Mikrosize®

UTM-DCT

High And Low Temperature Electronic Universal Testing Machine

Contact us

Mikrosize Precision Instrument Co.,Ltd
A-4035 RuiFeng Business Expo, Wuhu City, China , 241000.
Web:www.mikrosize.com
Email: mikrosize@mikrosize.com

Features and Applications

Product Features

- Widely applicable to various standards
- The testing machine is of class 0.5, with high measurement accuracy.
- Wide test speed range: 0.01 - 500mm/min (optional maximum 1000mm/min).
- Large test space and long stroke.
- Abundant fixture configuration: equipped with one set of film stretching fixtures and one set of 180-degree peeling fixtures, and other fixtures can be purchased optionally.
- Two return methods are available: manual and automatic.
- Stop methods include automatic stop at the maximum fracture value and stop at the upper and lower limit safety settings.
- Complete safety protection devices: equipped with mechanical travel switch protection, emergency stop switch for emergency braking, and overload protection function.
- Excellent performance of the high and low temperature chamber, using compression refrigeration.
- Adopts a digital AC servo speed control system and servo motor with high speed regulation accuracy and stable performance.
- The control and data processing software based on the Windows operating platform and database technology realizes the on-screen display of test data and curves. It is easy to operate, allows for the setting of multiple control modes, conforms to data processing of multiple standards, and the processed results can be easily stored and post-processed.

Product Application

- It can be used for testing various mechanical properties of different metals, non-metals, and composite materials. It is suitable for material tests in numerous industries, such as machinery manufacturing, vehicle manufacturing, aerospace, petrochemical, wire and cable, paper-making, textile, construction materials, etc., and can also be used for scientific research and teaching.

Instrument Appearance

1.Limit Device **2.Force Value Sensor** **3.Observation Window**
4.Emergency Stop Button **5.Switch Button** **6.Up** **7.Down**
8.Tool Storage Cabinet **9.Leveling Feet**

Instrument Appearance

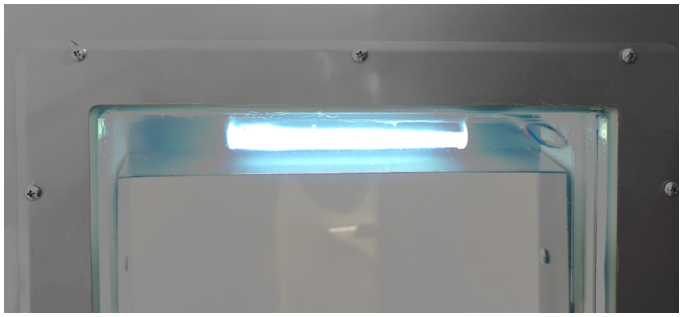
1.Display Screen	**2.Window Light Switch**	**3.Power Switch**
4.Alarm	**5.USB Interface**	

Product Details

Machine Details

- This device uses a high-precision force value sensor, which can greatly ensure the accuracy of experimental data.
- The fixtures can be quickly installed and removed. Loosen the fixture locking nut, pull out the fixture pin, and the fixture can be removed. Installation is carried out in the reverse order.
- This device can be adapted to a variety of fixtures to meet the requirements of different experiments.

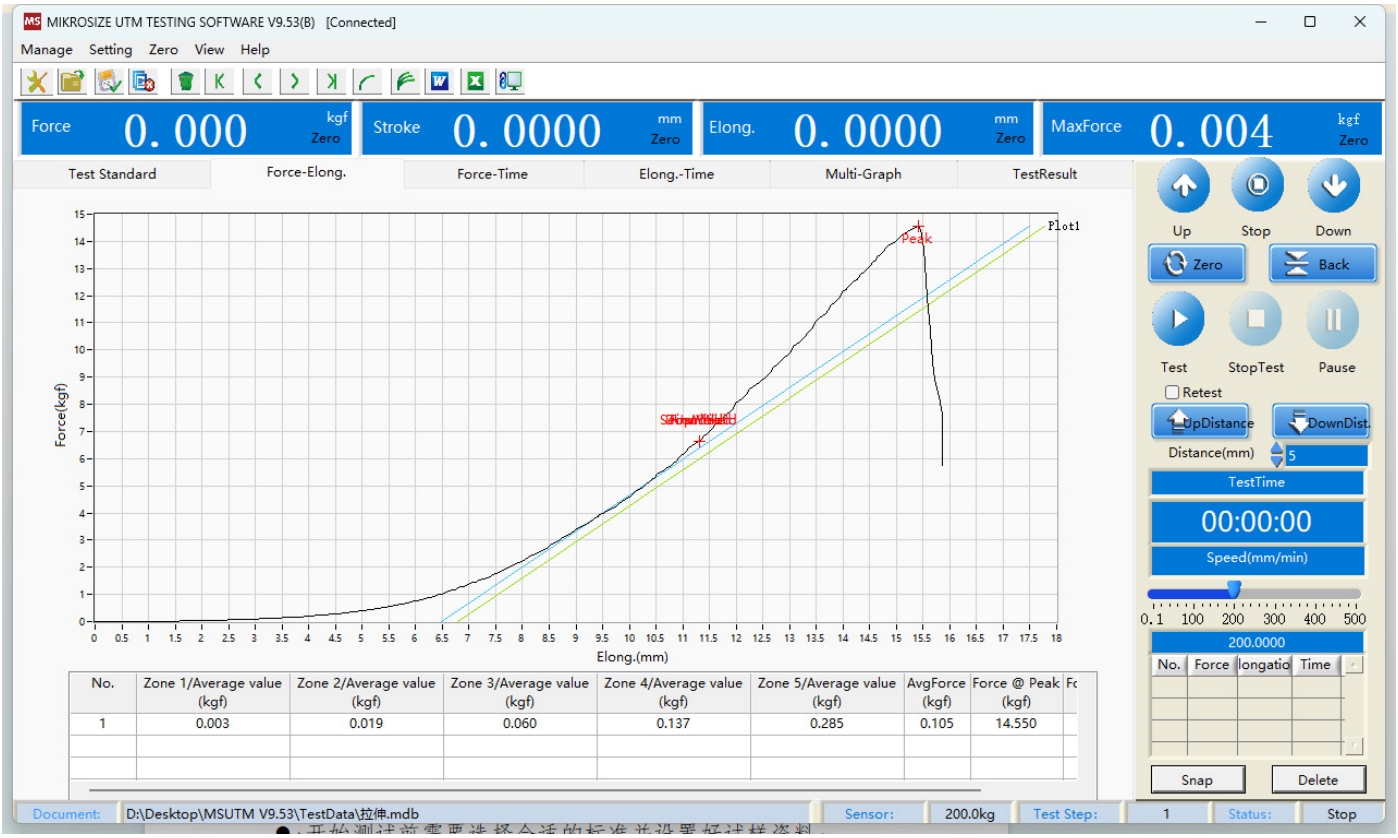
- There is an observation light above the observation window, which, together with the large transparent window, makes it more convenient for users to observe the internal situation of the chamber.



- The size of the test chamber can be customized. Both the outer shell and the interior are made of stainless steel plates, and the heat insulation material is rigid polyurethane foam.
- There are two Φ80mm test holes in the center of the upper and lower parts of the chamber.

Operation Interface

Software Interface

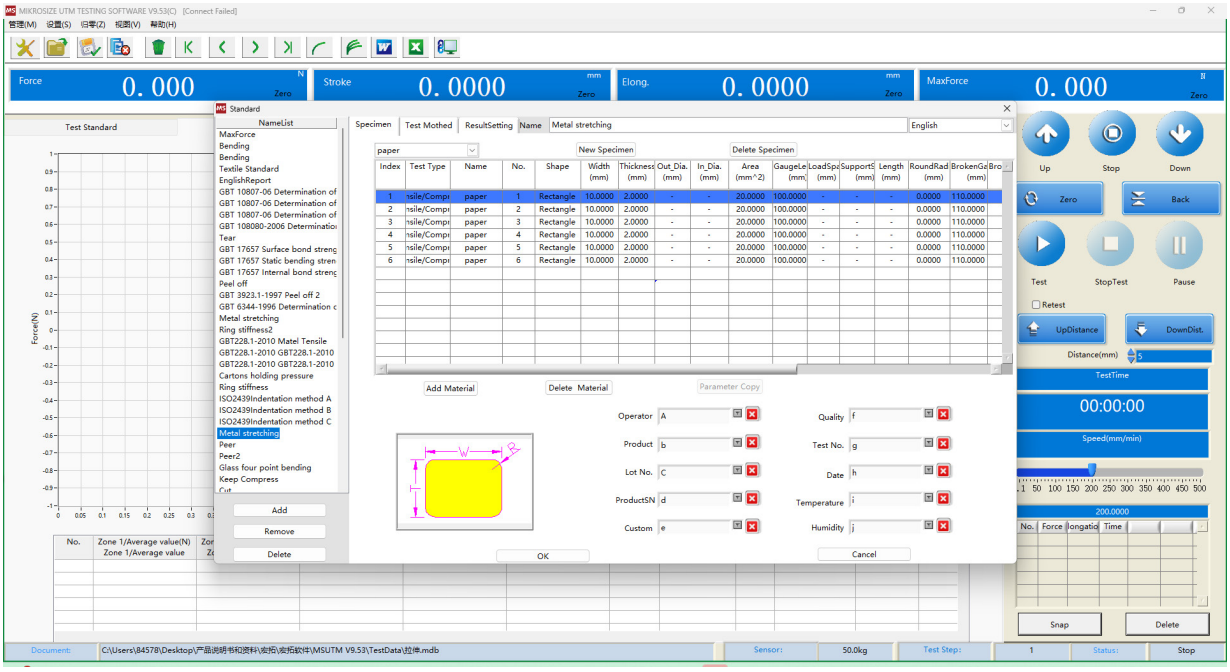


No.	Zone 1/Average value (kgf)	Zone 2/Average value (kgf)	Zone 3/Average value (kgf)	Zone 4/Average value (kgf)	Zone 5/Average value (kgf)	AvgForce (kgf)	Force @ Peak (kgf)
1	0.003	0.019	0.060	0.137	0.285	0.105	14.550

- The buttons on the right side can control the lifting, running, stopping, and jogging speed of the host.
- The upper part displays four parameters: force value, displacement, deformation, and maximum force. You can click the item name to select the item to be displayed, such as stress, strain, elongation rate, speed, etc.

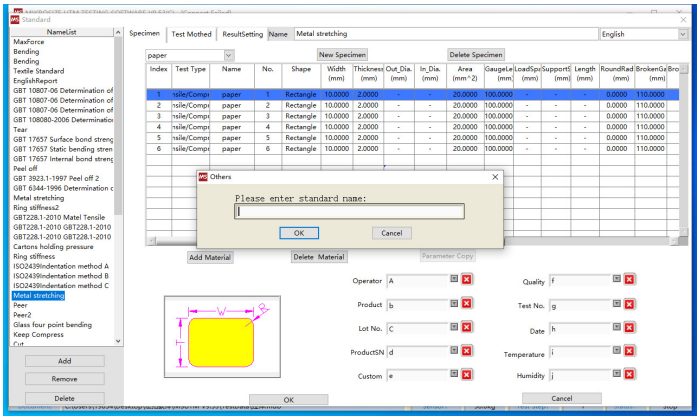
Operation Interface

Test Standard and Specimen Information

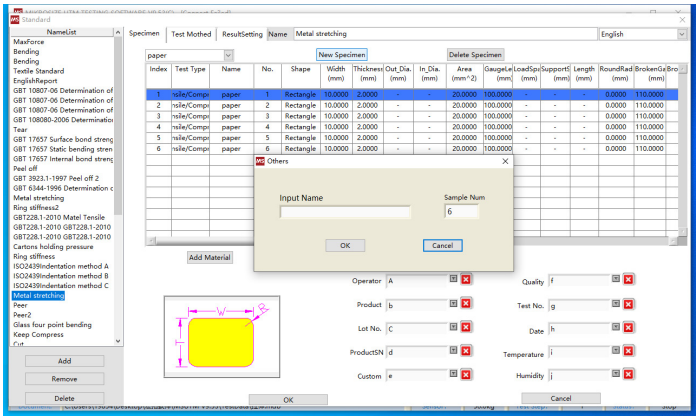


Test Standard

- Before starting the test, it is necessary to select an appropriate standard and set the specimen information.
- Display and set the information of test standards and test samples, including their shape and size, as well as relevant auxiliary information such as testers and specimen materials.



New Standard

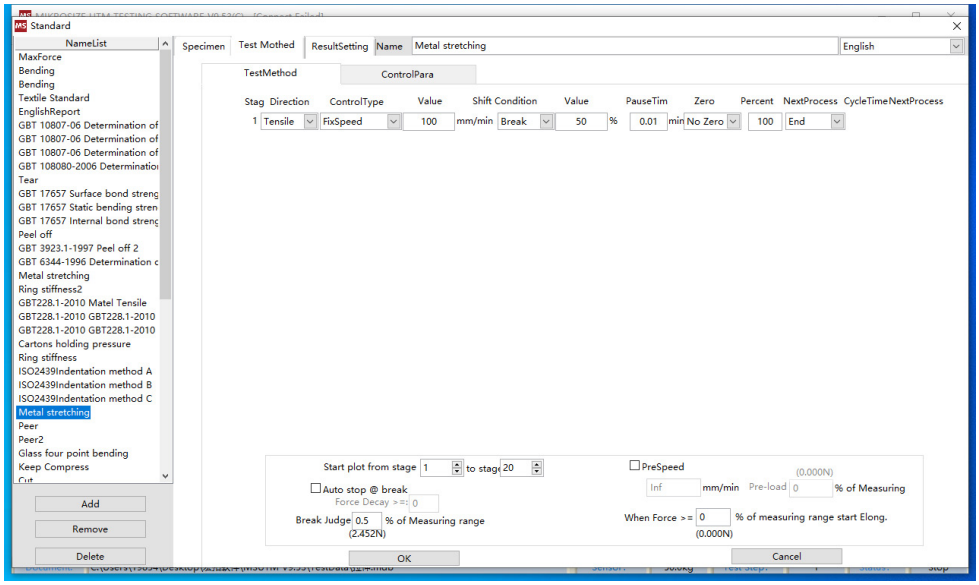


New Specimen

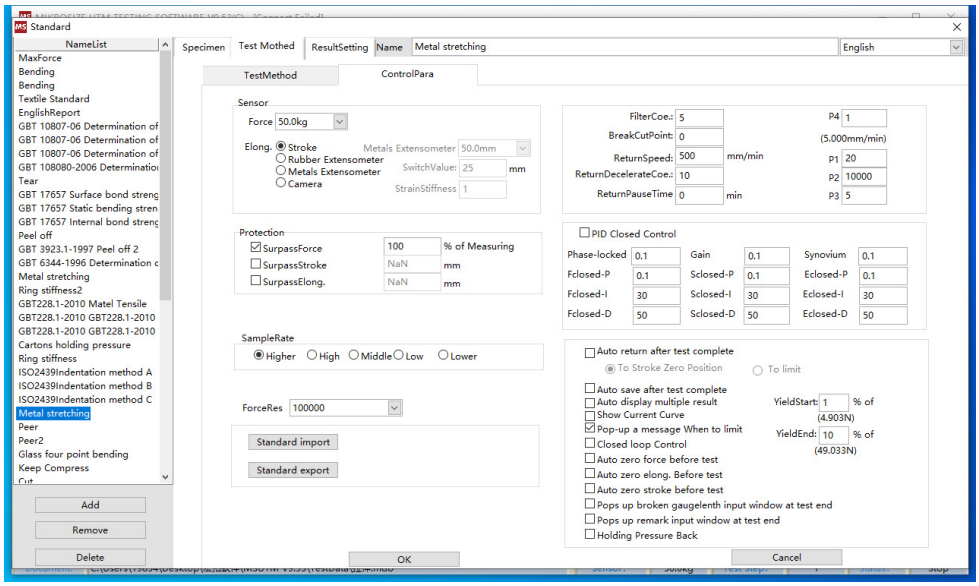
- It is possible to add or delete test standards and specimen information.

Operation Interface

Test Method and Parameter Control



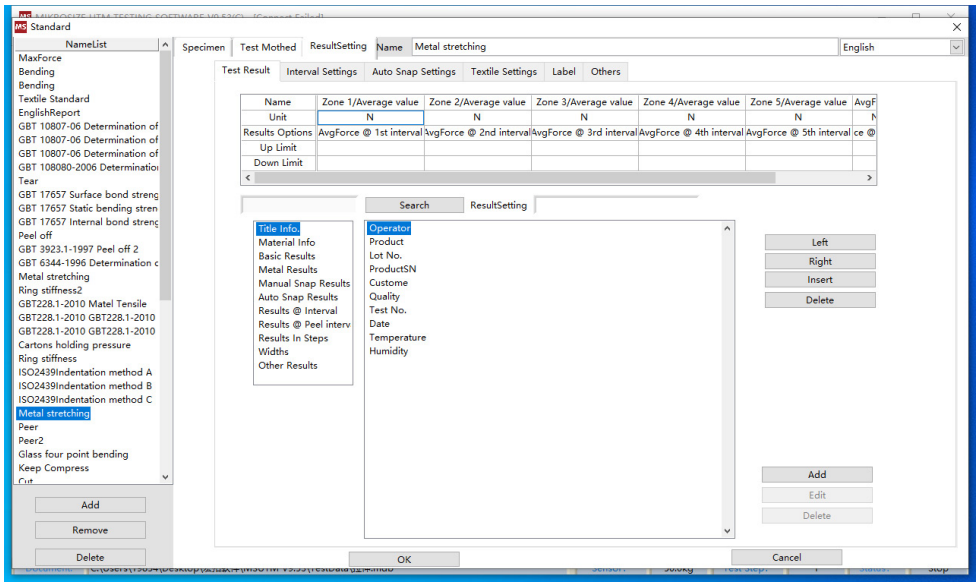
- After selecting the test standard, you can edit the test method. For example, for the tensile standard test method: set the test speed; choose the control mode such as constant deformation, constant speed, or constant stress.
- Also, set the stop conditions, like break point, yield point, or when parameters such as deformation, force, or strain reach the set values.



- Set parameters related to sensors, extension meters, force value resolution, and system control.

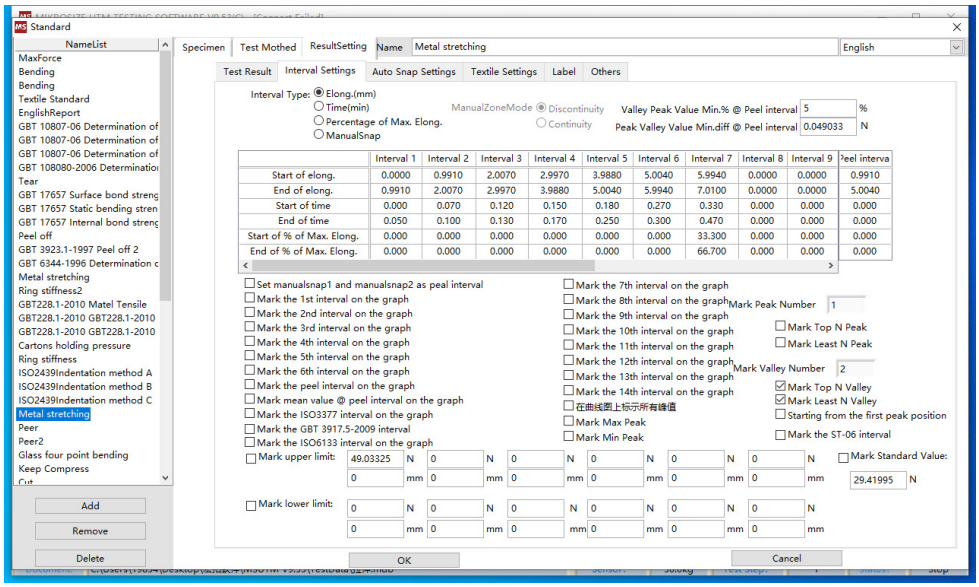
Operation Interface

Select Output Items



- The software classifies all test results into 11 categories for easy retrieval by customers. Users can also customize relevant test results.
- The added items will be displayed in the test report, allowing users to focus on the specific data they need.

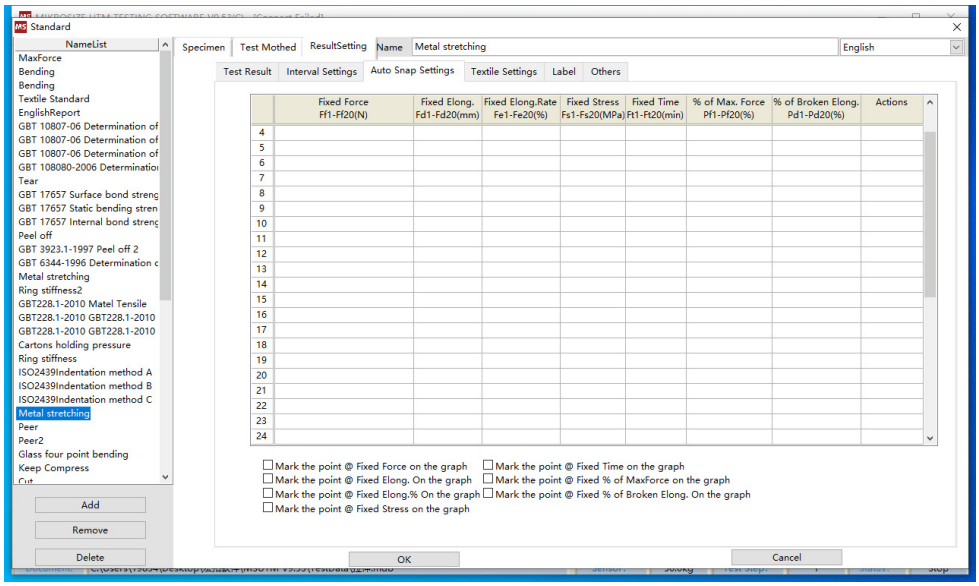
Interval Settings



- It supports three modes of dividing intervals: deformation, time, and deformation percentage.

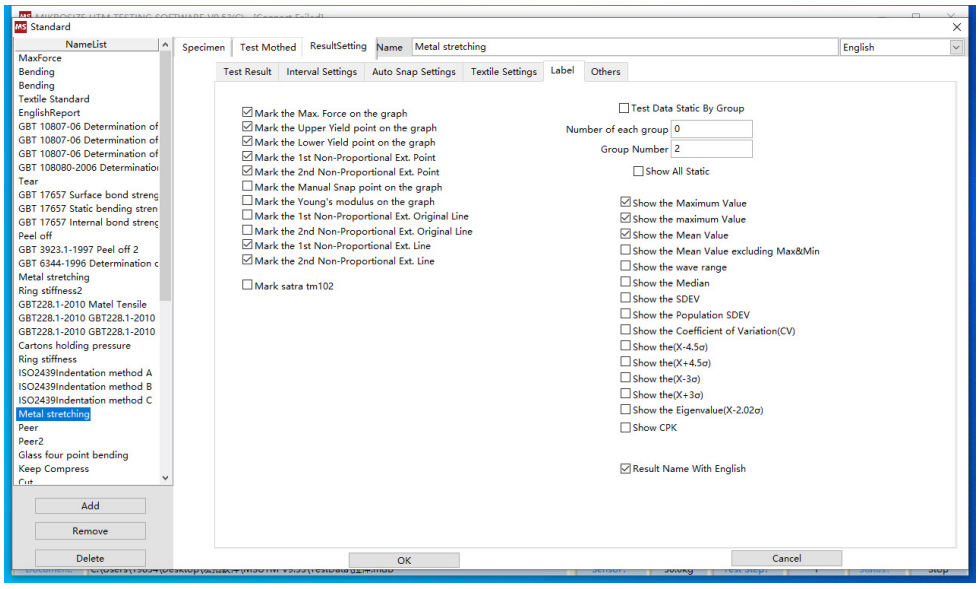
Operation Interface

Auto - Point Selection



- Supports 7 point - selection modes: fixed - force point selection, fixed - deformation point selection, fixed - elongation - rate point selection, fixed - stress point selection, fixed - time point selection, percentage - of - maximum - force point selection, and percentage - of - fracture - deformation.

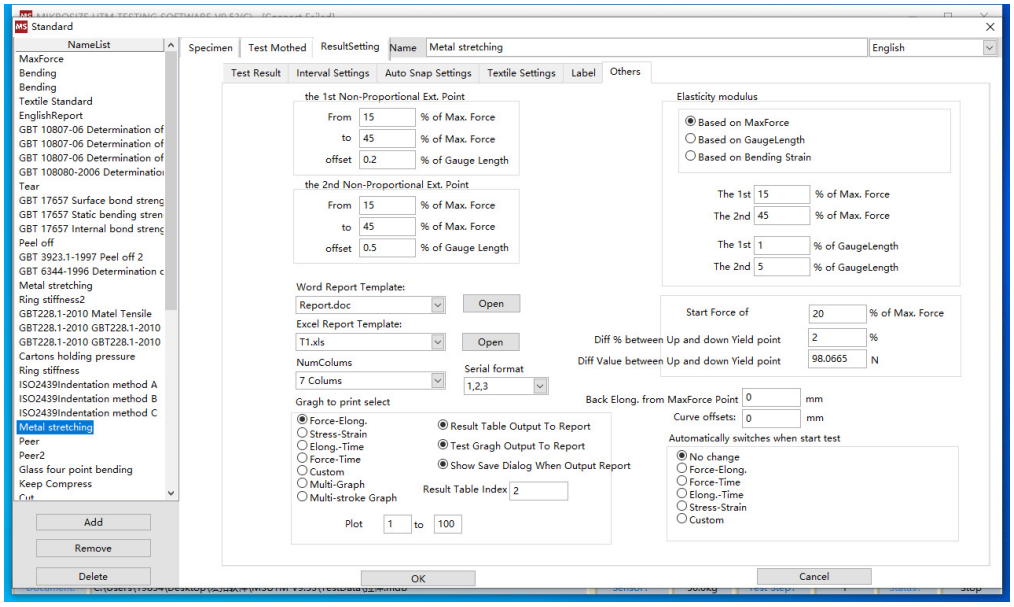
Marking



- Used to set the marking of various characteristic points on the curve, as well as whether to display statistical values such as the maximum value and the average value in the test results.

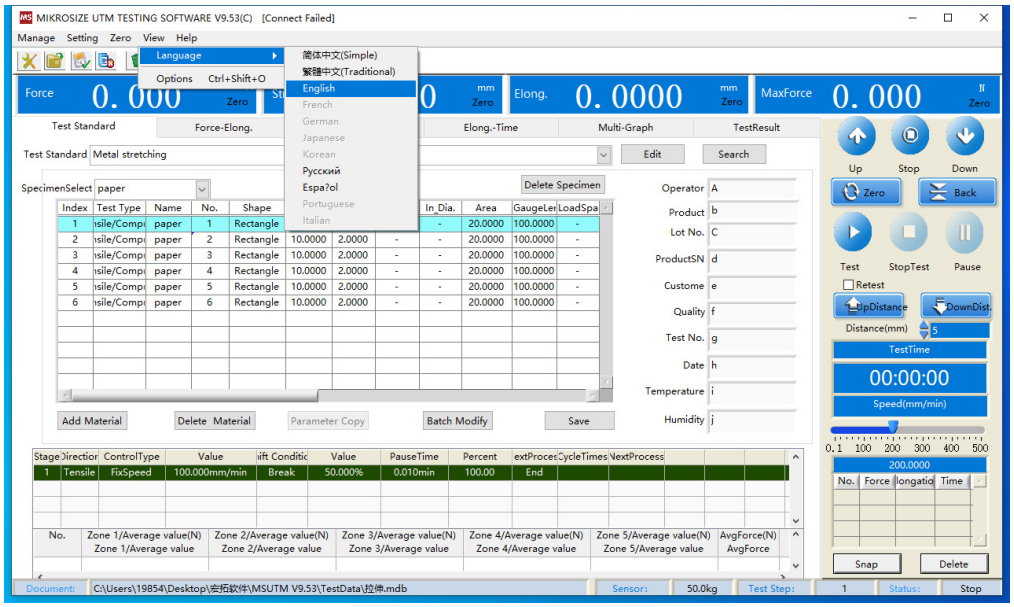
Operation Interface

Others



- Also, make report - related settings, such as the Word and Excel report templates, the selection of graphs to be printed in the report, and whether to output the test result table and graphs in the report.

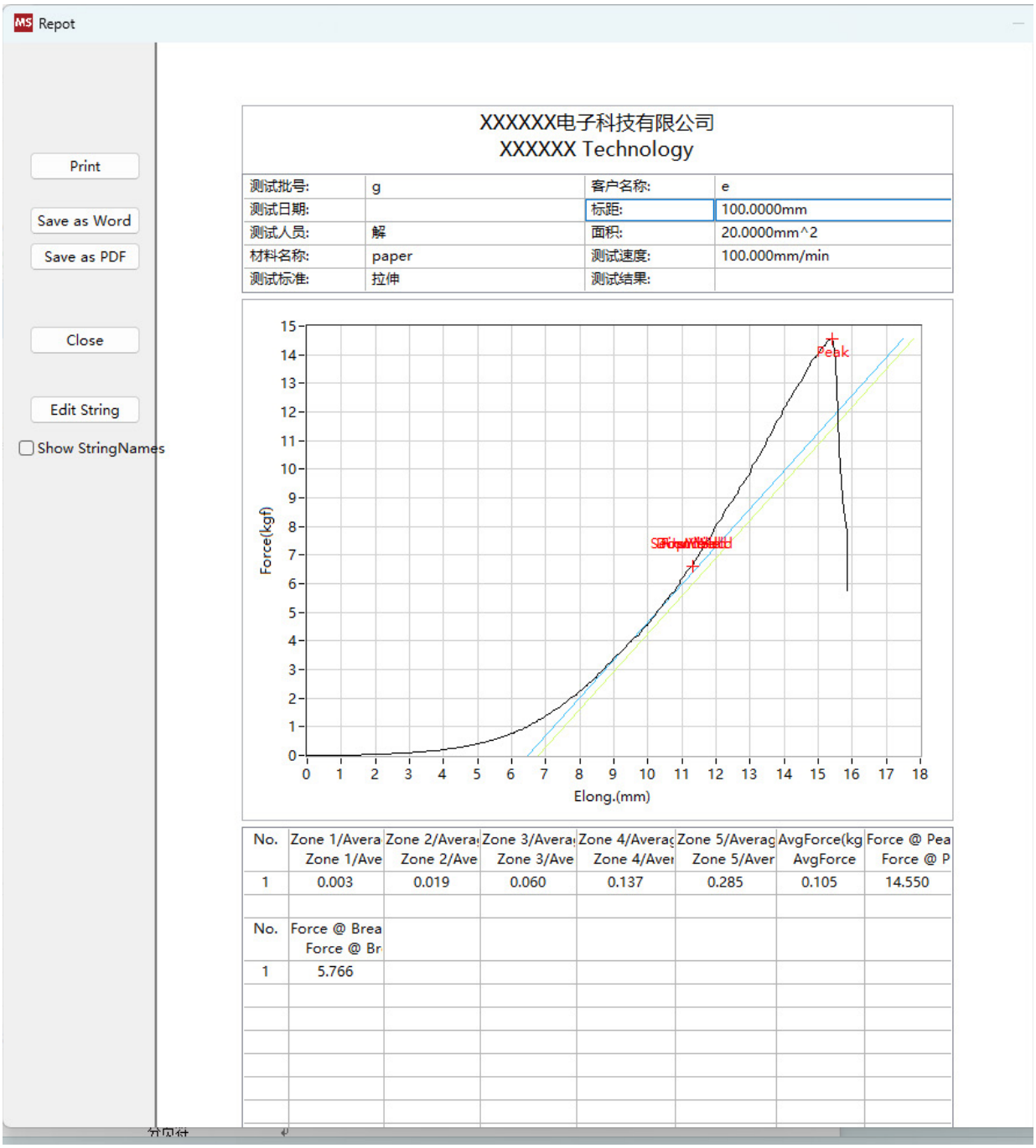
Language Selection



- Supports multiple languages
  Can be customized according to customer requirements.

Operation Interface

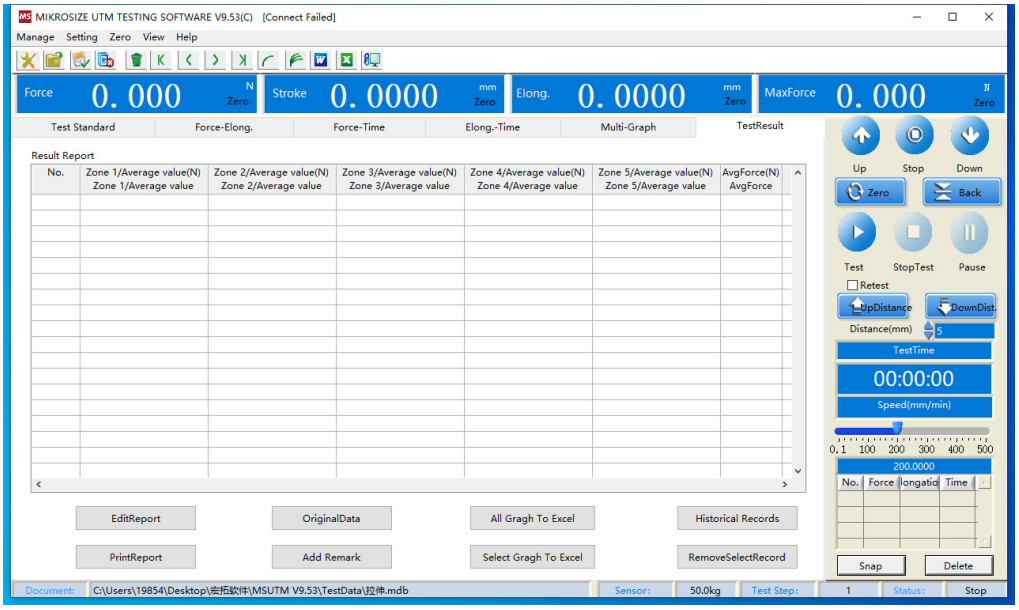
Report Editing

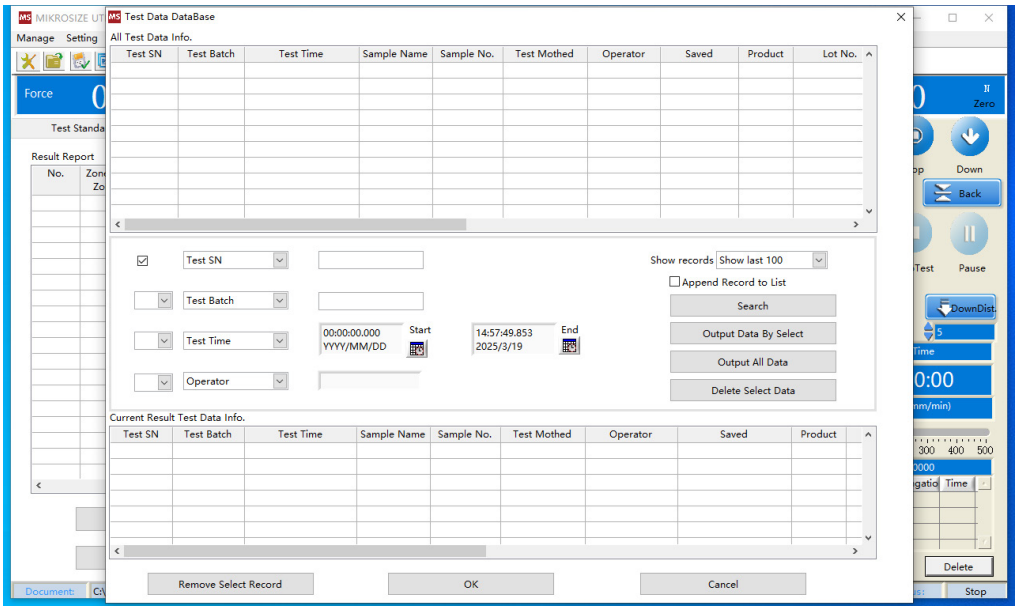


- The software comes with a simple result report, and users can edit the report.
- The output formats are PDF and Word. Users can also choose to output the report through the shortcuts on the top of the software, with options of Word and Excel.

Operation Interface

Data Viewing and Searching

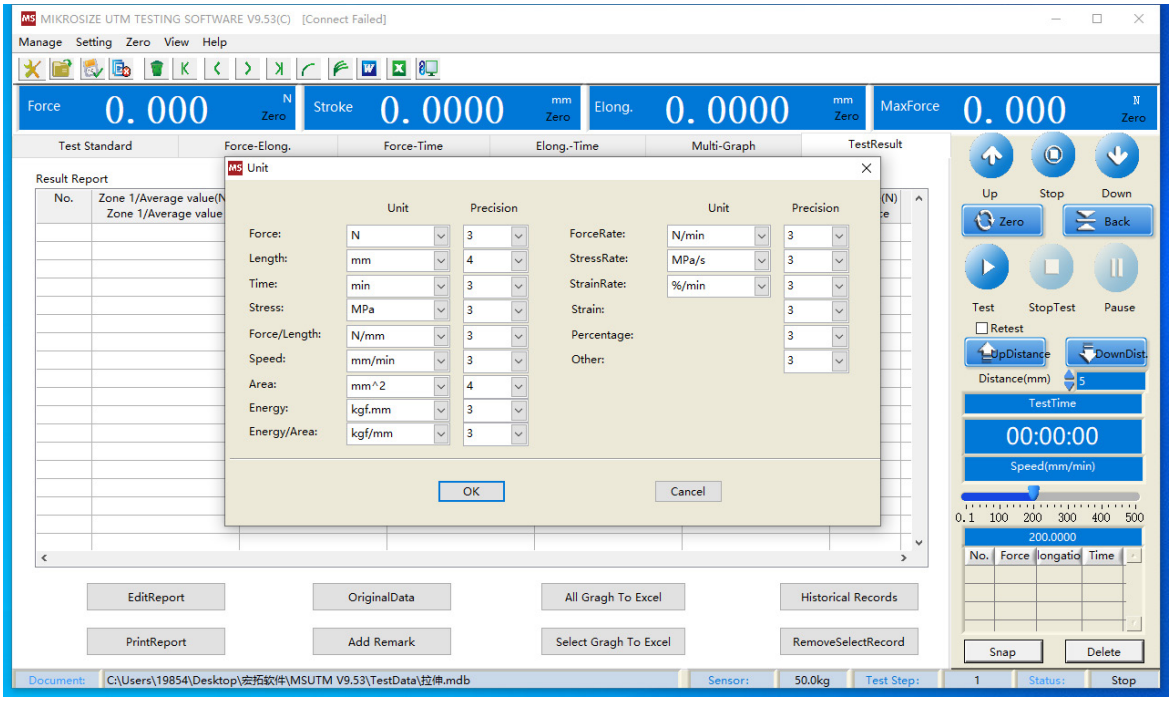




- After the test is completed, view the test data and results on this interface.
- "All Test Data Info" displays all the test data - related information saved in the file, facilitating customers to query and retrieve the data in the file.
- Users can also query the corresponding test data according to the test time, number of times, batch, material, standard, etc., and output the test result report based on the query results.
- "Current Result Test Data Info" shows the test information corresponding to the current output result.

Operation Interface

Units

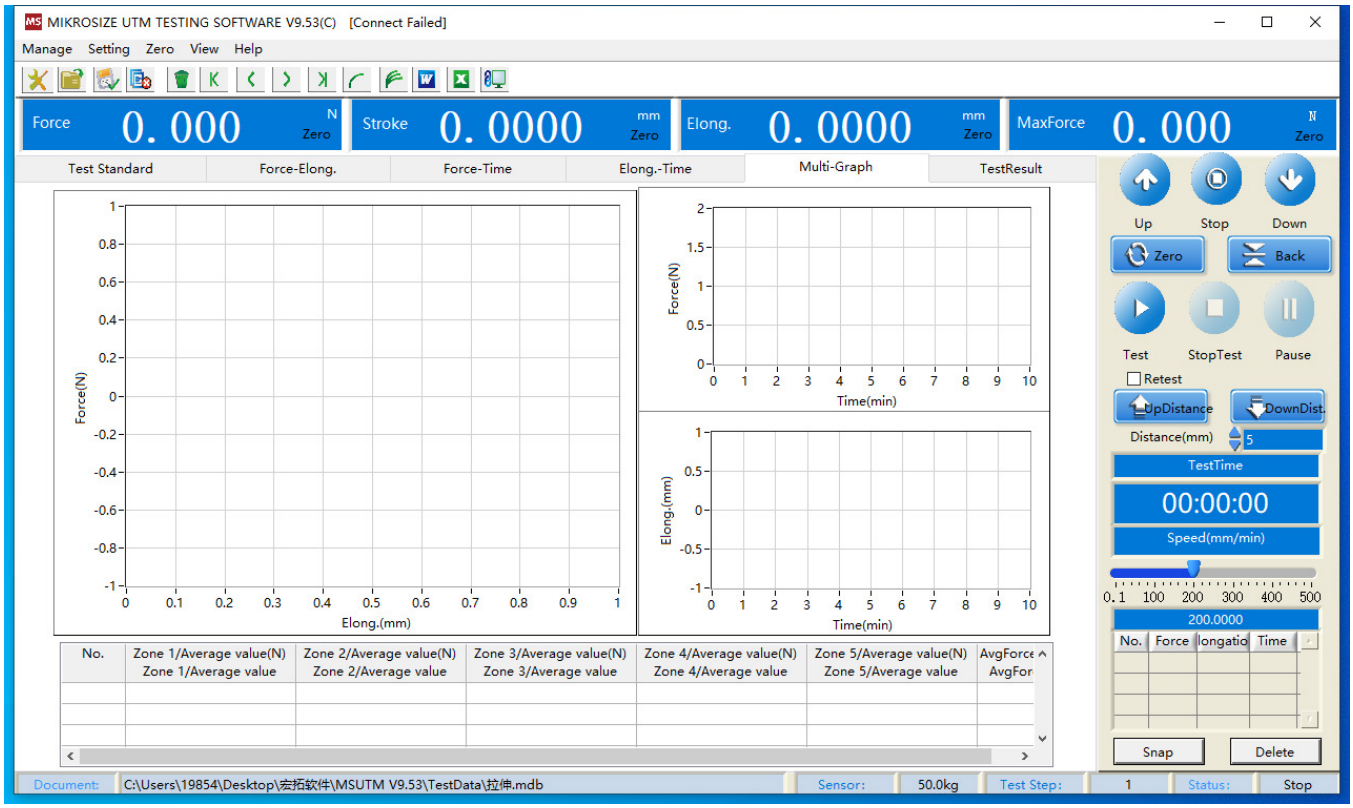


- There are multiple different units available for each parameter.
- Precision represents the number of decimal places.
- The parameter units determine the unit system of the entire system, and all parameter operations are performed based on this unit system.

Force	gf、kgf、N、kN、tf(SI)、lbf、tf(long)、tf(short)、ozf、cN、mN
Length	mm、cm、m、in、km、μm
Time	s、min、h
Stress	Pa、kPa、MPa、GPa、kN/m∧2、N/m∧2、N/cm∧2、N/mm∧2、kgf/m∧2、kgf/cm∧2、kgf/mm∧2、gf/cm∧2、gf/mm∧2、psi、kpsi、lbf/in∧2、lbf/ft∧2、gf/in∧2、gf/m∧2
Force/Length	N/mm、N/cm、N/m、kgf/mm、kgf/cm、kgf/m、gf/mm、gf/cm、kN/m、lbf/in、gf/in、kgf/in、pli、kN/mm、N/in
Speed	mm/min、mm/s、cm/min、cm/s、in/min、in/s
Area	mm∧2、cm∧2、m∧2、in∧2、ft∧2
Energy	kgf.mm、kgf.cm、kgf.m、N.mm、N.cm、N.m、lbf.in、J、kJ、cal、kcal、gf.mm、gf.cm、gf.m
Energy/Area	gf/mm、gf/cm、kN/m、lbf/in、gf/in、kgf/in、pli

Operation Interface

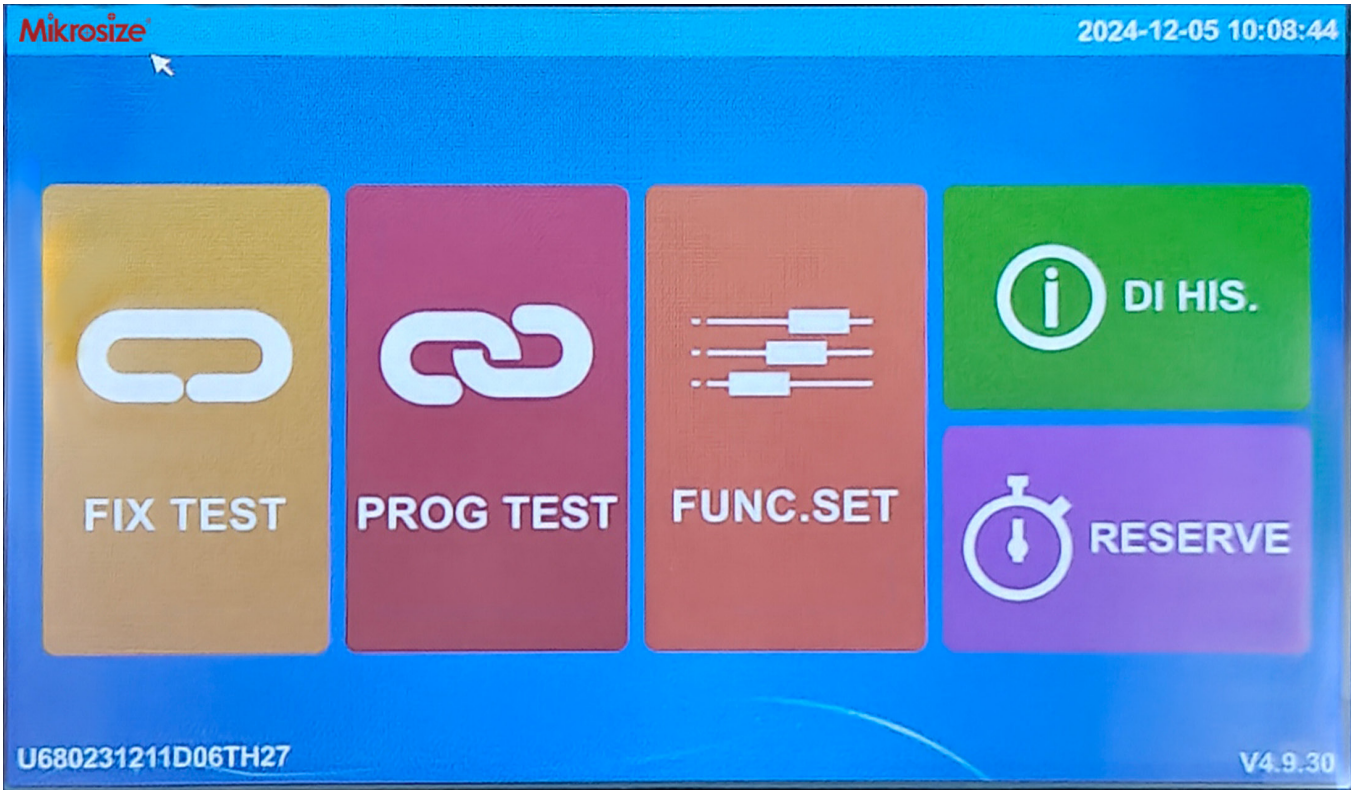
Multi - Graph Mode



- Supports the multi - graph mode, allowing users to view three different - axis curves of the same test simultaneously. This is convenient and intuitive, avoiding the need to switch back and forth.

Operation Interface

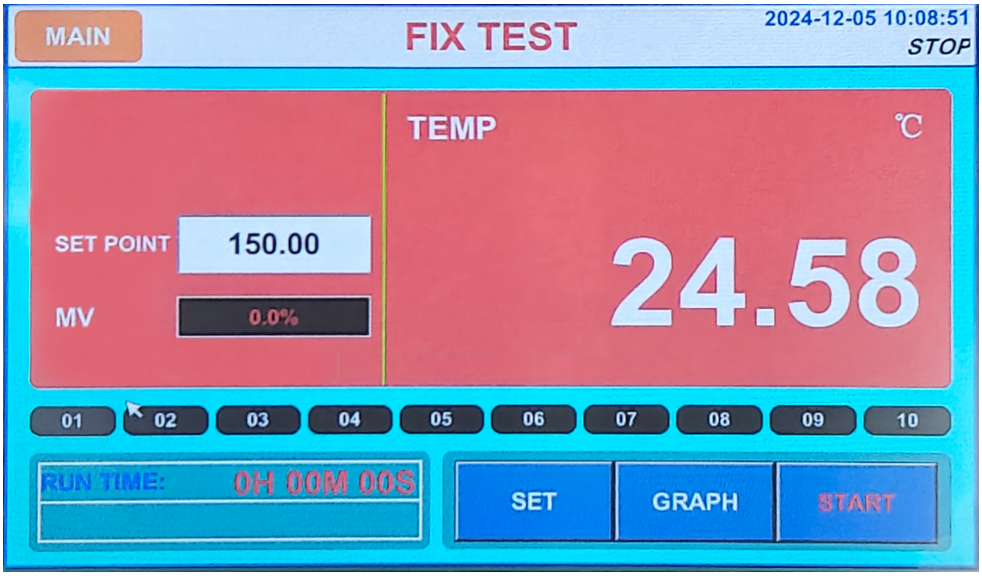
High and Low Temperature Test Chamber Interface



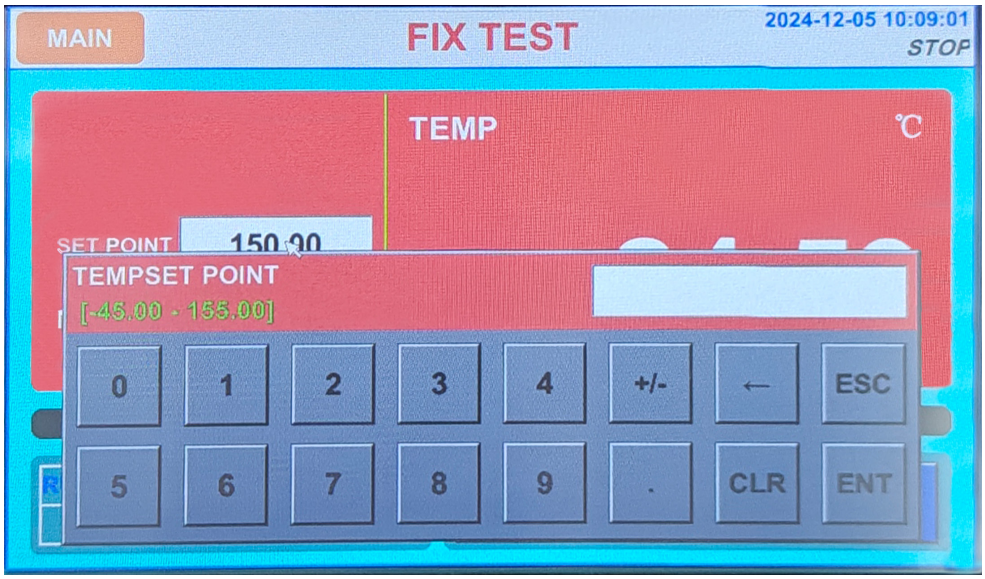
- The high and low temperature test chamber has an integrated structure, with the test chamber body, controller, and refrigeration unit installed separately.
- The controller uses a touch color liquid crystal display screen. The interface layout is clear, and the icons are intuitive, making it easy for users to quickly understand and operate.
- This equipment mainly includes two working modes: fixed value experiment and programmed experiment.

Operation Interface

Fix Test



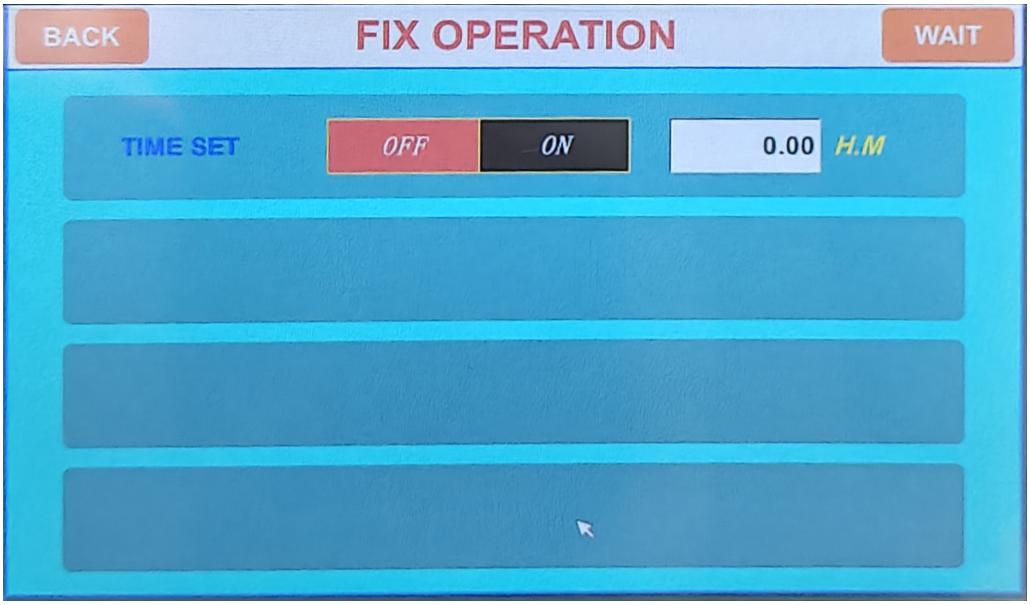
- When the fixed value experiment is selected, the target set temperature and humidity will not change after they are reached during the experiment process.
- This interface mainly includes:
- Display the current temperature value, the set temperature value; display the running time of the current experiment.
- The setting menu and the curve menu.
- The operation and stop buttons of the equipment.



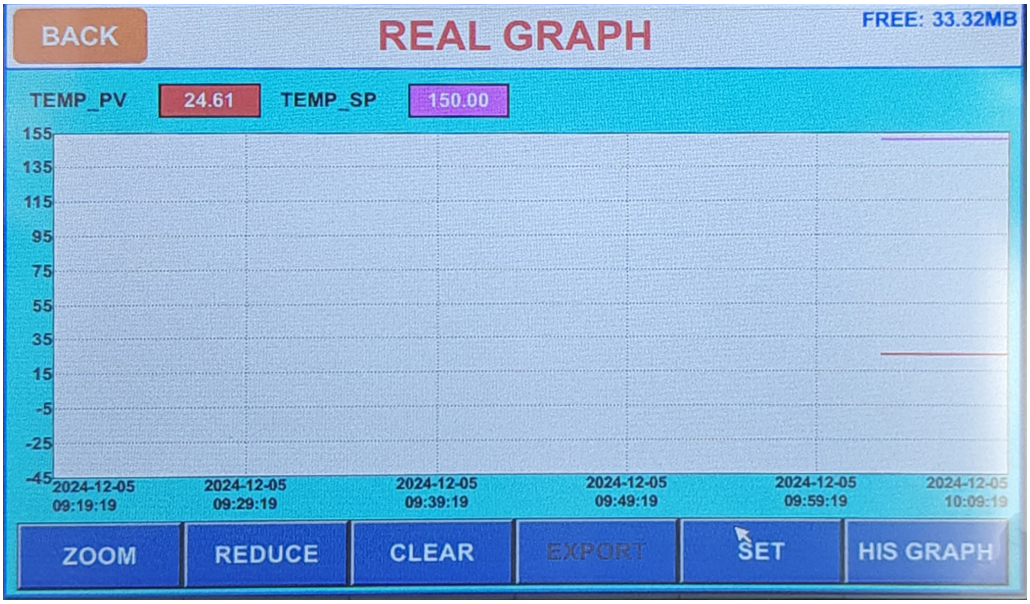
- Click on the temperature parameter, and a numeric keypad will appear. Users can enter the required temperature (within the temperature range allowed by the equipment).

Operation Interface

Fix Test



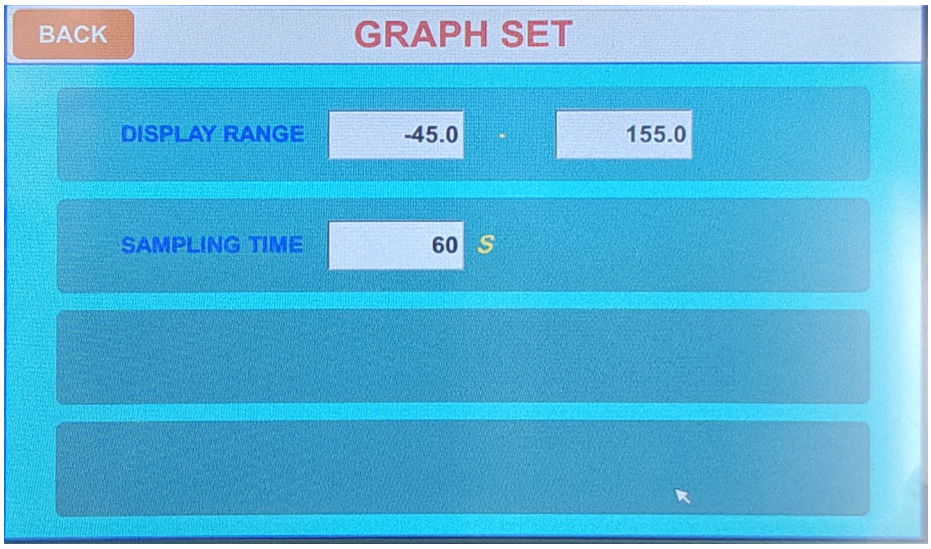
- On this interface, users can turn on the timed operation function. After turning it on, the required experiment running time can be entered on the right side. In the off state, the fixed value experiment will keep running until the experiment stop button is clicked.



- This interface will display the temperature change curve over time in real time. The curve can be zoomed in and out through the buttons at the bottom of the screen. The curve data can only be exported by inserting a USB flash drive, and the exported data format is an Excel document.

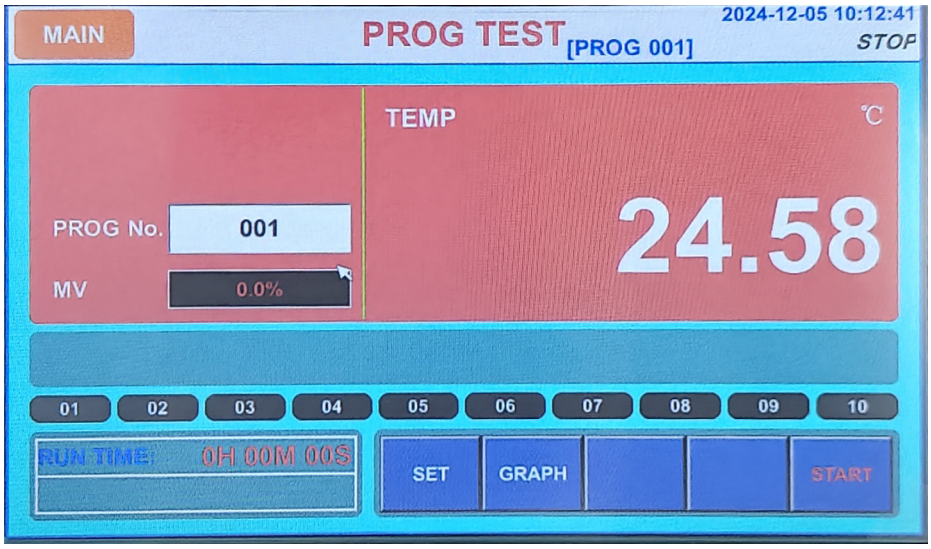
Operation Interface

Fix Test



- The display range is used to set the scale range of the curve.
- The sampling period is used to set the sampling time of the test data sampler, and the unit is seconds.
- (The curve setting part is exactly the same for both modes, and the curve part of the programmed experiment will not be described again.)

Prog Test

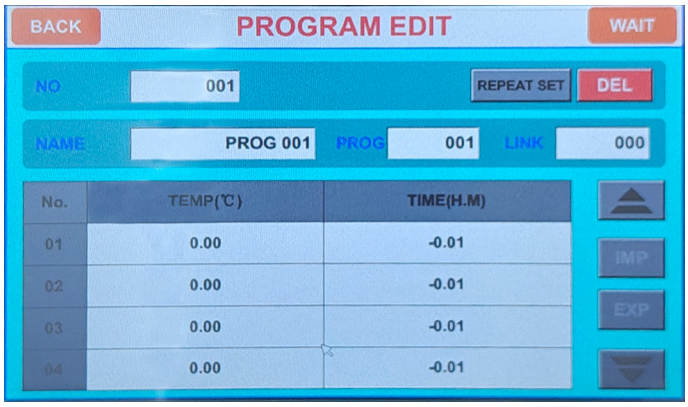


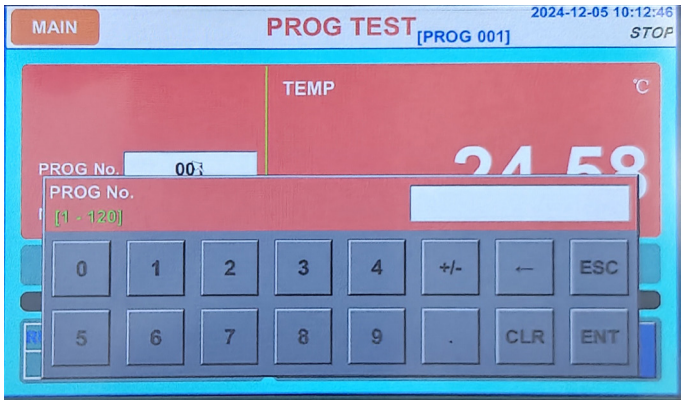
- The programmed experiment is a highly automated test mode that allows users to set multiple temperature stages according to the test requirements, as well as the duration and temperature rise/fall rate of each stage. During the experiment process, the target set temperature of each stage can be changed, and the equipment will operate automatically according to these settings to complete the entire test process.

Operation Interface

Prog Test

- After entering the program setting interface, the target temperature during the test process needs to be set first. When entering the target temperature, appropriate high and low temperature values should be selected according to the test requirements.

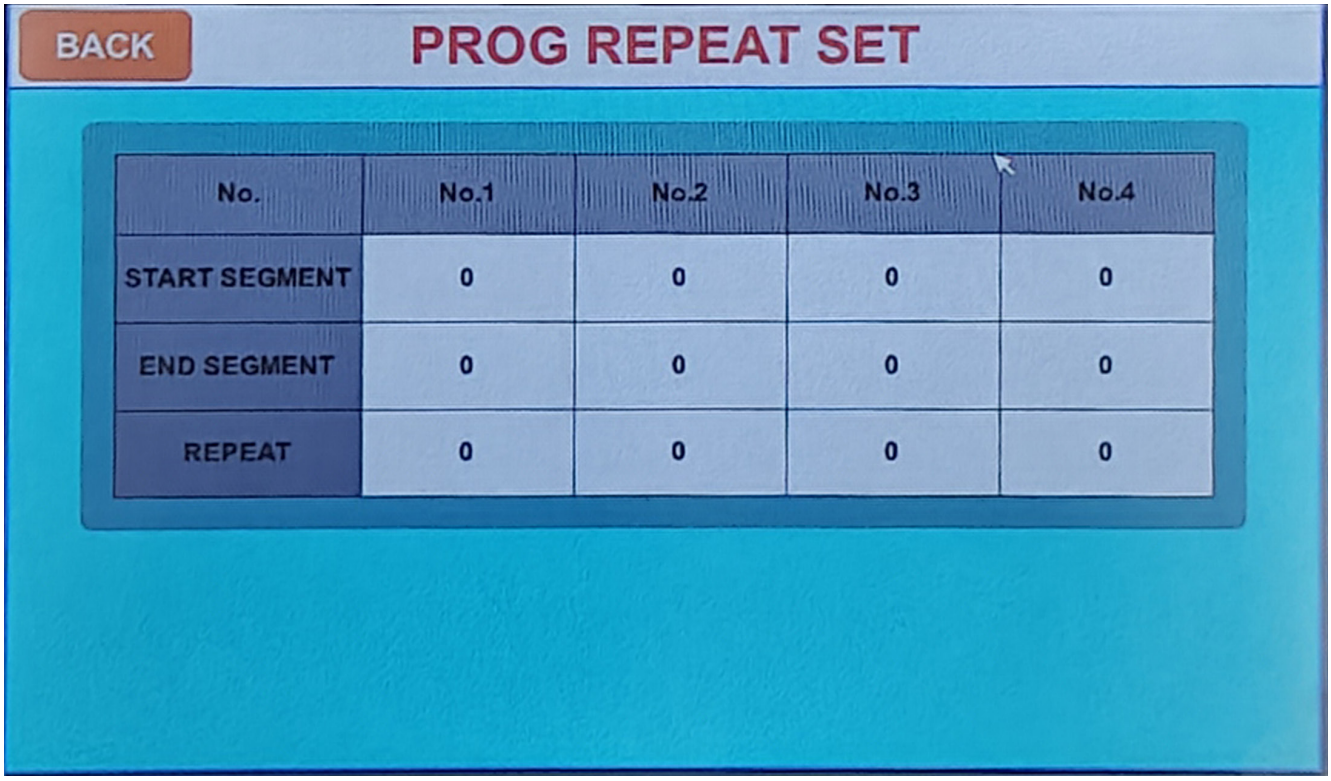




- Users can set multiple programs with different temperature points and experiment times. This equipment supports a maximum of 120 groups of programs.

Operation Interface

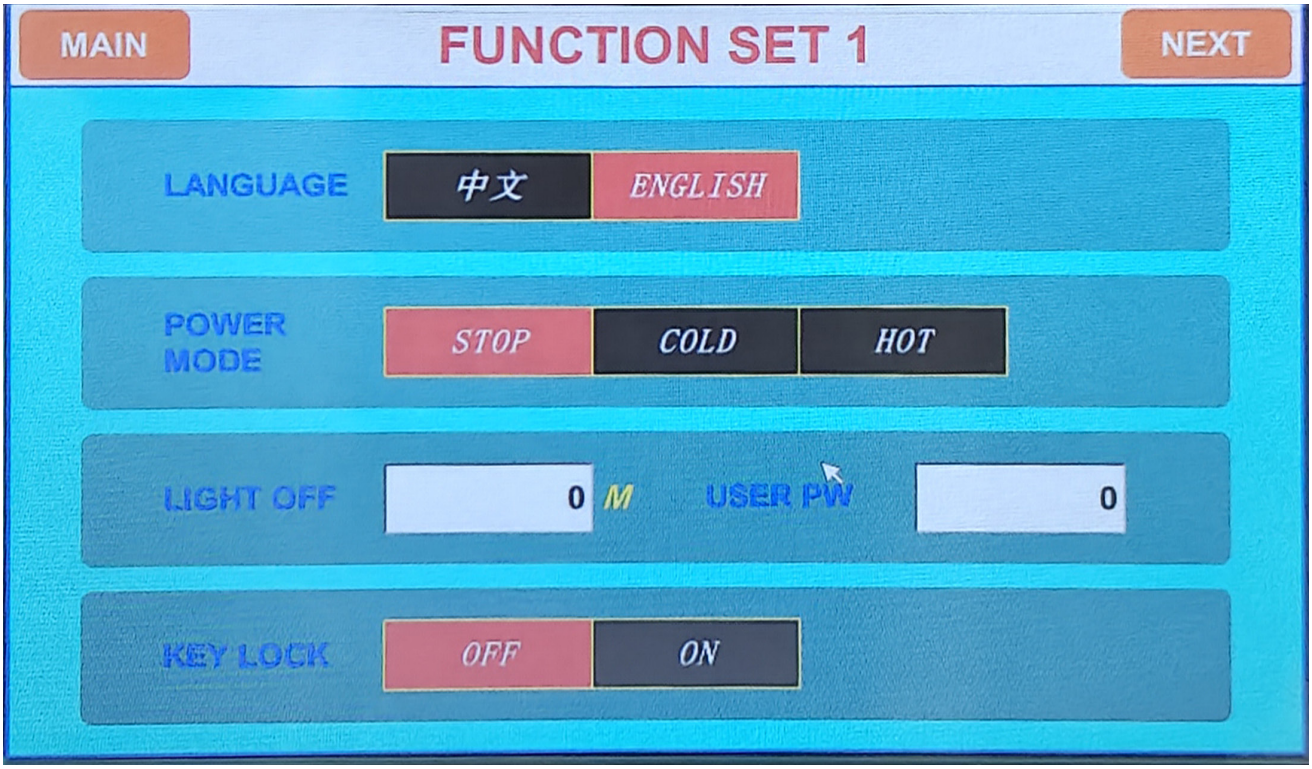
Prog Test



- Settings for partial segment loop parameters. When setting a partial loop, the following points need to be noted:
- The start and end segment numbers cannot exceed the maximum segment number within the current program
- The start segment number cannot be greater than or equal to the end segment number
- If the end segment number is not 0, the start segment number cannot be set to 0 either
- If this partial loop is not used, please set both the start and end segment numbers to 0, and the number of loops to 0
- If this partial loop is used, that is, the start and end numbers are not 0, the minimum number of times to set is 1.

Operation Interface

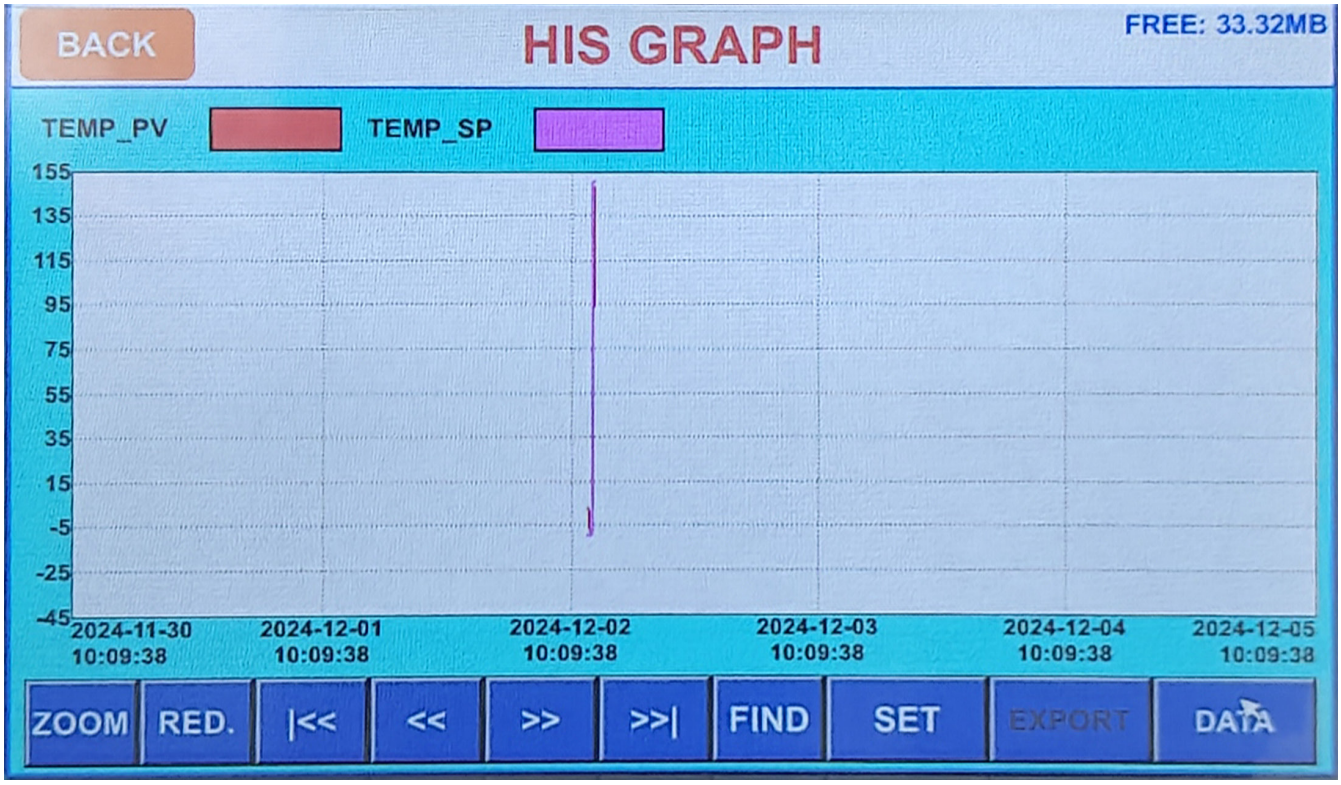
Operation Settings

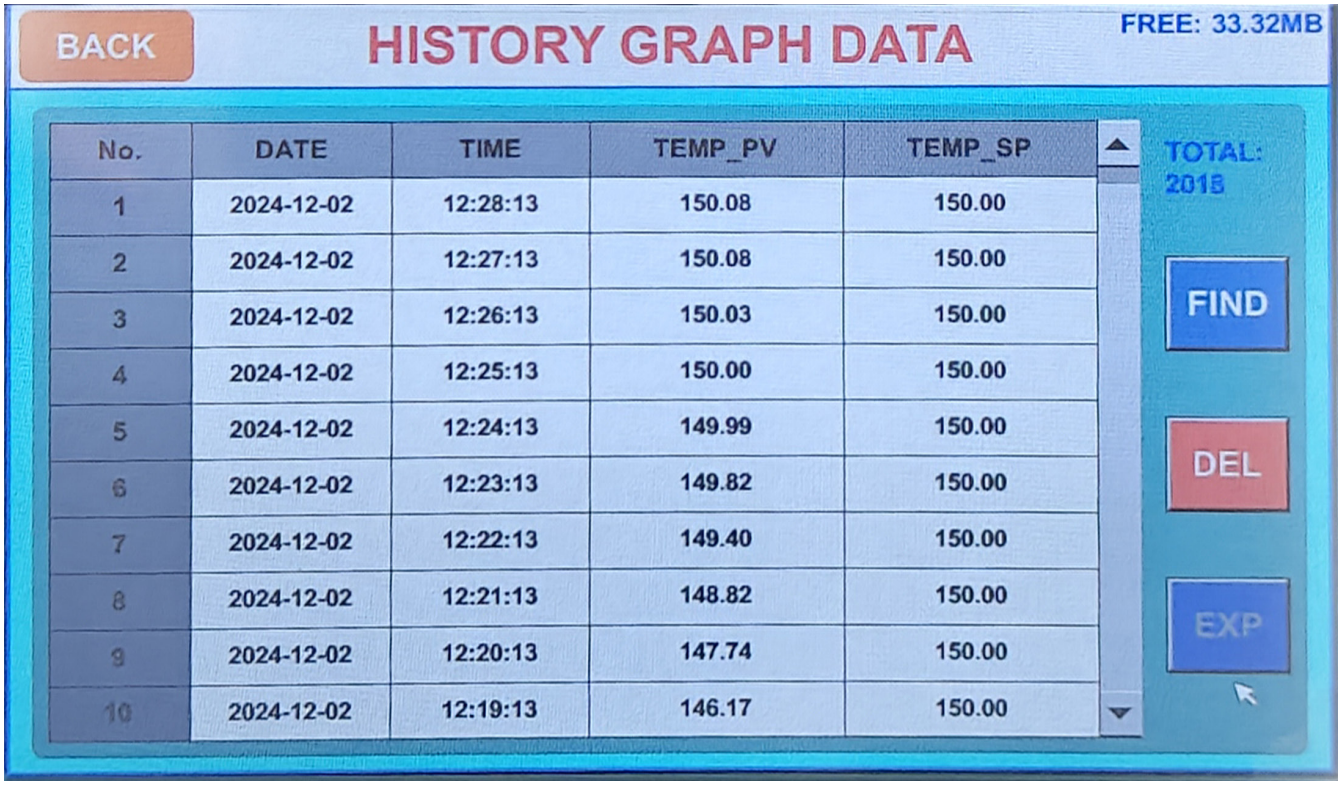


- Language selection, which can be either Chinese or English
- Selection of the startup mode, which is divided into three types: stop, cold start, and hot start
- Stop: An operation that restores the state to the operation stop state when the power is restored after a power outage during operation
- Cold start: An operation that restarts the operation when the power is restored after a power outage during operation.
- Hot start: An operation that restores the state to the state before the power outage when the power is restored after a power outage during operation.
- Backlight time setting. Setting it to 0 means it will never turn off
- Setting the user password
- Lock button. When the lock is on, all parameter (PARAMETER) settings cannot be used

Operation Interface

Historical Curves and Data

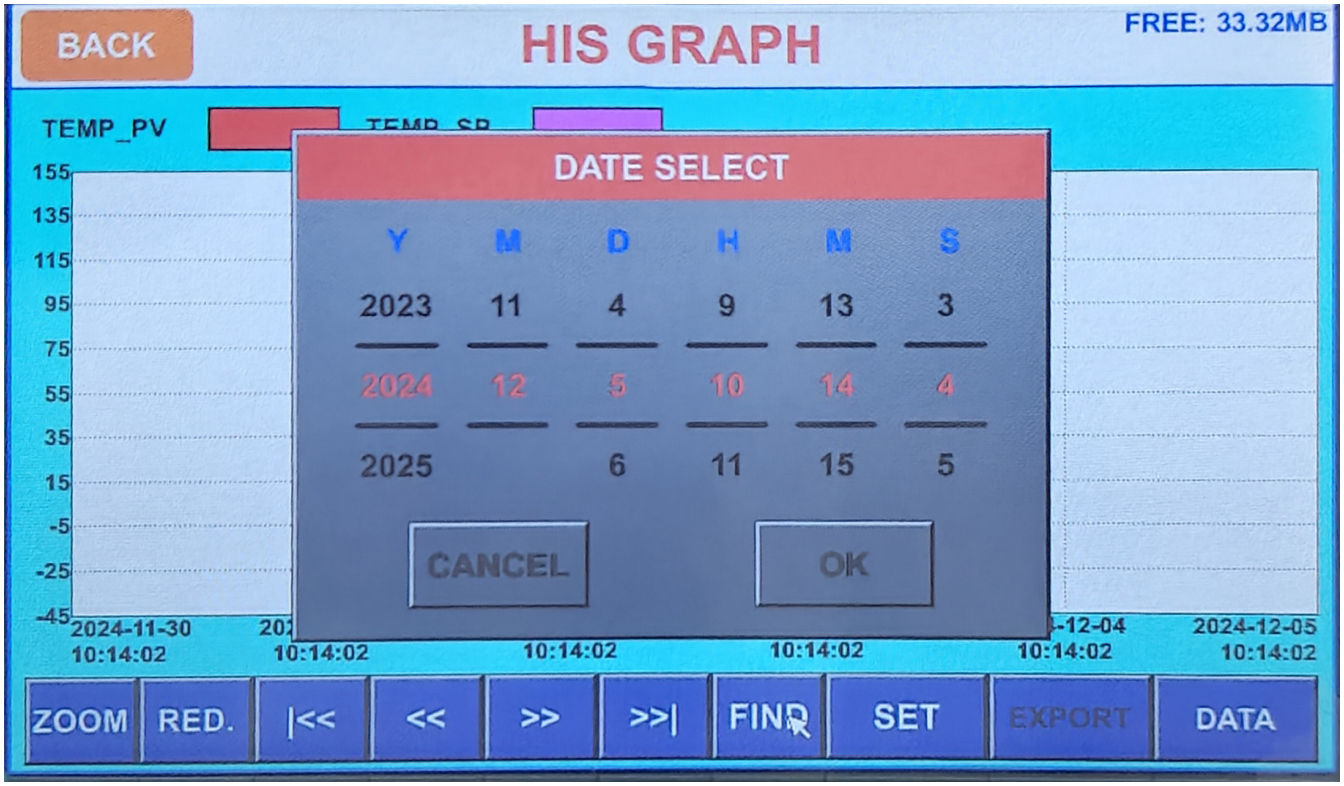




No.	DATE	TIME	TEMP_PV	TEMP_SP
1	2024-12-02	12:28:13	150.08	150.00
2	2024-12-02	12:27:13	150.08	150.00
3	2024-12-02	12:26:13	150.03	150.00
4	2024-12-02	12:25:13	150.00	150.00
5	2024-12-02	12:24:13	149.99	150.00
6	2024-12-02	12:23:13	149.82	150.00
7	2024-12-02	12:22:13	149.40	150.00
8	2024-12-02	12:21:13	148.82	150.00
9	2024-12-02	12:20:13	147.74	150.00
10	2024-12-02	12:19:13	146.17	150.00

Operation Interface

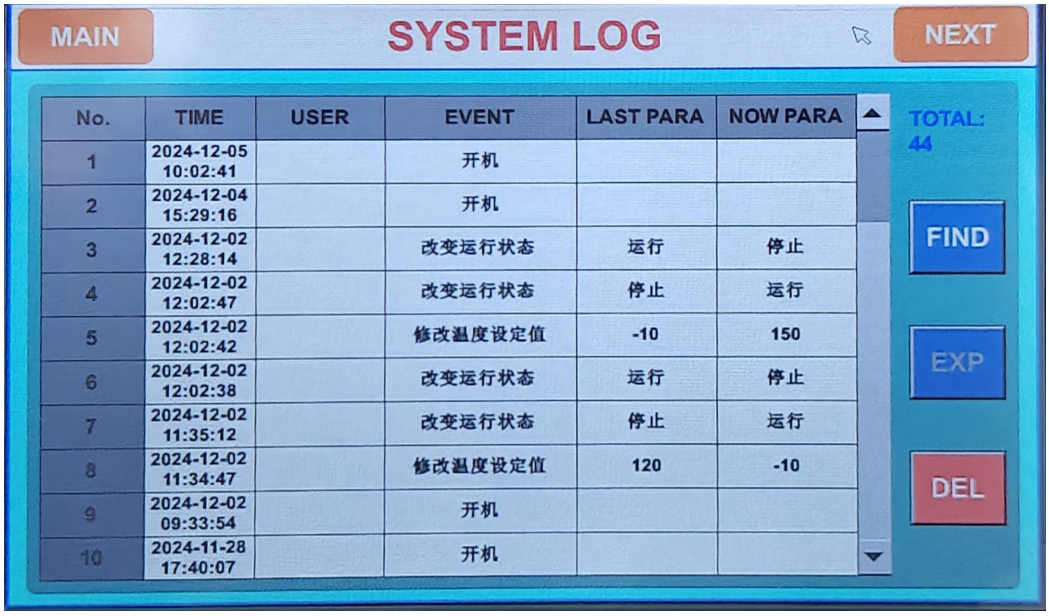
Historical Curves and Data



- On this interface, users can view and search for historical curves. The curves can also be zoomed in and out and moved left and right.
- Historical curves can be searched according to the time and date.
- Click on "Data View" to view the historical data. The data will display the preset temperature and actual temperature at different times. The data can also be exported using a USB flash drive.

Operation Interface

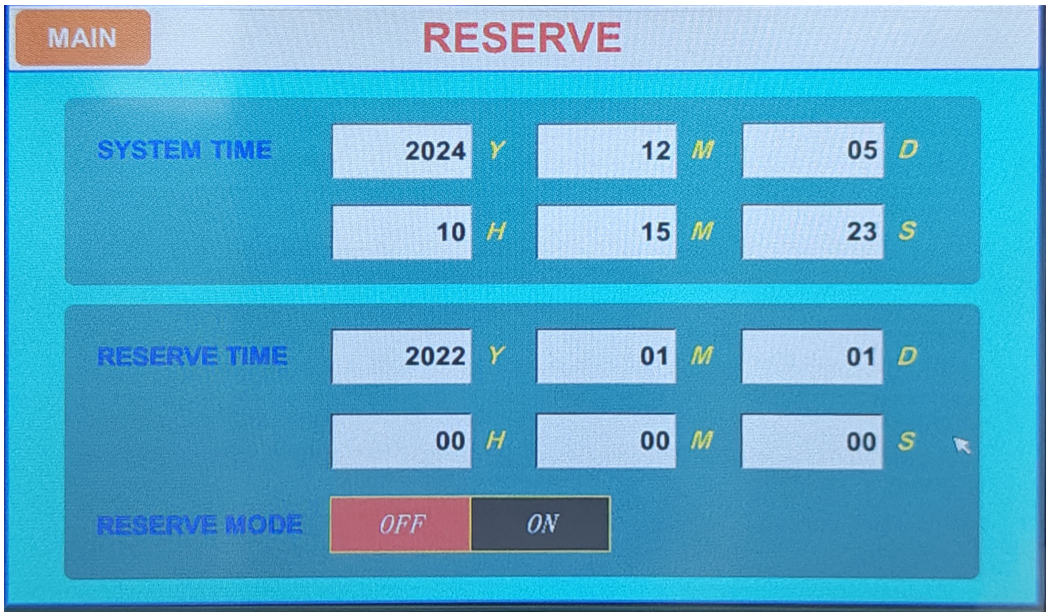
System Log



No.	TIME	USER	EVENT	LAST PARA	NOW PARA
1	2024-12-05 10:02:41		开机		
2	2024-12-04 15:29:16		开机		
3	2024-12-02 12:28:14		改变运行状态	运行	停止
4	2024-12-02 12:02:47		改变运行状态	停止	运行
5	2024-12-02 12:02:42		修改温度设定值	-10	150
6	2024-12-02 12:02:38		改变运行状态	运行	停止
7	2024-12-02 11:35:12		改变运行状态	停止	运行
8	2024-12-02 11:34:47		修改温度设定值	120	-10
9	2024-12-02 09:33:54		开机		
10	2024-11-28 17:40:07		开机		

- This interface will display in detail the events that occur in the controller as well as the parameter events before and after modification according to the time.

Reservation Settings



- This equipment has a reservation setting function. After turning on this function on this interface, the equipment will operate automatically at the reserved time set by the user, enabling unattended operation.

Technical Specification

Model		UTM-DCT						
Name		High And Low Temperature Electronic Universal Testing Machine						
Subdivision Model		UTM-DCT-5	UTM-DCT-10	UTM-DCT-20	UTM-DCT-50	UTM-DCT-100	UTM-DCT-200	UTM-DCT-500	UTM-DCT-1000
Capacity	**KN**	0.05	0.1	0.2	0.5	1	2	5	10
	KG	5	10	20	50	100	200	500	1000
	lb	11	22	44	110	220	440	1102	2204
Force Unit		G、Kg、lb、N、KN							
Displacement Unit		Inch cm mm							
Testing Machine Class		Class 0.5							
Effective Test Force		0.2%～100%FS							
Force Accuracy		Within ±0.5% of Indication Value							
Force Resolution		1/500000							
Displacement Resolution		≤0.05μm							
Displacement Accuracy		Within ±0.5% of Indication Value							
Deformation Measurement		0.2%～100%FS							
Deformation Indication Accuracy		Within ±0.5% of Indication Value							

Mikrosize®

Technical Specification

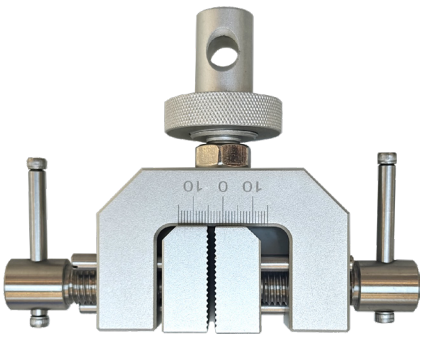
Maximum Test Speed	500mm/min; optional up to 1000mm/min
Minimum Test Speed	0.01mm/min
Speed Accuracy	Within ±0.5% of Indication Value
Crossbeam Stroke	No - fixture test stroke:1330mm; Test stroke with fixture: 800mm
Effective width	750mm
Fixture Configuration	One set of film stretching fixtures, one set of 180-degree peeling fixtures
Return Method	Manual, Automatic
Stop Method	1.Automatically stop at the maximum fracture value 2.Stop when the upper and lower limit safety settings are reached
Safety Device	1.Mechanical travel switch protection 2.Emergency stop switch for emergency braking
Overload Protection	When reaching 100% of the maximum load, the machine automatically stops for protection
Power Supply Voltage	220V.AC/ 50HZ Can be selected as 110V.AC/60Hz according to the country)
Machine Size/Weight	Model with base: L * W * H: 800mm * 750mm * 2100mm / about 205KG

Technical Parameters Of High And Low Temperature Test Chamber

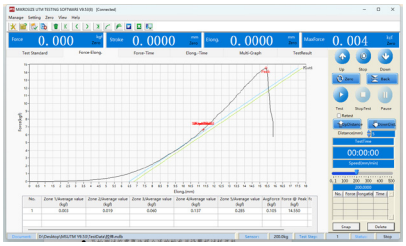
Studio Size	400×400×700(mm) （D×W×H） The size can be customized according to the equipment.
External Dimension	600×1380×1640(mm) （D×W×H） The size can be customized according to the equipment.
Temperature Range	-20℃～+150℃
Temperature Change	Heating： -20℃～+150℃ 1～3℃/MIN
	Cooling：0℃～-20℃ 1℃/MIN
Control Accuracy	≤±1℃
Temperature Fluctuation	≤2℃
Temperature Uniformity	≤2℃
Humidity Range	20%～98%R.H.
Humidity Fluctuation	±3%R.H.
Cooling Method	Compression refrigeration

Φ80*2There are corresponding Φ80*2 holes on the upper and lower surfaces of the box

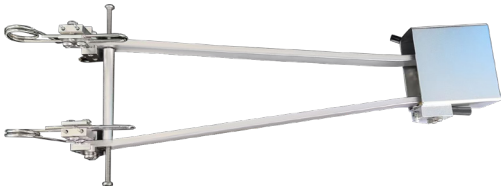
Standard Delivery

Name	Qty	Photo
Main Unit Universal Testing Machine + High And Low Temperature Test Chamber）	1 pc	
Film Stretching Fixtures	1 set	
180 Degree Peel Fixture	1 set	
Power Cord	2 items	

Standard Delivery

Name	Qty	Photo
Testing Software	1 set	
Data Cable	1 item	
Instruction Manua	1 each	
Warranty Card	1 each	
Product Certificate	1 each	

Optional Delivery

Name	Photo
Small Deformed Extensometers	
Large Deformation Extensometer	
Printer	
Computer	
Splash Prevention Device (Protective Door)	