

To provide the most professional laboratory equipment for customers all over the world

# Product Introduction

**HZ-1007A**





# Table of Contents

	<b>Technical Parameters</b> .....	1
1	<b>Brief introduction</b> .....	2
	1.1 Main purpose and scope .....	2
	1.2 Main features .....	2
	1.3 Normal operating conditions .....	2
	1.4 Main specifications and technical parameters .....	2
2	<b>Operation Guide</b> .....	3
	2.1 Interface directly into the test after boot.....	3
	2.2 Sample information.....	4
	2.3 Test Information.....	6
	2.4 Auxiliary information (1).....	7
	2.5 Auxiliary information (2).....	8
	2.6 View Interface.....	9
	2.7 Test Results.....	9
3	<b>Calibration</b> .....	11
	3.1 Force Sensors.....	11
	3.2 Displacement Sensor.....	12
	3.3 Speed.....	13
	3.4 System Settings.....	14



## Technical Parameters

Model	HZ-1007A
Capacity	50KG
Accuracy of load measurement	The load cell +TM 2101 screen $\pm 0.5\%$ (full range of 5% -100%)
Units	Kg、Lb、N,Ton (can be exchanged)
Resolution	1 / 50000
Displacement resolution	0.001mm
Power system	AC motor,deceleration device ( from Italy )
Control system	Testing speed 50~300 mm/min with step less speed and 5 fixed-speed ( 50,100 , 200 , 250,300 ) or the needs of customer
Data sampling frequency	200times/sec
Effective testing width	120cm (can be widened according to customers' requirement)
Safety devices	Overload, emergency stop devices, limited devices of displacement,leak current protection device
Power	400W(depending on different demand of force using different motor)
Machine size	45×55×140cm (length * width * height)
Weight	About 150KG
Power supply	AC 220V single-phase



## 1. Brief Introduction

### 1.1 Main Purpose and Scope of Use

This measurement and control system designed for tensile machine, pressing machine, electronic universal material testing machine and developed. Is suitable for the determination of various materials on the tensile, compression, bending, shear, tear, peel, piercing conditions related to the mechanical properties and physical parameters.

### 1.2 Main Features

The measurement and control system core components imported the latest ultra-precision 24 AD, the sampling rate of 400 times / sec full, regardless of file resolution of 300,000 divisions. 6:00 Calibration and use technology to further improve accuracy, so that the power of acquisition accuracy meet the national standards. No displacement error of plus or minus count. 7-inch TFT color touch screen, direct input test parameters, the English interface layers prompt, the user can easily operate without an operator's manual. It may also be via RJ45 network interface communicates with PC, coupled with a dedicated professional TM2100Pro deluxe edition monitoring software, real-time display force - displacement, force - time, displacement - time, stress - strain curve, automatic calculation of the maximum force, yield strength , average power, maximum deformation, yield point, elastic modulus and other parameters, and has flexible report editing and printing capabilities.

Flexible output control mode, pulse output can be configured to control the servo motor or 0 ~ 10V output voltage controlled variable frequency motor stepless, there is another rise, stop and drop relay output can be used to control a DC motor or pneumatic, such as hydraulic power unit.

### 1.3 Normal Operating Conditions

- ★ in the range of 0 ~ 55 ° C;
- ★ relative humidity less than 80%;
- ★ Power 220 ± 10% VAC, frequency 50Hz;
- ★ away from strong electromagnetic interference.

### 1.4 Main Specifications and Technical Parameters

- ★ force differentiate force: 100000, sampling frequency 400 times / sec;
- ★ force accuracy: ± 0.1% of indicated value (20 ~ 100% FS);
- ★ force sensor type: 1mV / V, 2mV / V, 3mV / V, 4mV / V, 8mV / V, 9.6mV / V;
- ★ for the force sensor range: 1 ~ 1000000N
- ★ extensometer differentiate force: 100000, sampling frequency 50 times / sec;



- ★ extensometer accuracy:  $\pm 0.1\%$  of indicated value (20 ~ 100% FS);
  
- ★ displacement resolution: determined by the mechanical systems and photoelectric encoder, generally up to 0.001mm;
  
- ★ displacement measurement accuracy: error-free instrument system;
  
- ★ test speed: 0.01mm / min ~ 500mm / min;
  
- ★ speed accuracy:  $\pm 1\%$  of indication;
  
- ★ four power channels;
  
- ★ two displacement channels;
  
- ★ 0 ~ 10V output voltage output frequency motor stepless speed control;
  
- ★ pulse output variable speed servo motor control;
  
- ★ Optional micro-printer, print the test results, and that is a take of the print function;
  
- ★ single test, manually 10:00 statistics and automatically calculates the average value, fracture value (appropriate to do peel, tear test), can store up to five groups;
  
- ★ fit a variety of grating encoder pulse number range: 100 to 65,535;
  
- ★ arbitrary switching unit: power: kN / N / kgf / gf / t / lbf, displacement: mm / cm / in;
  
- ★ automatic homing function;
  
- ★ overload protection function can be set;
  
- ★ scheduled to load and position shift, and other testing methods.



## 2. Operation Guide

### 2.1 Interface Directly Into the Test After Boot



When the test button interface response:

Button "up": increased movement control of the machine;

Button "down": control of the machine lowering operation;

Button "Test": perform the test;

Button "Stop": rise and fall during the run Click this button to stop the machine during the test Click this button to end the test;

Button "zero": the power, the most vigorous, displacement, deformation equivalent to zero;

Button "return": the machine back to the last press "zero" position of the button in time, the return process can press the "Stop" button down, and press the "return" button to continue return again; also press the "zero" button to shut down, but press the "Reset" button down and then press the "return" button will not return to place, because pressing the "zero" button the program is judged that the return is complete, so Stop the machine no longer return;

Button "⤴": Jog speed rise, press and hold the machine fast rise, loosen the machine stops, the speed in the "additional information 2" screen can be set;

Button "⤵": Jog speed drop, press and hold the machine rapid decline, loosen the machine stops, the speed in the "additional information 2" screen can be set;

Button "⤶": Jog low rise, hold the machine slowly rising, loosen the machine stops, the speed in the "additional information 2" screen can be set;

Button "⤷": Jog low speed fall, hold the machine slow down loosen the machine stops, the speed in the "additional information 2" screen can be set;





Button "Print": print the test results;

Button "take point": the testing process Press this button to perform a manual to take points;

Button "View": enter the test results view interface;

Button 'Setup': before entering the test specimen and test method information setting interface;

Button "force", "the most vigorous", "displacement", "deformation": 4 Click this button to select button to switch the display projects text to be displayed in real time, as shown below.



## 2.2 Sample Information

The screenshot shows a form titled "Sample Information" with the following fields and options:

- 1. E. Str. Uint: MPa (dropdown)
- 2. TearStrUint: N/mm (dropdown)
- 3. Sample Num: 1 (dropdown)
- 4. Sample Shape: Square (dropdown)
- 5. Gauge Length: 10 mm (input)
- 6. Width: 5 mm (input)
- 7. Thickness: 3 mm (input)

Buttons on the right side include: DEFAULT, TIMESET, CALIBRATE, VERSION, PREVIOUS, NEXT, and TEST. A "COPYDOWN" button is located between the Gauge Length and Width fields.

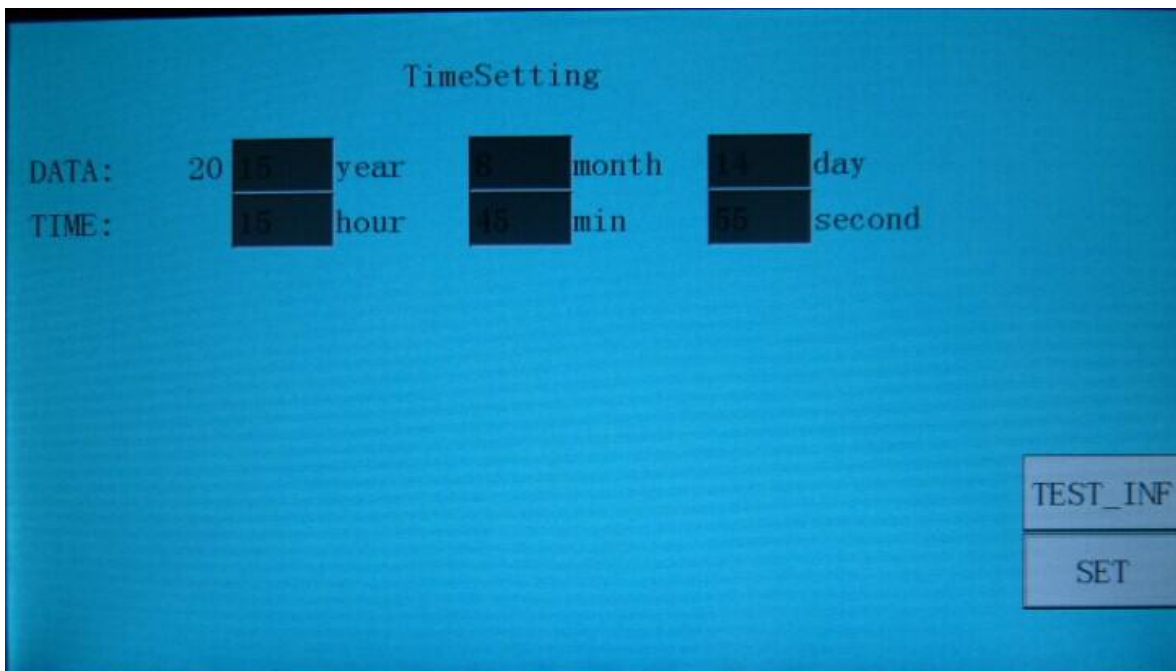
1. Sample Number: Set the number of the sample;



2. Sample shape: Sets the shape of the specimen, the "square", "circle" Optional;
3. gauge: Set the current sample distance labeled;
4. Width: Set the width of the current sample;
5. Thickness: Set the thickness of the current sample;
6. Width: set the width of the current sample;
7. Thickness: set the thickness of the current sample;

Button "Down Copy": Clicking this button will copy the data from the current sample data down the serial number, serial number when switching to a sample copy and paste information and data to the sample number of the switched data;

Button "Time Setting": Set the system time, as shown below;



Button "Calibration": Enter the password to enter the calibration calibration interface;

Button "Version Info": to view the version information;

Button "on page": Page Up;

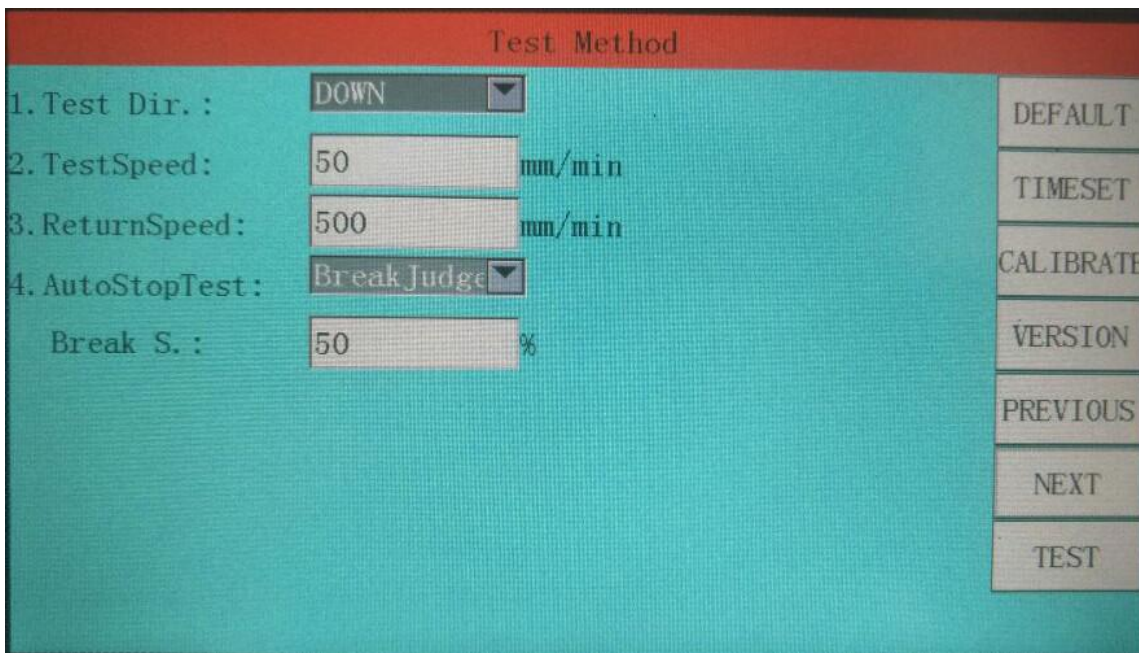
Button "Next": Down;

Button "Test": Back to the test page.

## 2.3 Test Information

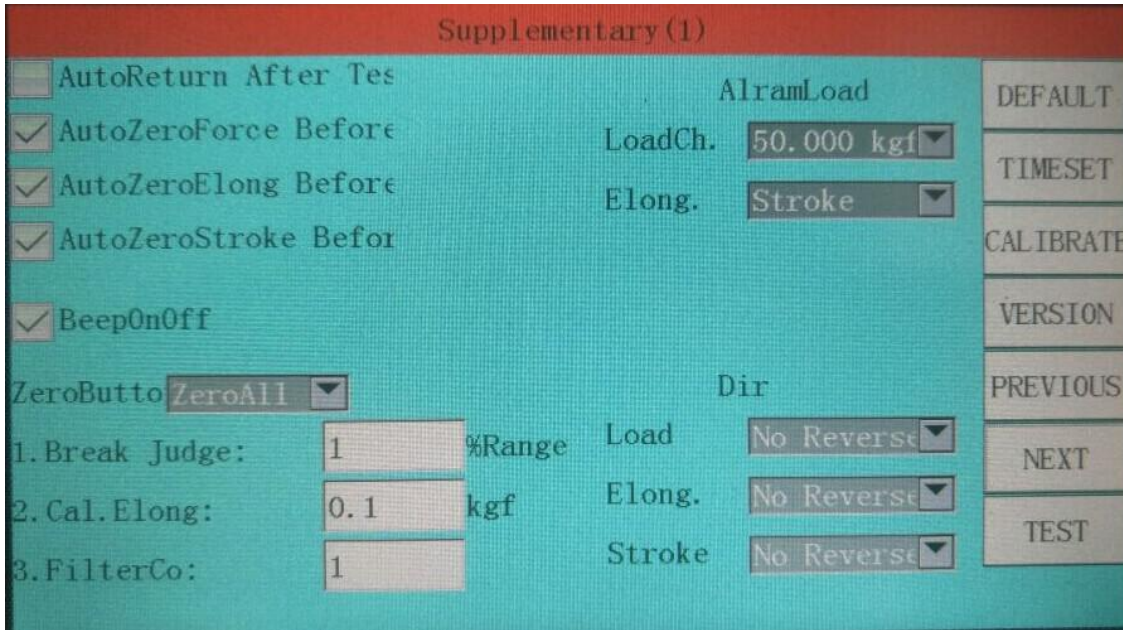
---





1. Test direction: set to test the running direction of the machine, the "up", "down" Optional;
2. Test Speed: Set walking speed test machine;
3. The return speed: set up the machine back when walking velocity potential;
4. Stop condition: Set stop the machine end of the test conditions, the "power to achieve," "deformation reaches", "break rate" is optional, when a shutdown condition is "power to achieve" power to achieve the set value 1kgf, force retention time to reach a value of 1min when is the power to keep the 1min 1kg of "holding pressure" or "hold pull" function, when the force reaches the value set 1kgf, force holding time to reach a value of 0min, is to test the power to 1kg test is completed; when the shutdown condition is "deformation reaches" Setting deformation reaches a value of 50mm, the deformation is to test to 50mm test is completed; when the shutdown condition is "breakpoint ratio" setting breakpoints ratio is 50 percent, It is to test the current force value decreased to 50% of maximum force when it is determined that the specimen fracture, the test is completed.

## 2.4 Auxiliary Information (1)



Touch beep: check to open the touch beep;

Zero button: Select the test main interface "zero" button mode, the "all zeros", "zero power" Optional;

1. Start judgment breakpoints: enter the test when the force reaches the value set conditions before judgment shutdown condition breakpoints ratio Note: This condition value is usually set to 1% force value sensor range more suitable setting too When the General Assembly did not appear the end product has been broken machine condition test is still running, but also can not be set too small, set too small when the force value fluctuations, and fluctuations in the force value reaches the value set by the condition, there will be just one machine Run on shutdown status;

2. Start count variants: Click test when the force reaches the condition setting value, be considered to enter the test Note: If the value of this condition is set to 0, then there will not even come into contact with the test material testing, obviously so test out the result is wrong, this condition should not be set too high a value, usually based on the measured material is suitable for the material is set to be between 0.1% and 1% force value sensor range;

3. The filter coefficient: setting filter coefficients;

Sensors (force path): force sensor channel selection;

Sensors (deformation): Select deformation sensor, the "displacement", "rubber extensometer (also called large deformation)," "Metal extensometer (also called the Little deformation)" Optional;

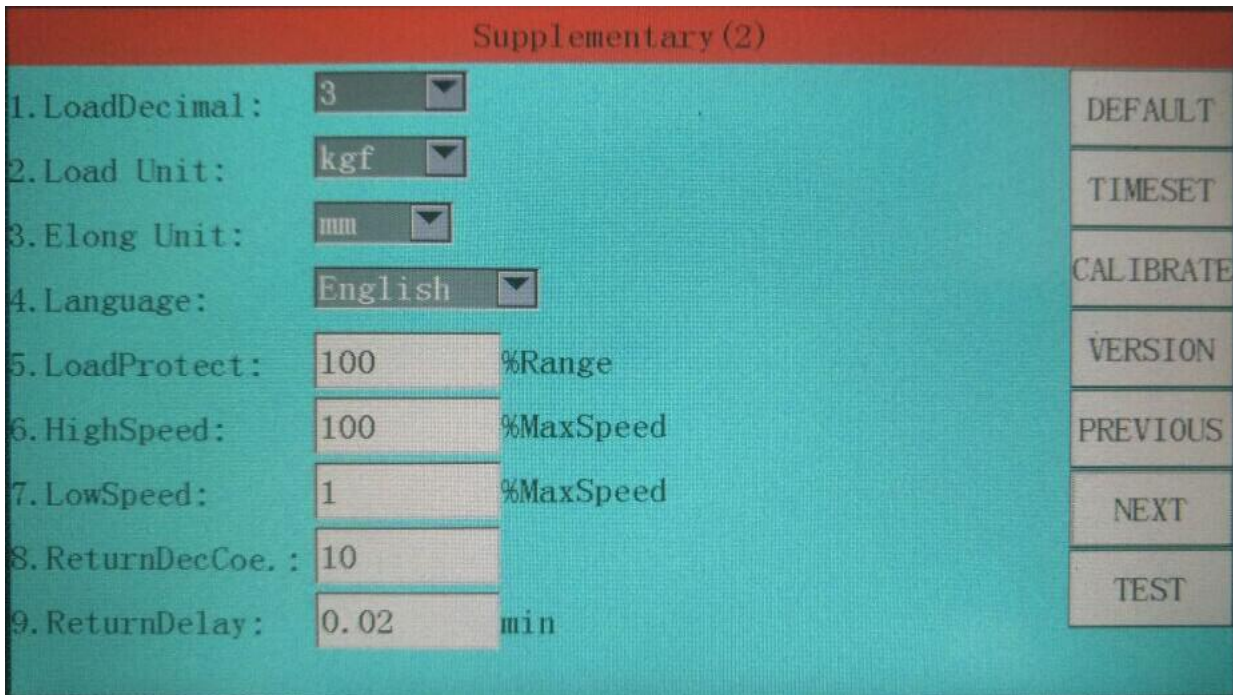
Direction (force): to change the direction of the force value;

Direction (deformation): Change the deformation direction;

Direction (displacement): to change the direction of displacement.



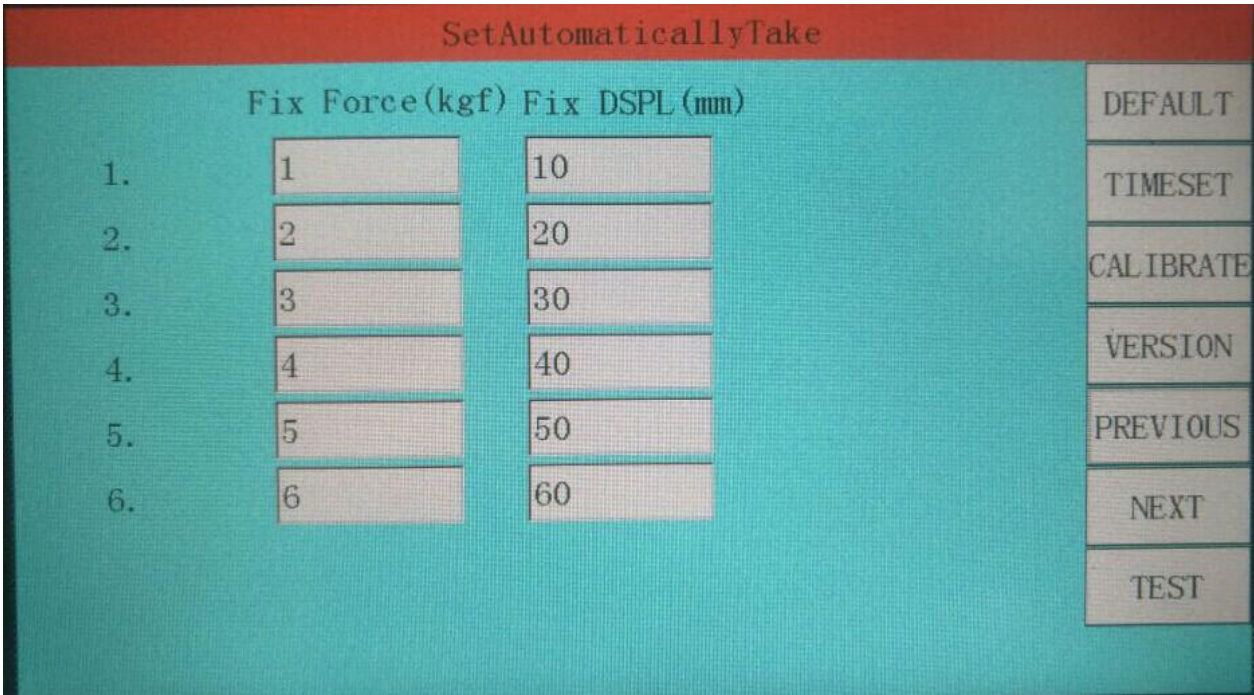
### 3.5 Auxiliary Information (2)



1. Force number of decimal places: Set the number of digits displayed after the decimal point of the force value;
- 2 "force unit: switch the value of the unit," kgf "," N "," lbf "," gf "," KN "," t "optional;
3. Deformation unit: switch the deformation unit, "mm", "cm", "in" optional;
4. Language: switch language display, "English", "Chinese" optional;
5. Force protection: set the value of protection;
6. Jigong high-speed: set the main interface test "inch high speed" speed;
7. Jaw low speed: set the test main interface "jog low speed" speed;
8. Return bit deceleration factor: return when the stroke is less than the set value when the automatic deceleration, to prevent displacement overshoot;
9. Return to wait: set the waiting time before returning;

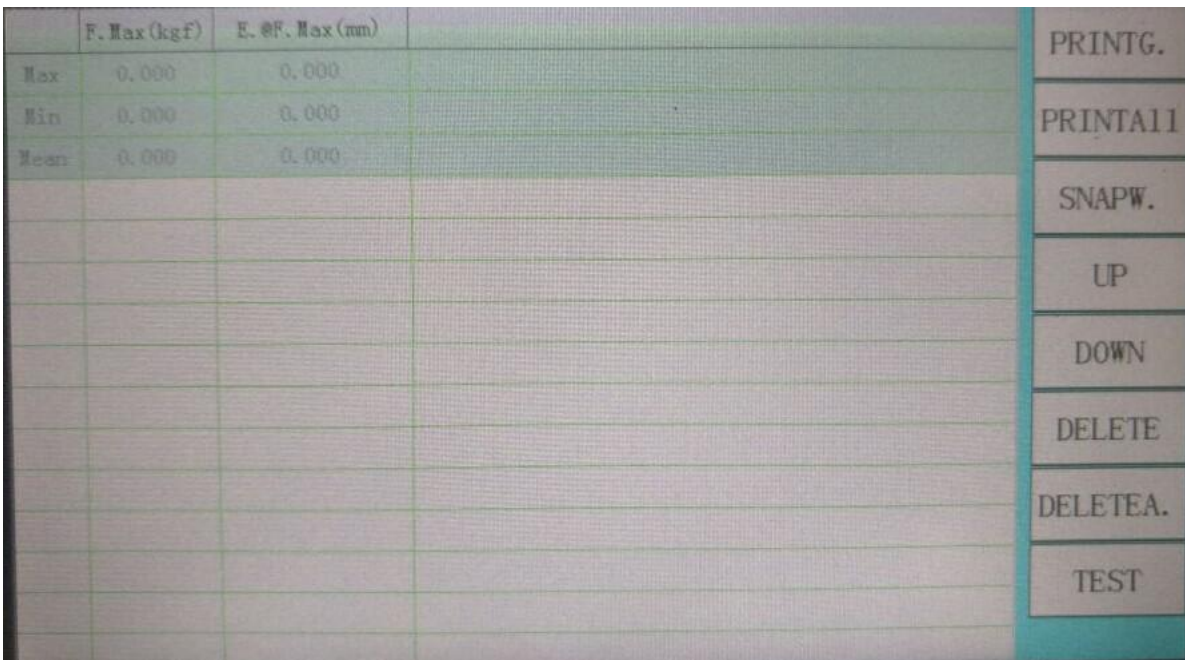
### 2.6 Automatic Take Point Settings





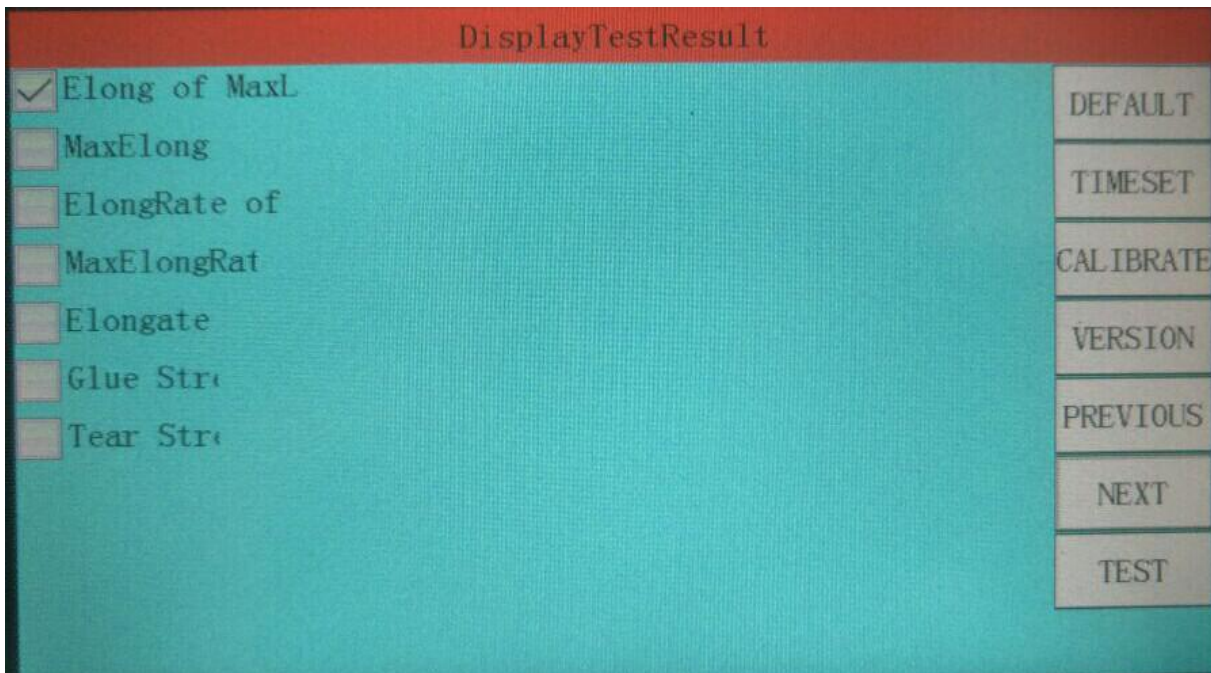
Set the fixed force, positioning automatically take points

### 2.7 View the Interface



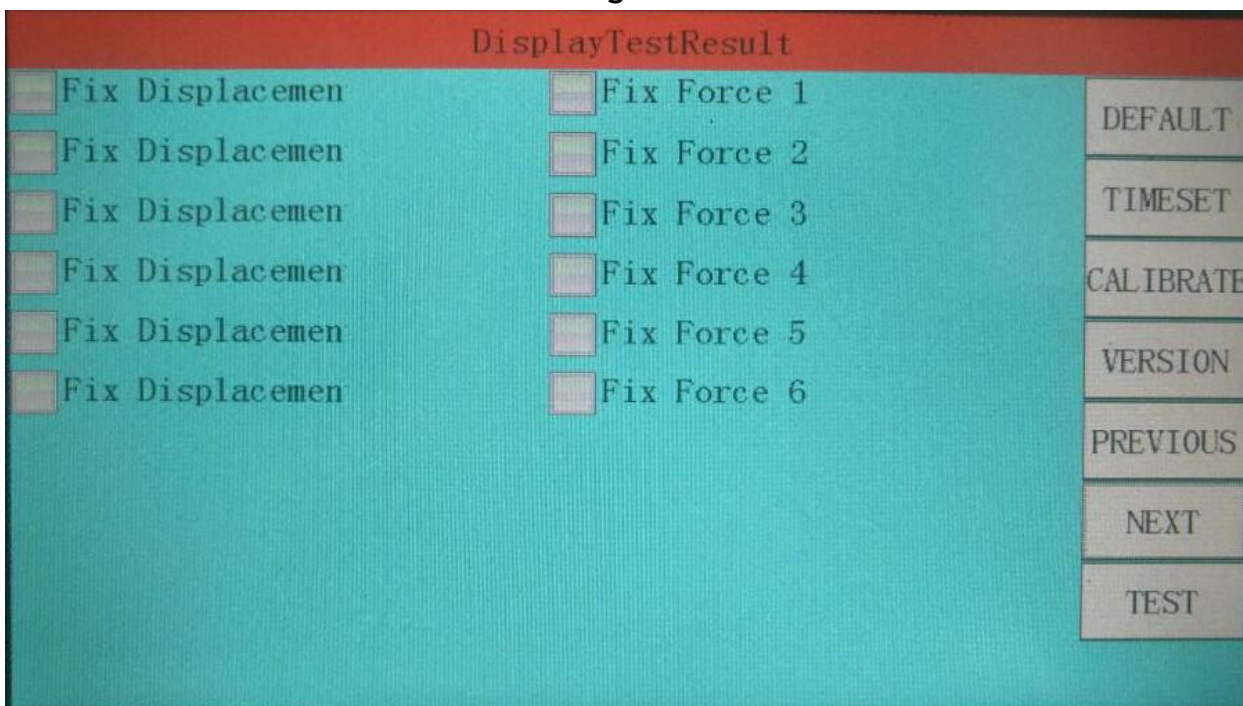
- Button "Print Group": prints the currently selected group;
- Button "print all": print the current view of all the results;
- Button "take point window": open to view the manual take point window;
- Button "move up": select a group of test results to move up;
- Button "down": select a group of test results down;
- Button "delete": delete the selected test results;
- Button "delete all": delete all test results;
- Button "test interface": return to test the main page;

### 2.8 Test Results



Check if the test results are displayed;

### 2.9 Show the Result of Automatic Picking



Check whether the result of the automatic picking is displayed in the test result;

## 3. Calibration





### 3.1 Force Sensor

Load	Stroke	Elong	RunningTime	Speed	SetedSpeed	
-0.006kgf	0.000mm	0.000mm	0.00min	0.0mm/min	50mm/min	
ForceCh.	AD	8387548	Load	-0.005kgf	UP	F. Sensor
<input checked="" type="radio"/> 50.000 kgf <input type="radio"/> 0.000 kgf <input type="radio"/> 0.000 kgf <input type="radio"/> 0.000 kgf	AD	StrandLoad			DOWN	D. Sensor
Measurement (kg)	1	8417756	0	Snap	STOP	RubberEx.
50	2	8479595	1	Clear	ZeroFor.	MetalsEx.
MinForce (kgf)	3	0	0	Switch	ZeroStr.	Speed
0	4	0	0		ZeroElo.	System
	5	0	0		ZeroAll	SET
	6	0	0			TEST_INF

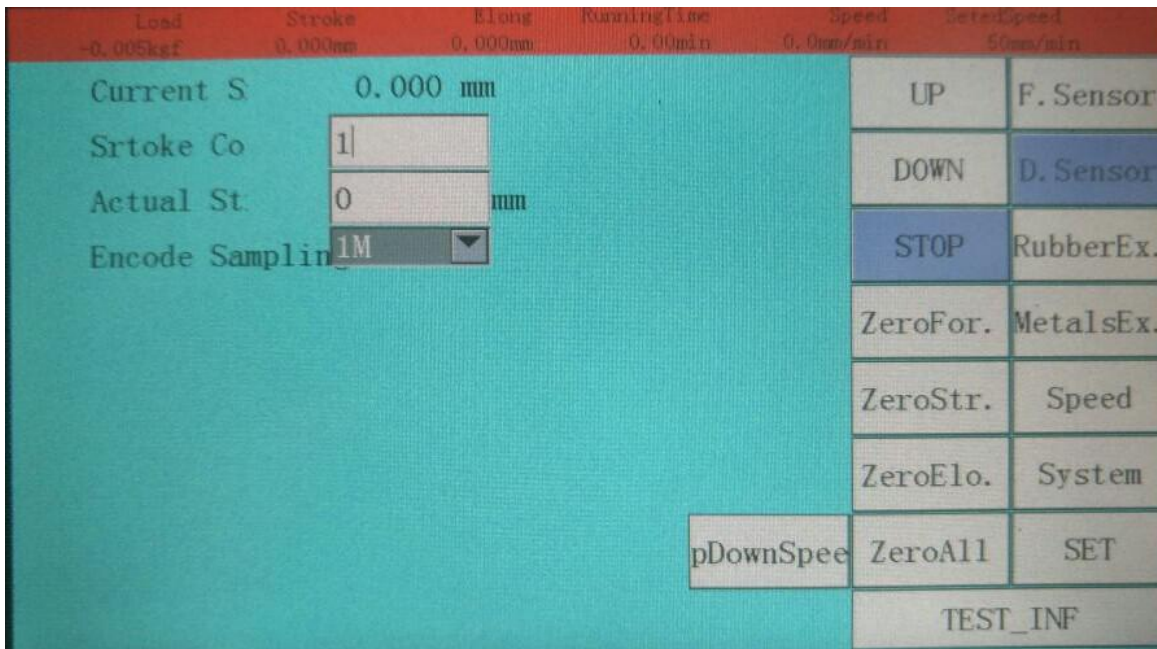
1. In the upper left corner, select the channel you want to calibrate, the first step must be calibrated "zero", first click the "clear" button, the calibration data table data clear, and then click the "force zero" button and force sensor Do not bear any load, and then press the "take point" button, that is, check the first point "zero";
2. Place the weight on the force sensor and set the "Standard weight value" in the second row and second column of the "Calibration data table" to the weight of the weight (in kg) Weight and then press the "take point" button that is a good second point;
3. Similarly, adjust the following points, you can only calibrate two points;
4. Click on the "force zero button", then the weight on the sensor, to be stable after the weight, see the "current force" whether the weight of the weights are equal, if equal, click the "Settings" button back Test the main interface to complete the calibration, and vice versa to repeat 1-3, until the "current force" value and the weight of the weight so far.

Note: If you calibrate more than 2 points, the weight of the weight in the calibration process must be increased in turn, and the AD value displayed on the top line of the screen during the weighting process must also be increased. If you find the weight If the value is reduced, the wiring of the two signal lines of the force sensor needs to be changed. If only two points are calibrated, there is no such restriction.

In addition, it is advisable for the calibrated machine to record the calibration data (the data in the calibration table in the figure above) so that if the calibration data is modified by mistake during subsequent use, the recorded data is only re-entered Can be restored to normal, no need to re-calibration with a weight or calibrator.

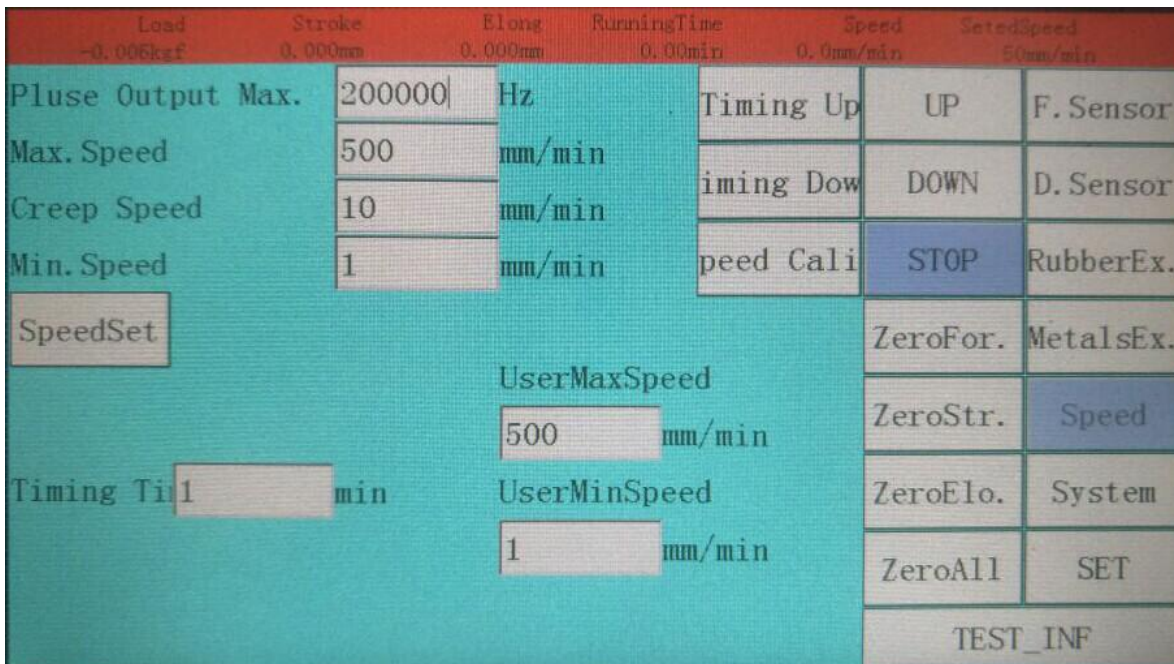
### 3.2 Elong Sensor





1. Click the "Reset to zero" button to zero the "current displacement"
2. Click the "up" or "down" button to let the machine walk a certain distance, with the ruler measured the distance;
3. Enter the amount of data into the box after "Actual displacement":
4. Repeat steps 1-2 to see if the machine travel value is equal to the current displacement value displayed by the software. If it is equal, complete the displacement sensor calibration and vice versa.
5. Repeat steps 1-3 until the value of the machine trip is equal to the value of "current displacement".

### 3.3 Speed



Before calibrating the machine speed, please calibrate the displacement sensor. If there is no calibration displacement, the speed is not allowed.

Button "lift speed": modify the calibration in the "rise", "down" speed, as shown below;



1. In the current tab control section, in the current tab control panel section, the default given "calibration with the maximum speed" a value of 500mm / min, click the button "all zero";
2. Then adjust the speed bar or directly enter the "debug speed" given a speed of the machine;
3. Click the button "Rise" or "Drop" to let the machine walk for a distance and click the "Stop" button to stop the machine;
4. Then click the button "Speed Calibration", click this button, the "calibration with the maximum speed" value will be changed to complete the speed calibration;
5. Repeat steps 1-4 until the speed is accurate.

### 3.4 System

