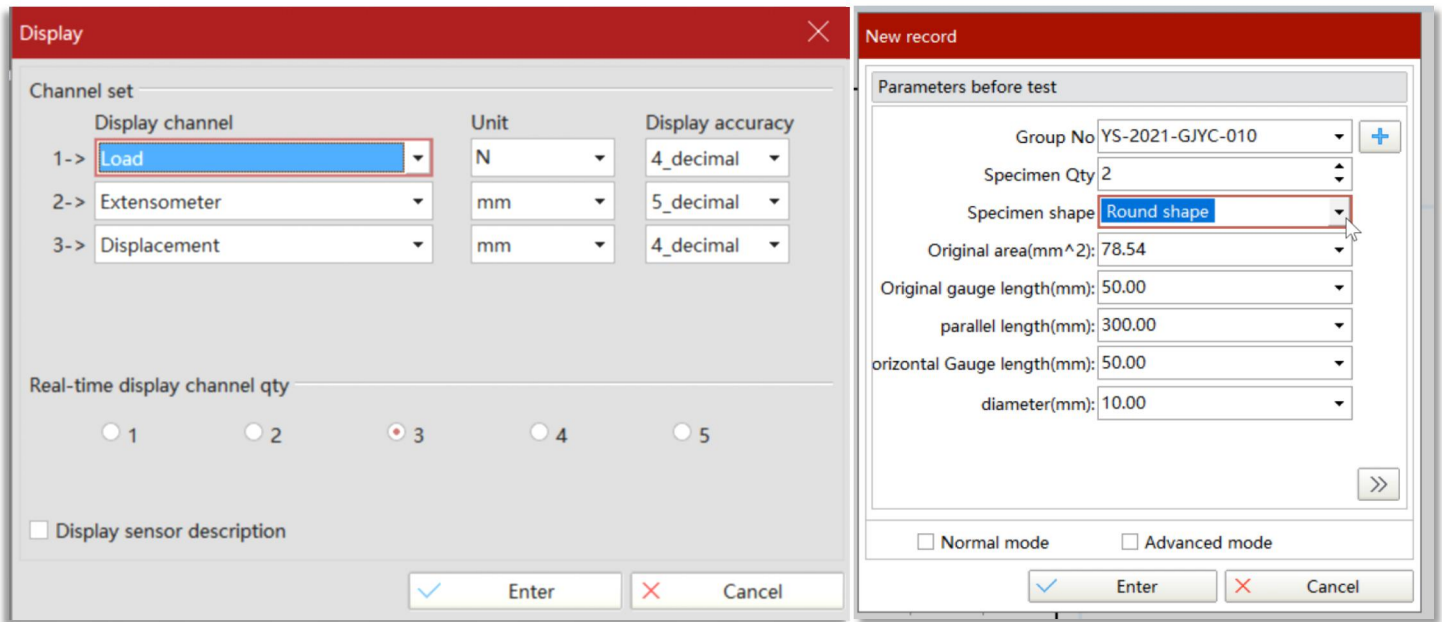
Multilevel identity management, different identity has different functions, which not only makes the operation quick by ordinary operator, but also protect the system effectively.

7. Based on the database, test data is stored by form of text file, which is convenient for the user to inquire about and utilize the various kinds of commercial report forms to reprocess the test data, meanwhile transfer the data to the internet conveniently.

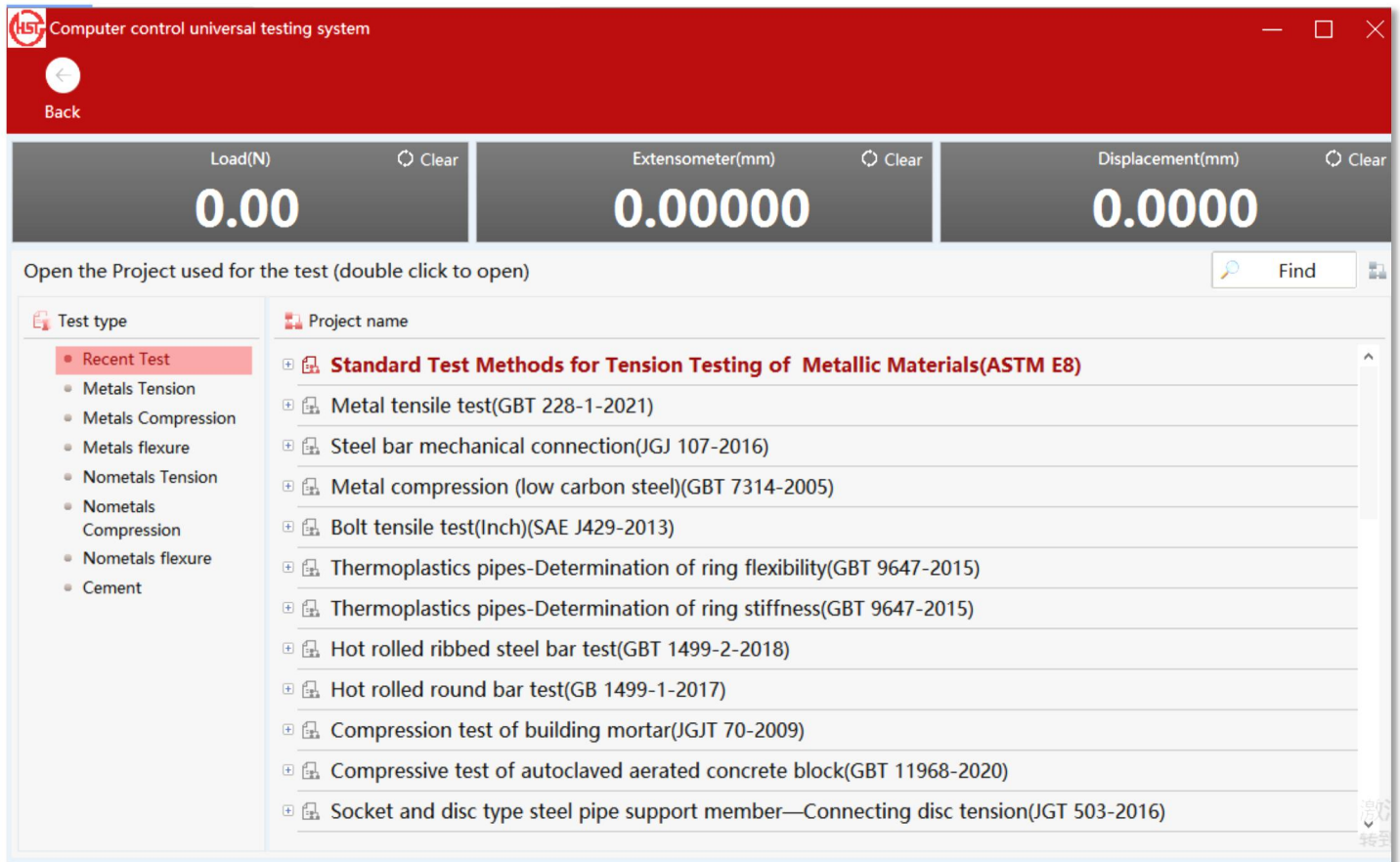


**Multi controlling channels**

Displacement control, force control, deformation control, stress control, strain control, constant stress, constant strain etc.



**Test standard:** provide users with the necessary applications to the test, covering GB, ASTM, DIN, JIS, BS ... and other testing standard specification.



**Multi measurement units**

Load can be displayed in kN, lbf or kgf as selected by the operator.

**Multi controlling channels**

Displacement control, force control, deformation control, stress control, strain control, constant stress, constant strain etc.

**Report**

Output and print report: Excel, word, template test report, can be edited customize To show test information, including test person, test standard, test curve, test max load etccan add your company LOGO and company name,easy to edit.

TENSION REPORT							
BatchNo:	2019090707			TestDate:	2019-9-8 13:38		
Unit				Texture			
Norm				Temp			
Size(mm)				Area(mm <sup>2</sup> )	804.25		
Result Data							
No.	MaxLoad (kN)	tensile strength (MPa)	Upper yield (kN)	Upper yield strength (MPa)	Lower yield (kN)	Lower yield strength (MPa)	Elongation (%)
1	511.89	637	414.88	516	398.5	496	24
2	502.43	625	406.16	505	388.12	483	24.5
3	503.75	626	407.07	506	394.87	491	25
Testing base	ASTM E4						
Remark							
principal				Review			
Tester	HST GROUP			Print date	2022-6-24 10:25		

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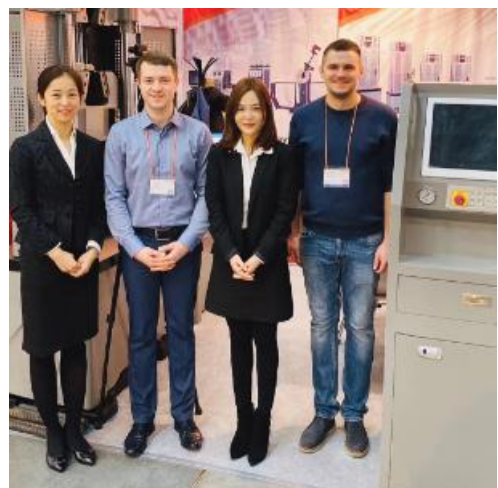
ISO:9001 and CE accredited and an active member of all the main international standard organizations, including GB, ISO, EN, ASTM, AASHTO and AWRG, we are also involved in steering future Standards' development so they are written with practical operation and application in mind for the benefit of the end-users.



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**HST GROUP Co., LTD.**

NO. 4915, West Jingshi Road, Jinan 250012, PR CHINA.

Tel:+86-58056101, +86-159 1008 1986

[www.hssdgroup.com](http://www.hssdgroup.com) - e-mail: [admin@hssdtest.com](mailto:admin@hssdtest.com)

