THT-1550 Intelligent Tablet Hardness Tester Operating Manual

Contents

1. Introduction

1.1 Safety instructions

In order to ensure the personal and property safety of users and use efficiently, relevant information is provided in the manual and highlighted by the following symbols.

The following lists the symbols that may be used in this manual. Please read them carefully to make better use of this manual.

Warning

"Warning" indicates that there is a potential danger, which may cause injury to people if it is not avoided.

Attention

"Attention" indicates a potential risk that, if failed to avoid, will cause the equipment to fail to function properly or cause loss.

Description

"Description" is the additional information in the specification, the emphasis and supplement to the content.

1.2 Instrument description

THT-1550 intelligent tablet hardness tester is a drug testing instrument used to measure the quality, hardness, thickness and diameter of tablets. It is widely used in pharmaceutical factories, drug inspection institutes and related scientific research units. The instrument fully complies with the requirements of the 2020 edition of the Chinese Pharmacopoeia. It mainly has the following characteristics:

• Use a single chip microcomputer to control the operation interface, which is convenient and quick to use.

• Use high-precision pressure sensors to ensure high output measuring accuracy.

• The display uses a high-definition LCD screen.

• Can automatically perform statistics, analysis, printing and display of measuring data.

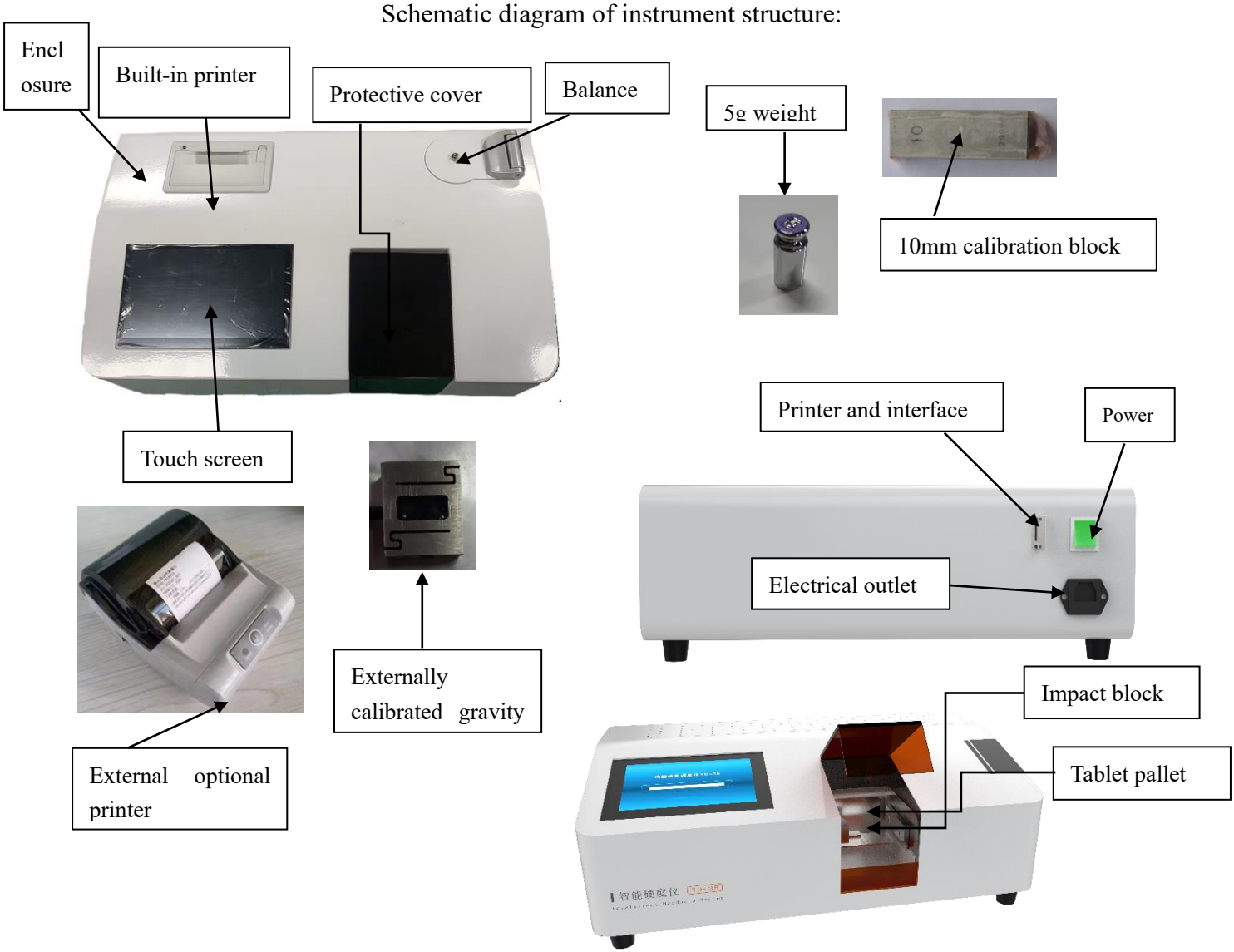
• With real-time calendar clock function, the test and calibration date and time can be printed in the test report.

• Has a fault self-diagnosis function and automatically prompts some abnormal phenomena in test.

• Parameter settings are automatically saved until they are reset.

• With calibration function, display and print calibration results.

Schematic diagram of instrument structure:



1.3 Performance parameters

• Measuring range:

Hardness: 5 ~ 500N Resolution: 0.01 N Accuracy: 0.1 N

Diameter: 1 ~ 50mm Resolution: 0.01 mm Accuracy: 0.1 mm

Thickness: 0.5 ~ 15mm Resolution: 0.01 mm Accuracy: 0.1 mm

• Units of measuring:

Hardness: N/Kg/Kpa (optional)

Diameter: mm/inch (optional)

• Measuring method: manual single chip/automatic continuous (the maximum number of measuring chips is 100)/optional

• Display: 7-inch touch screen

• Printing interface: Centronic standard serial printing interface, can be connected to micro-typing (Chinese or English output)

2. Installation

No.	Installation steps	
2.1	The user shall provide a firm horizontal workbench to place the instrument, and provide the power socket (with ground wire), and its capacity shall be ≥ 1A.	
2.2	Working environment: the ambient temperature meets 15 ~ 35℃, and the relative humidity is < 80%.	
2.3	Ensure that the distance between the back of the instrument and the wall is not less than 150mm, and the space on both sides of the instrument is not less than 200mm.	
2.4	Self-test and installation of micro printer.	Connect the round plug of the printer power supply to the power input end of the printer, and insert the three-phase plug at the other end into the three-wire socket of the single-phase AC power supply.
		When powered on, the printhead makes a moving sound, and the P (power indicator) and SEL (online/offline indicator) on the printer panel are on.
		Enter printer self-test. Printer self-test method: Press and hold the SEL key while powered on. Press and hold the SEL key first, and then turn on the 5V DC power supply. The printer prints the self-test list, and the SEL (online/offline indicator) goes off. Exit printer self-test mode: ①After the printer self-test list, the printer automatically exits. ②To exit during printing, just press the SEL key once more.
		Connection of micro printer to host: The printer is connected to the print interface on the rear panel of the instrument via a print cable. Connect the 25-wire D-type plug (hole type) of the print cable to the 25-wire D-type socket (pin type) of the printer, and connect the other 9-wire D-type plug (pin type) of the print cable to the 9-wire D-type socket (hole type) of the print interface on the rear panel of the host of the THT-1350 tablet hardness tester.

2.5	While ensuring the power is in the OFF position, plug the power cord plug into the power outlet on the rear panel of the main unit and plug the three-wire plug into the three-wire outlet for the single-phase AC power supply. Make sure the voltage in the lab is AC220V. Turn off the instrument switch when connecting to avoid damage. It is forbidden to plug and unplug live. Press the power on the rear panel, the power indicator in the power should be on, the instrument enters the self-test state, the LCD screen displays, and the pressure head returns to the initial position.

Warning

The printer is connected to the print interface on the rear panel of the instrument through the print cable (it is strictly forbidden to plug and unplug live).

Attention

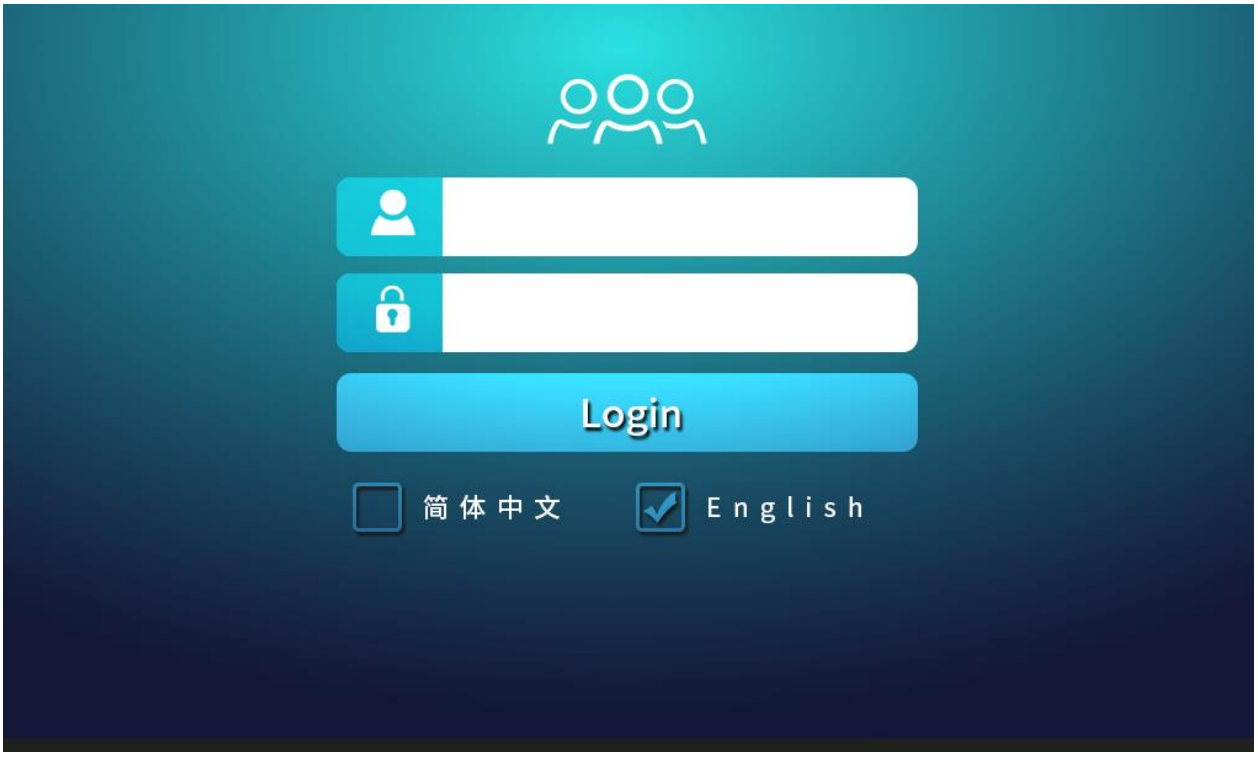
The AC power supply used should be protectively grounded, and the instrument should be reliably grounded through a three-wire socket to ensure safety.

3 Operation

3.1 Power and user login

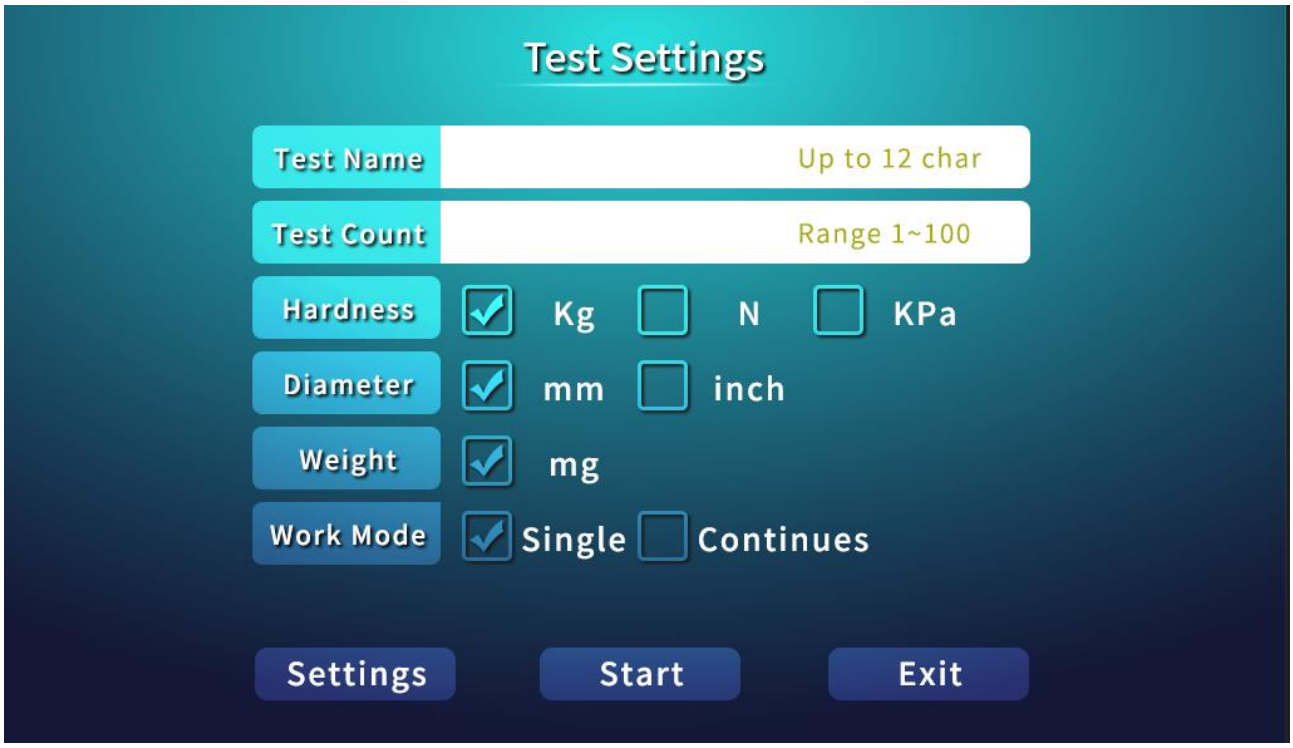
Press the power on the rear panel of THT-1550 to the "ON", and the indicator in the power lights up. The instrument enters a series of self-test screens, and the sound of motor running can be heard at the same time. When the instrument passes the self-test, the following interface appears.

After the self-test of the instrument is completed, enter the following user login interface.



3.2 Experimental settings

Under this interface, experimental parameters such as "experiment name", "test times", "hardness unit", "diameter unit", "weight unit" and "working mode" can be set.



3.2.1 Set experiment name

right side of "Experiment Name", and the text input interface pops up. Switch between Chinese

and English through the "English/Chinese" key, and use the on-screen keyboard to enter the experiment name.

3.2.2 Set the test times

Click the blank space on the right side of "test times", and the numeric keyboard pops up. Enter the measured quantity according to the experimental needs and press "Enter" to determine. The number of experiments is the sum of the number of single/successive experiments under the name of this experiment.

3.2.3 Set unit

Hardness units, diameter units and weight units can be directly selected in the "Experimental Settings" interface. Among them, the hardness units support kilograms, Newtons, and kilopascals; The diameter unit supports millimeters and inches as optional; The weight unit supports milligrams.

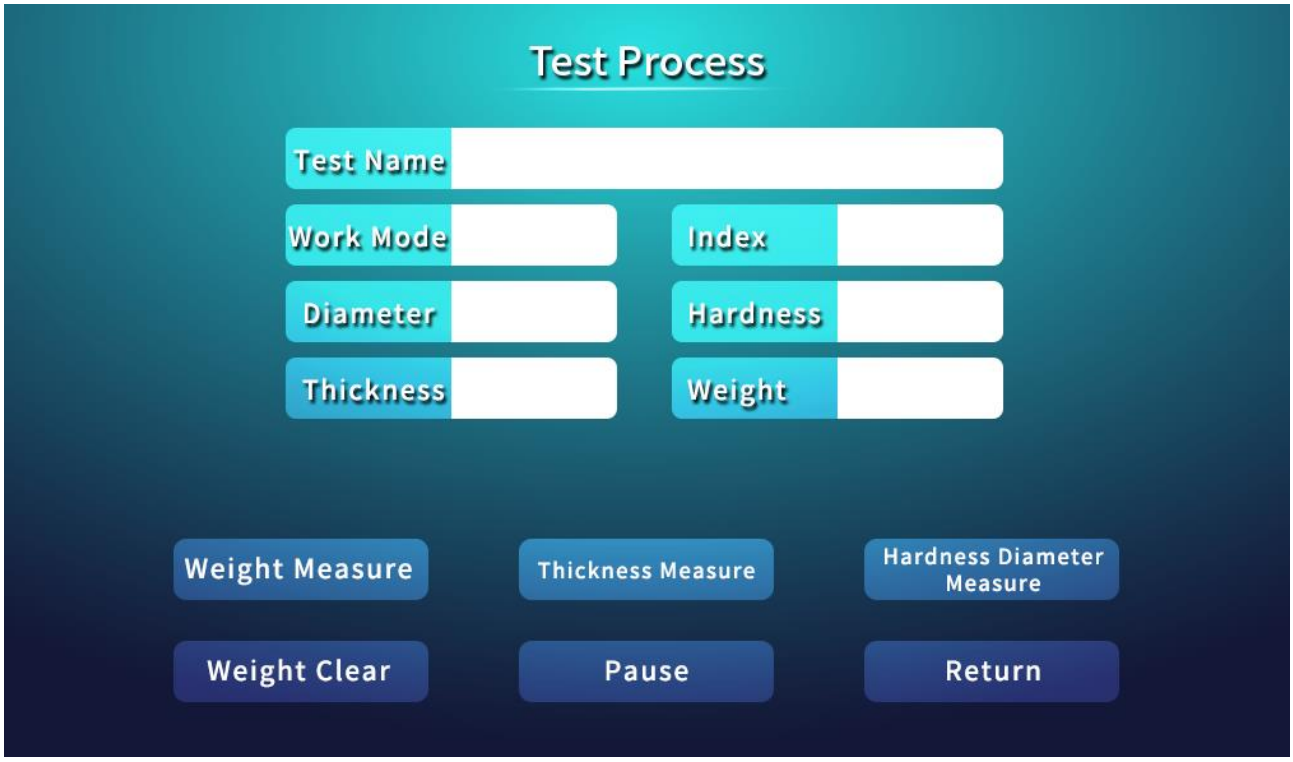
3.2.4 Set working mode

The working mode supports two working modes: monolithic and continuous.

Description
When selecting "Working Mode", please note that only hardness and diameter can be measured continuously.

3.3 Hardness test of tablet samples

After setting the experimental parameters in the "Experiment Settings" interface, place the drug on the tablet pallet with the sample close to the pressure head. Click "Start Test", and the instrument will start the test and enter the "Test Process" interface. When measuring the current weight, "clear the weight" first, and then measure the drug weight after the current weight displays 0. In this interface, consult real-time process data in real time.



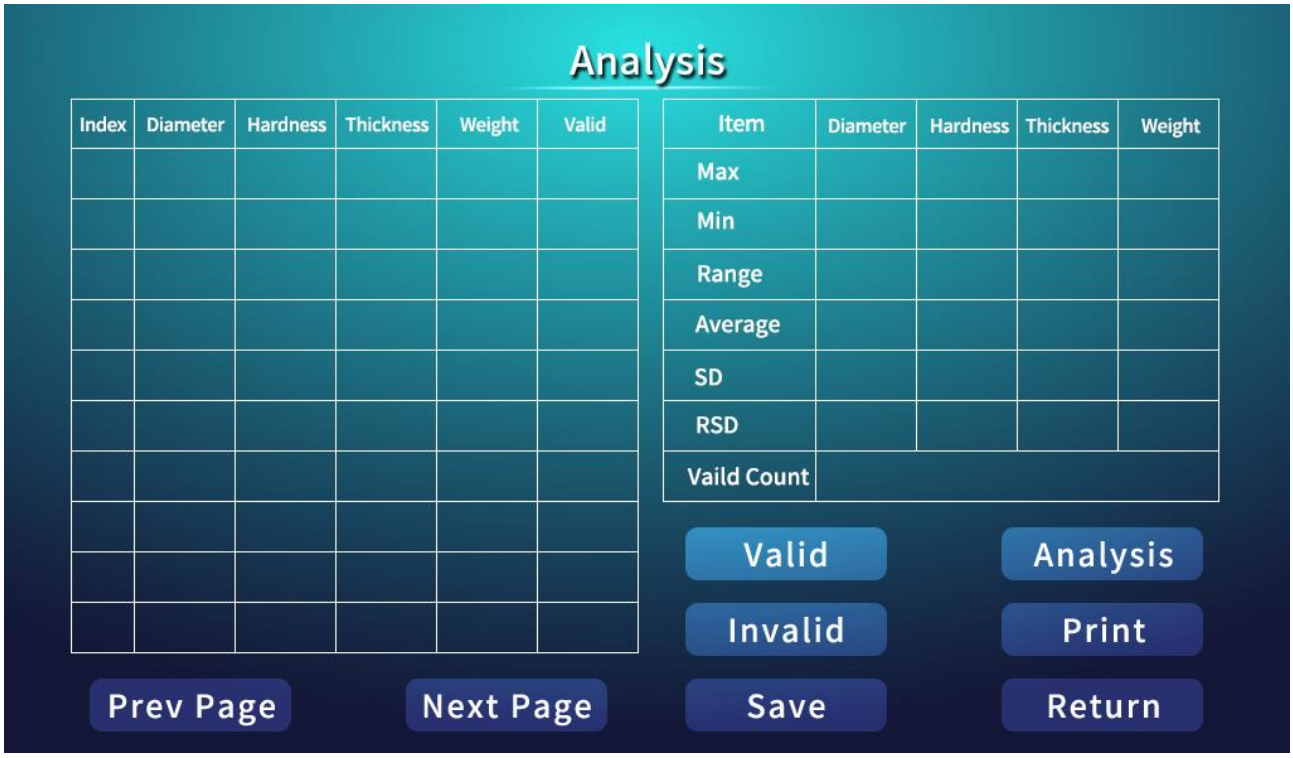
3.3.1 Continuous working mode

A) Test. Click "Start Test", and the instrument starts. At the beginning of each batch of tests, the first pressure head starts advancing at a slow speed from the preset position until it touches the sample to be tested, slowly pressurizes until the sample is crushed, and the pressure head will quickly return to the initial position (run at a slow speed near the initial position), ready to start the second piece of test. Starting from the second piece, the pressure head advances rapidly from the initial position until it runs about 10mm in front of the sample, and then becomes slow forward. Until each test of this test is completed, the instrument automatically measures and records the hardness and diameter of the sample.

B) Suspend the test. In the continuous state, if want to end the test early and get the completed test results, please press the "Pause" key first to pause the measuring.

C) Data invalid value. In the continuous state, after the predetermined number of pieces is tested, that is, after this group of tests is completed, the pressure head returns to the initial position, and the instrument will automatically count, calculate, display and print the sample data. After the "Data Analysis and Printing Interface" appears, the results of each (slice) test data are displayed. Select a certain data, click "Set as invalid value", and then click "Analyze data" to eliminate this abnormal data and not participate in statistical calculation. The validity is changed to invalid after corresponding to the data slice number. If the elimination is wrong, select the data of the piece again, click "Set as valid value", and then click "Analyze data" to recover the eliminated data. The data cannot be changed after saving. Press the "Save and Exit" key to record the data, and press the

"Return" key to clear this group of experimental results and return to the experimental setting interface.



3.3.2 Single working mode

A) Test. In the single operation mode, each time the "Start/Pause" key is pressed, the instrument makes a measuring. After measuring this sample, the pressure head returns to the initial position and waits for the next single test. Press the "Start/Pause" key again and the instrument starts the next sample test until this group is tested.

B) Data invalid value. In a single working state, after the predetermined number of pieces is tested, that is, after this group of tests is completed, the data analysis and printing interface appears, and the data and statistical results of each (piece) test are displayed. Select a certain data, click "Set as invalid value", and then click "Analyze data" to eliminate this abnormal data and not participate in statistical calculation. The validity is changed to invalid after corresponding to the data slice number. If the elimination is wrong, select the data of the piece again, click "Set as valid value", and then click "Analyze data" to recover the eliminated data. Press the "Save and Exit" key to record the data, and press the "Return" key to clear this group of experimental results and return to the experimental setting interface. The data cannot be changed after saving.

3.3.3 Test result printing

After the test is completed, the instrument automatically displays the test results. Press the "Print" key to start printing.

The printing table header includes: tablet name, instrument number, working mode, test times,

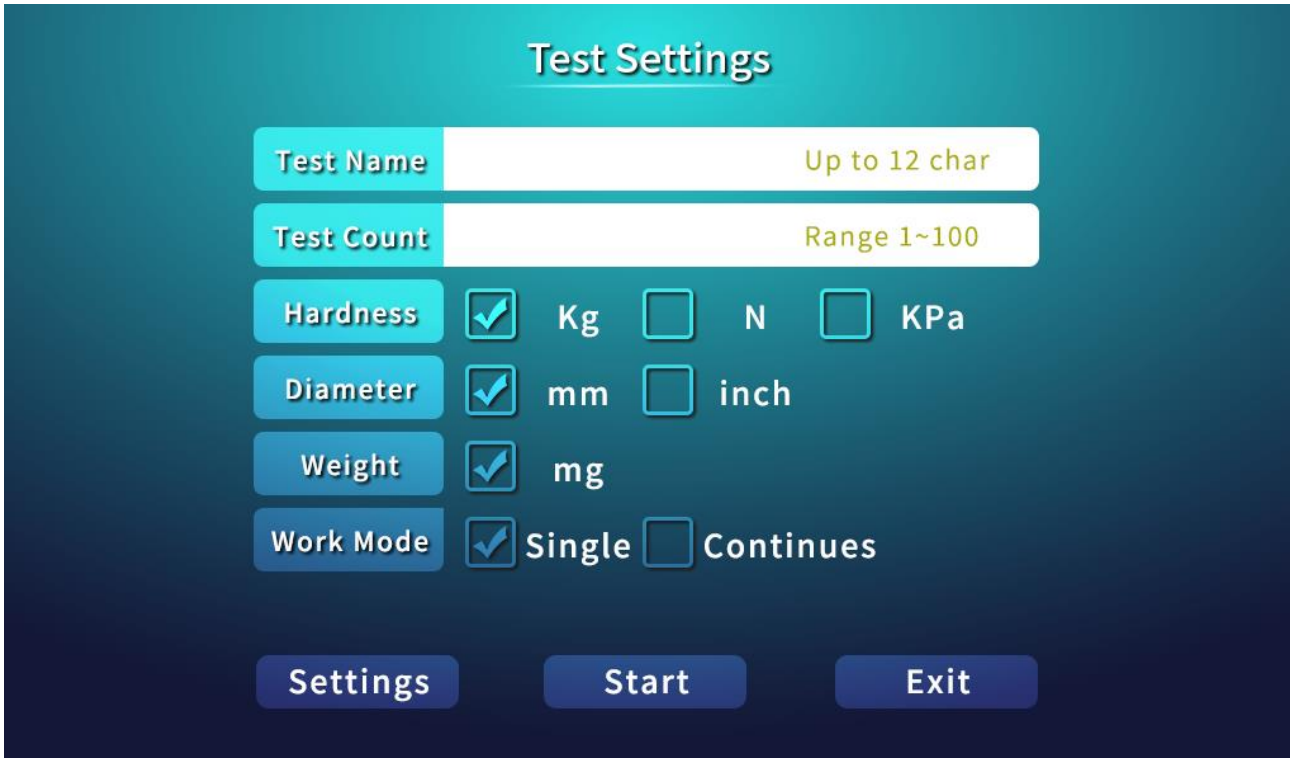
test date, test time, test account number, diameter unit, hardness unit, drug batch, etc.

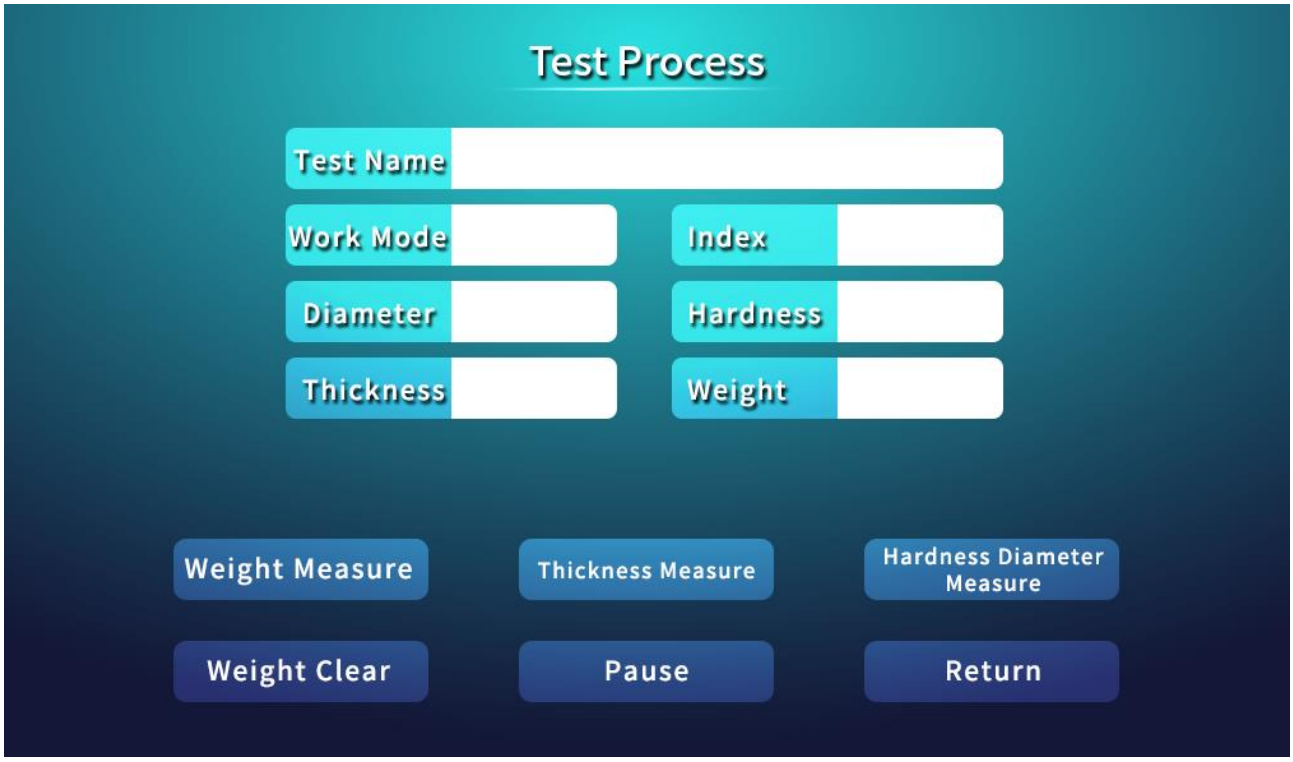
The printed data includes: No., tablet diameter, hardness, thickness and weight.

The printing statistical results items include counting the effective number of pieces, maximum value, minimum value, range value, average value, standard deviation, relative deviation, etc. of the detected hardness and diameter.

3.4 Setting and query

Click "Setting and Query" in the "Experimental Settings" interface to enter the "Setting and Query" operation interface. In this interface, perform "Hardness Calibration", "Diameter Calibration", "Weight Calibration", "Login Record" query, "Test Record" query, "Calibration Record" query, as well as "Account Management", "Setting Time", "About this instrument" and other access functions.





3.4.1 Hardness calibration

Click "Hardness Calibration" in the "Setting and Query" interface to enter the "Sensor Calibration" interface, as shown in the figure below.

The "Sensor Calibration" interface displays the calibration operation steps: Please place the external sensor on the extrusion platform, and click the calibration key after putting it away. When the calibration is complete, the calibration parameters are displayed.

Click the "Return" key to exit the "Sensor Calibration" interface and complete the hardness calibration.

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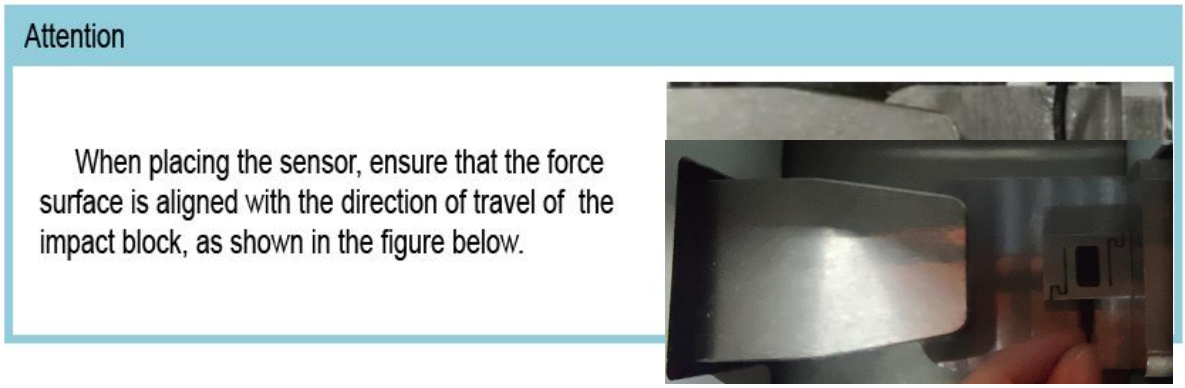

3.4.2 Diameter calibration

Click "Diameter Calibration" in the "Setting and Query" interface to enter the "Sensor Calibration" interface.

The "Sensor Calibration" interface displays the calibration operation steps: Please place the 10mm standard block on the extrusion platform, and click the calibration key after putting it away.

When the calibration is complete, the calibration parameters are displayed. Click the "Return" key to exit the "Sensor Calibration" interface and complete the diameter calibration.


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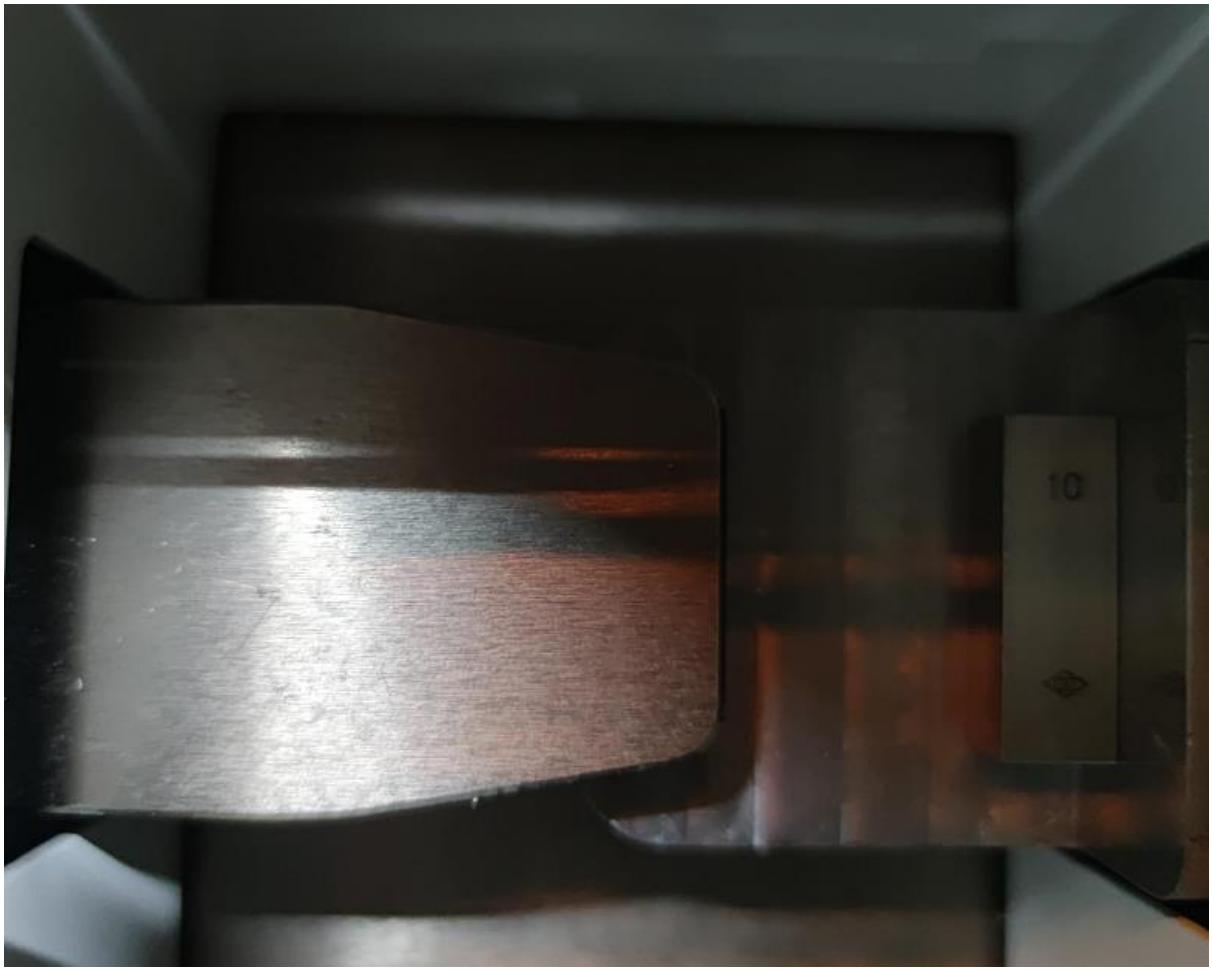
Sensor Calibration
Step 1: Please place the 10mm standard block o
n the extrusion platform and click the OK butt
on after placing it
OK
Return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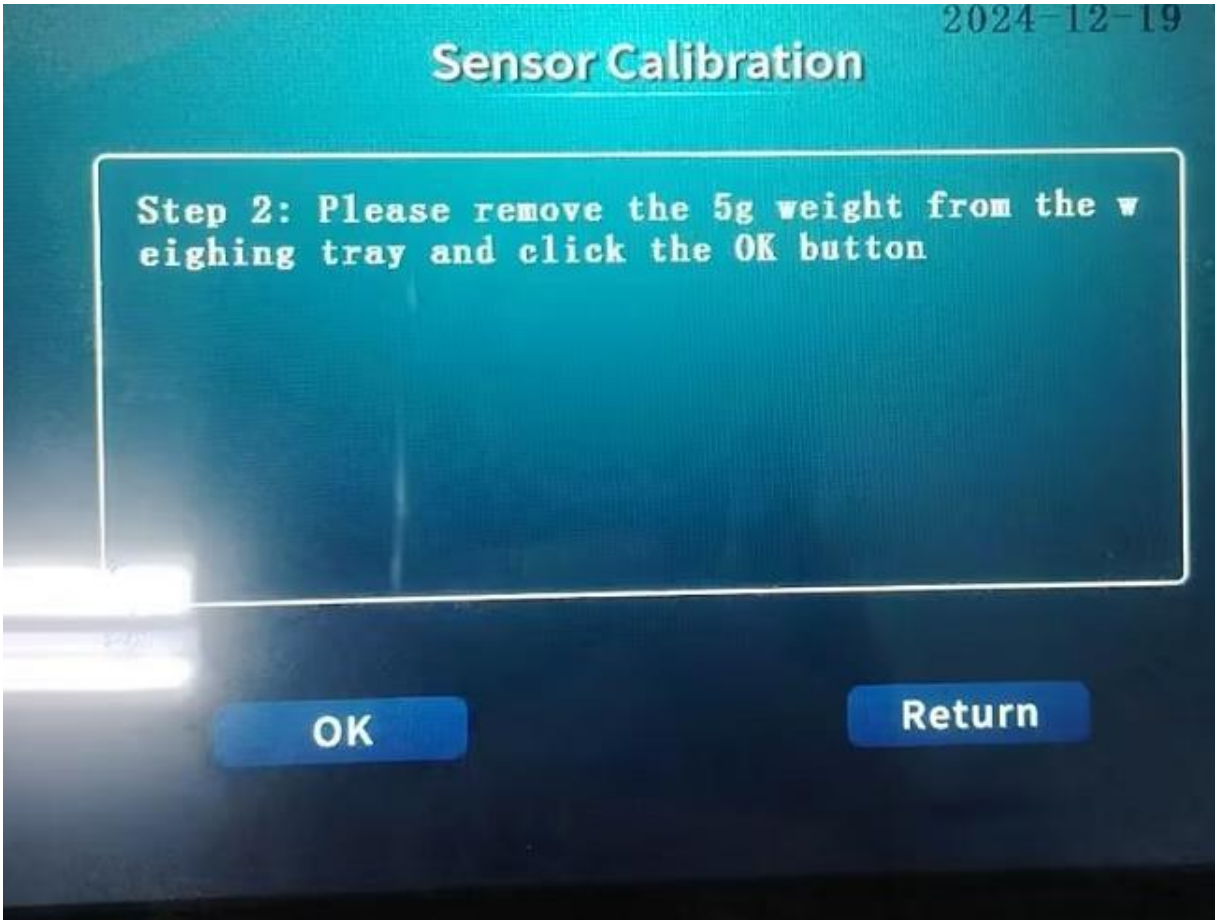
3.4.1 Weight calibration

Click "Weight Calibration" in the "Setting and Query" interface and enter the "Sensor Calibration" interface.

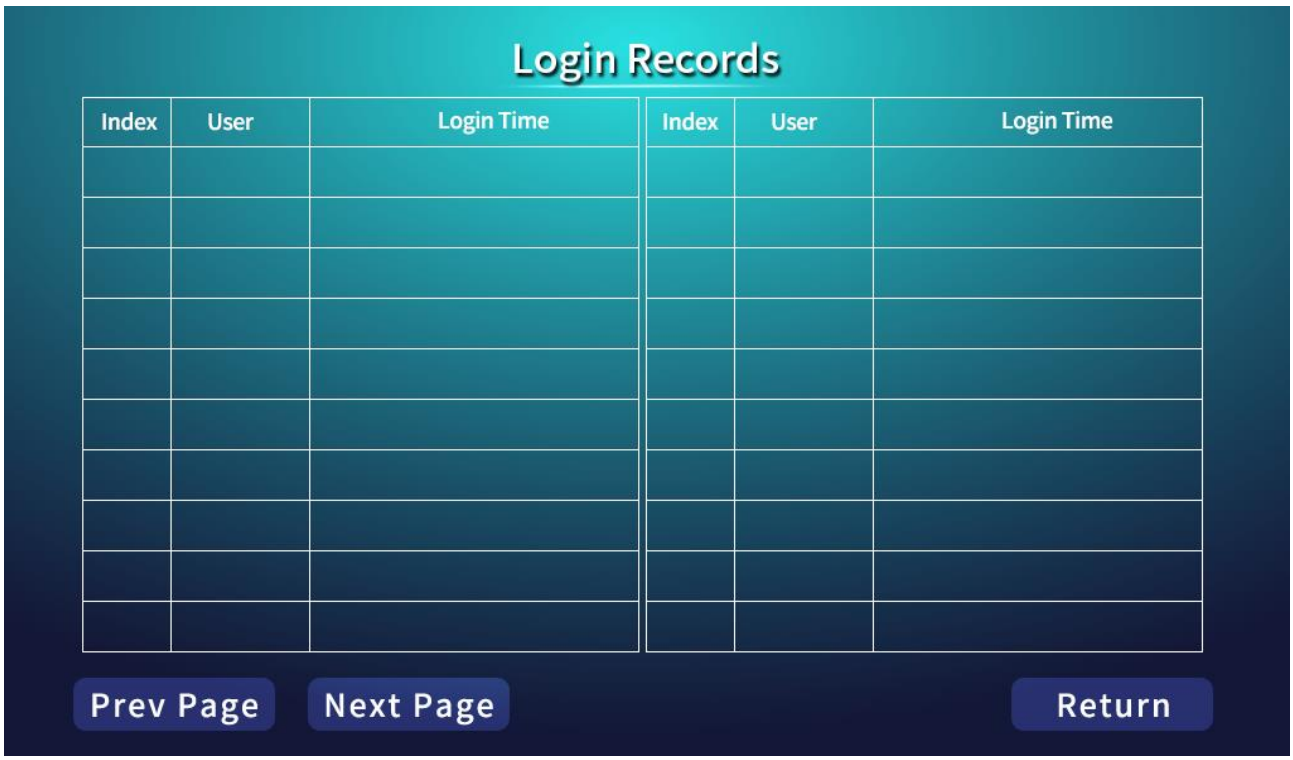
The "Sensor Calibration" interface displays the calibration operation steps: Please place the 5g weight in the weighing tray, and click the calibration key after putting it away.

When the calibration is complete, the calibration parameters are displayed. Click the "Return" key to exit the "Sensor Calibration" interface and complete the weight calibration.



3.4.4 Login record

Click "Login Record" in the "Setting and Query" interface to enter the "Login Record" interface. Under this interface, check the historical login records of all accounts, as shown in the figure below.



3.4.5 Test record

Click "Test Record" in the "Setting and Query" interface to enter the "Test Record" interface, under which can consult the historical test records, as shown in the figure below.

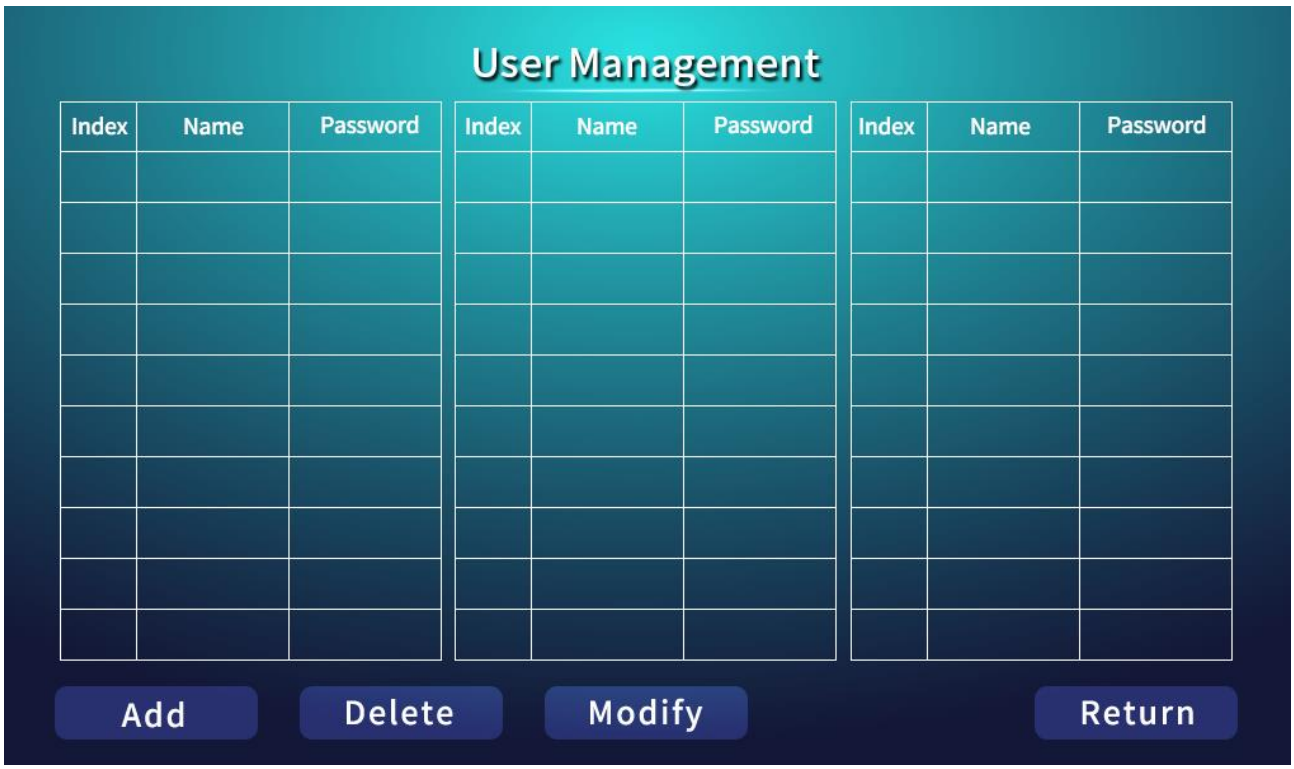
3.4.6 校准记录

Click "Calibration Record" in the "Setting and Query" interface to enter the "Calibration Record" interface. Under this interface, consult historical calibration records, as shown in the figure

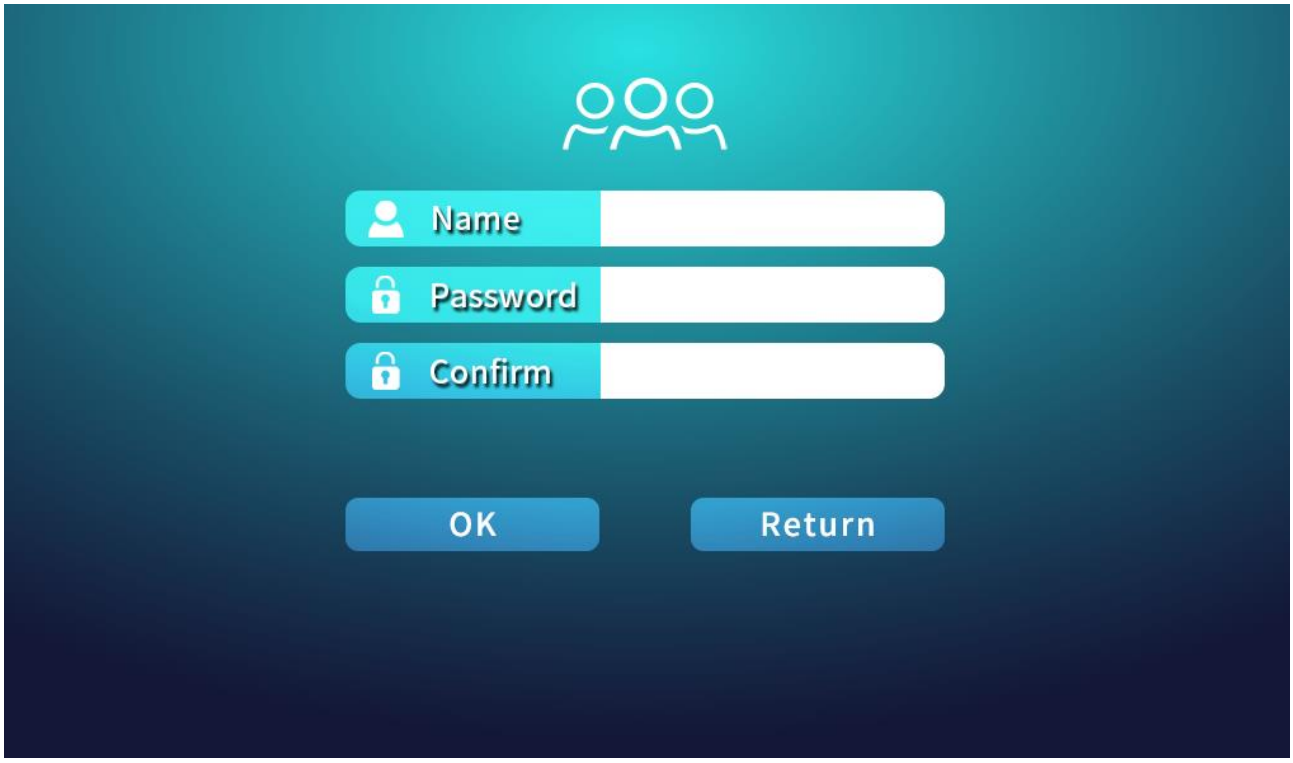
below.

3.4.7 Account management

The administrator account clicks "Account Management" in the "Setting and Query" interface to enter the "User Management" interface, under which all users can be managed. Account operations such as "Add", "Delete" and "Change Password" can be performed, as shown in the figure below.



Take the function of adding an account as an example. Click the "Add" key in the "User Management" interface to enter the new user interface. By setting the user name and password, complete the addition of new users, as shown in the figure below.



3.4.8 Set time

Click "Set Time" in the "Setting and Query" interface to enter the "Set Time" interface. Under this interface, set the clock of this instrument, as shown in the figure below.