

Dear Client,

Thank you for purchasing our HTDR-H Automatic Capacitance Bridge Tester. Please read the manual in detail prior to first use, which will help you use the equipment skillfully.



Our aim is to improve and perfect the company's products continually, so there may be slight differences between your purchase equipment and its instruction manual. You can find the changes in the appendix. Sorry for the inconvenience. If you have further questions, welcome to contact with our service department.



The input/output terminals and the test column may bring voltage, when you plug/draw the test wire or power outlet, they will cause electric spark. PLEASE CAUTION
RISK OF ELECTRICAL SHOCK!

◆ **SERIOUS COMMITMENT**

All products of our company carry one year limited warranty from the date of shipment. If any such product proves defective during this warranty period we will maintain it for free. Meanwhile we implement lifetime service. Except otherwise agreed by contract.

SAFETY REQUIREMENTS

Please read the following safety precautions carefully to avoid body injury and prevent the product or other relevant subassembly to damage. In order to avoid possible danger, this product can only be used within the prescribed scope.

Only qualified technician can carry out maintenance or repair work.

--To avoid fire and personal injury:

Use Proper Power Cord

Only use the power wire supplied by the product or meet the specification of this produce.

Connect and Disconnect Correctly

When the test wire is connected to the live terminal, please do not connect or disconnect the test wire.

Grounding

The product is grounded through the power wire; besides, the

ground pole of the shell must be grounded. To prevent electric shock, the grounding conductor must be connected to the ground.

Make sure the product has been grounded correctly before connecting with the input/output port.

Pay Attention to the Ratings of All Terminals

To prevent the fire hazard or electric shock, please be care of all ratings and labels/marks of this product. Before connecting, please read the instruction manual to acquire information about the ratings.

Do Not Operate without Covers

Do not operate this product when covers or panels removed.

Use Proper Fuse

Only use the fuse with type and rating specified for the product.

Avoid Touching Bare Circuit and Charged Metal.

Do not touch the bare connection points and parts of energized equipment.

Do Not Operate with Suspicious Failures

If you encounter operating failure, do not continue. Please contact with our maintenance staff.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in Explosive Atmospheres.

Ensure Product Surfaces Clean and Dry

— Security Terms

Warning: indicates that death or severe personal injury may result if proper precautions are not taken

Caution: indicates that property damage may result if proper precautions are not taken.

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I. Product Overview

In order to reduce reactive power loss in power system, shunt capacitor banks are usually used to improve power factor. In practical application, the accident rate of capacitor compensation device is relatively high, which is determined by the characteristics of the working state of capacitor device. Therefore, it is very important to check the capacitor device regularly and find capacitor defects early to avoid the expansion of the fault.

Capacitors in the capacitor bank are all in parallel in the field, so the leads need to be removed when workers measure with a general capacitance meter, which is a heavy workload and easy to cause wiring errors. The newly developed capacitor and inductance tester of our company can measure a single capacitor of a group of parallel capacitors without disconnecting the wire, and can also measure the inductance and current. The wiring is convenient, the operation is simple, which reduce the workload of the maintenance personnel and greatly improves the testing efficiency of the site and provides security for the normal operation of the power grid.

II. Function Features

- The instrument can measure the single capacitor of a group of parallel capacitors without disconnecting the line, which is convenient to test. At the same time it can also display the measured voltage, current, loss, capacity, frequency, impedance and other data.
- The instrument displays the measured inductance value and also displays the measured voltage, current, loss, capacity, frequency, impedance and other data;
- The instrument can display the current value and display the current

frequency and other data;

- Δ -type and Y-type connection capacitors can also be measured besides the group of capacitors;
- 320×240 large-screen liquid crystal display and Chinese menu prompts makes it easy to operate;
- Built-in large-capacity non-volatile memory: Each test option can store 256 sets of data;
- Built-in USB controller interface can export instrument memory data, which makes it easy for report generation;
- Built-in high-precision real-time clock function for date and time calibration;
- The instrument comes with a high-speed micro thermal printer to print measurement and historical data;
- Function of test power supply over-current protection can ensure the instrument will not be damaged when the power supply outputs short circuit.

III Technical Parameters

Measurement range

Capacitance: 2uF~2000uF

Inductance: 5mH~5000mH

Current: 20mA~2000mA

Measurement accuracy

Capacitance: \pm (1% reading + 2 words)

Inductance: \pm (1% reading + 5 words)

Current: \pm (1% reading + 2 words)

Dimensions : 345mm×295mm×175mm

Instrument weight : 7kg

IV Working condition

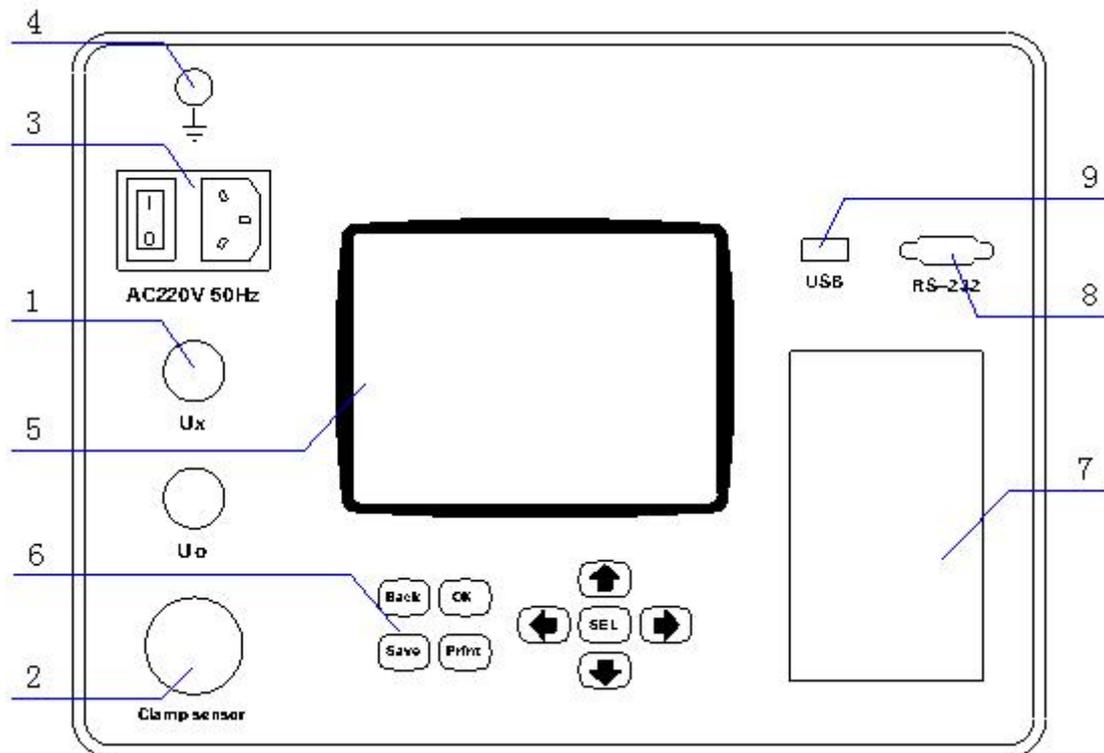
Ambient temperature $-10^{\circ}\text{C} \sim 50^{\circ}\text{C}$

Ambient humidity $\leq 85\% \text{RH}$

Working power supply $\text{AC}220\text{V} \pm 10\%$

Power frequency $50 \pm 1\text{Hz}$

V Panel Introduction



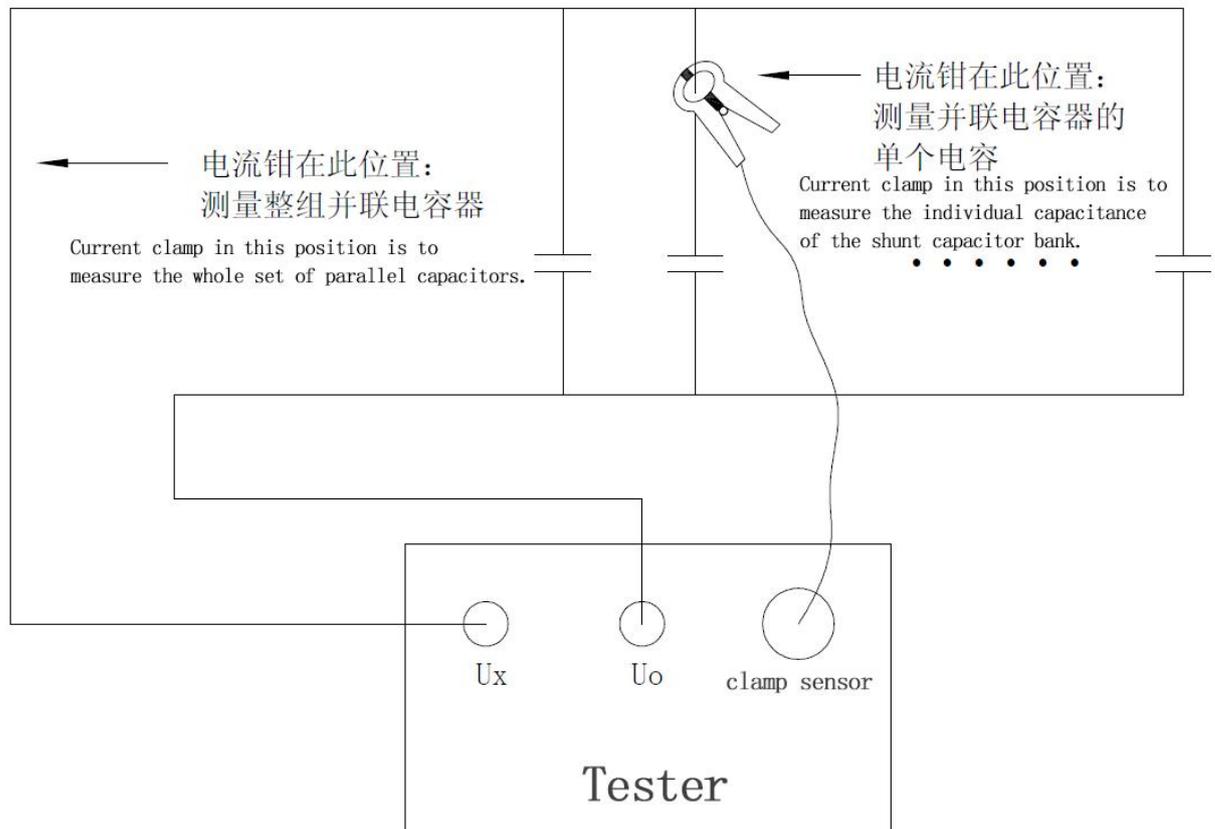
1. U_x, U_o : voltage output test terminal
2. Current input: signal input socket for clamp current transformer ;
3. Power switch: power switch and insurance of the instrument;
4. Grounding column: dedicated to the safety grounding of the instrument
5. Liquid crystal screen: used to display various data and curves;
6. Keyboard: Used for various functions operation and parameter setting;

7. Printer: used to quickly print various data and curves;
8. RS-232: Used for data communication or software upgrade between the instrument and the PC.
9. USB interface: linked with large-capacity external mobile storage devices.

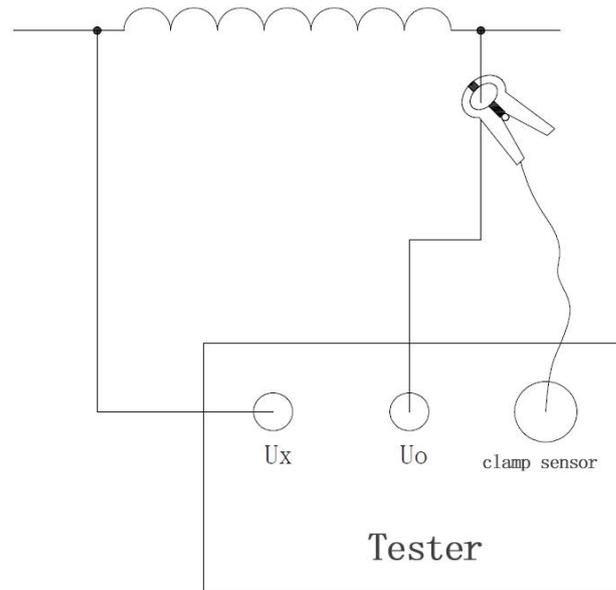
VI Operation Introduction

6.1 Wiring Direction

6.1.1 Typical test wiring diagram of high voltage shunt capacitor:

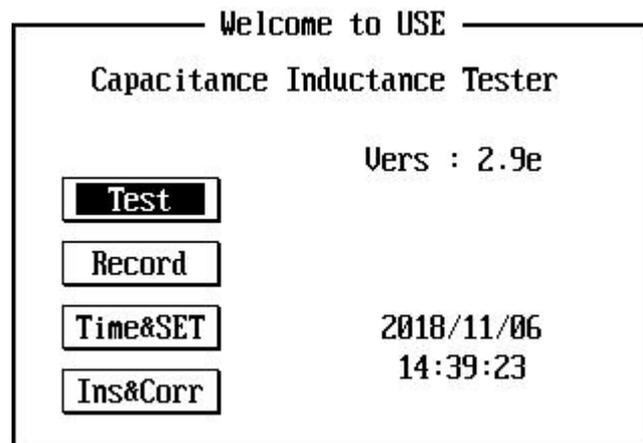


6.1.2. Typical test wiring diagram of reactor:



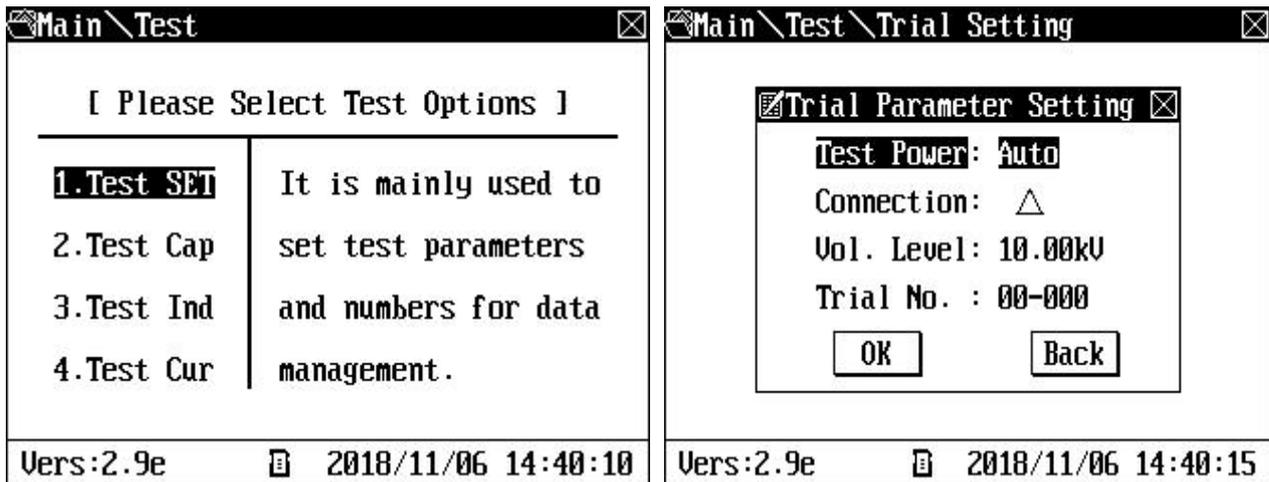
6.2. Instrument Operation

After the instrument is well connected to the power line in accordance with the requirement, turn on the power switch, and the LCD will display the main menu which is shown in the following figure.



6.2.1 Capacitance Test

In the interface of Main Menu, press the key < SEL >, <↑> or <↓> key, and select the option of Test, then press < OK > to enter the Test Options interface; When conducting capacitance test, it is necessary to set test parameters first. Select 1.Test SET to enter the Trial Parameter Setting interface:



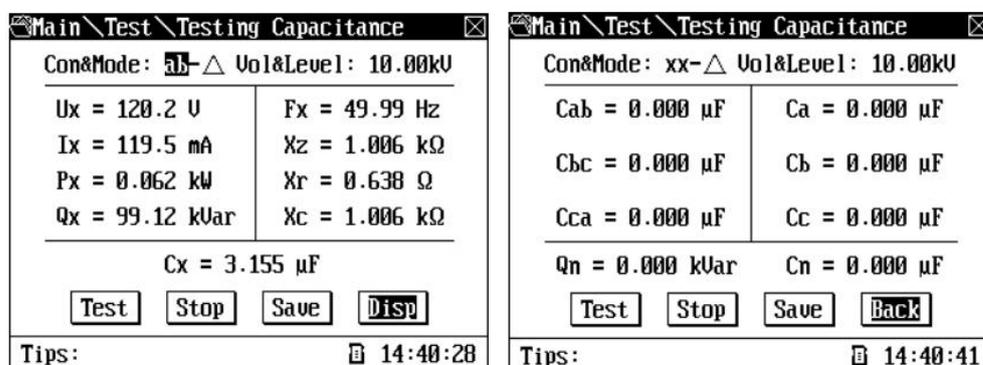
Among them: Test Power - refers to the test power supply provided for the test inside the instrument. Automatic voltage output or manual voltage regulation (4V, 20V, 120V) output can be selected.

Connection—It means that the capacitor banks with Delta, Y and single-phase connections can be selected, when the capacitance is tested.

Note: This setting is invalid when measuring inductance or current;

Vol. Level—refers to the nominal voltage level of the test object, used to calculate the rated capacity of the sample;

Trial No.—refers to the number used to distinguish different tested items or equipment to facilitate query and technical management in the history.



In the Testing Capacitance interface, press the key <SEL> to select the

function options: **Test**, **Stop**, **Save** or **Disp**; press the key <↑>, <↓> to modify the phase of current capacitor under test (ab_bc_ca), while the single-phase capacitor is invalid. When modified to the required test items, press the function button **Test** to enter the capacitance test state, as shown in the left-top figure. The current measurement data can be temporarily stored by pressing the function button **Save**. The capacitance values of Delta or Y-shaped capacitors can be displayed by pressing the button **Disp**. When ab→bc→ca three-phase cyclic test is carried out and temporarily stored, the phase-separated capacitance value, the compatible capacitance value and the rated capacity of the tested capacitor can be obtained as shown in the right-top figure. Press the button **Stop** to cut off the output of the test power, and the test is over.

In the Testing Capacitance interface, the current test results can be saved in local memory by pressing the key < Save> , and the current test parameters and test results can be printed by pressing the key <print> .

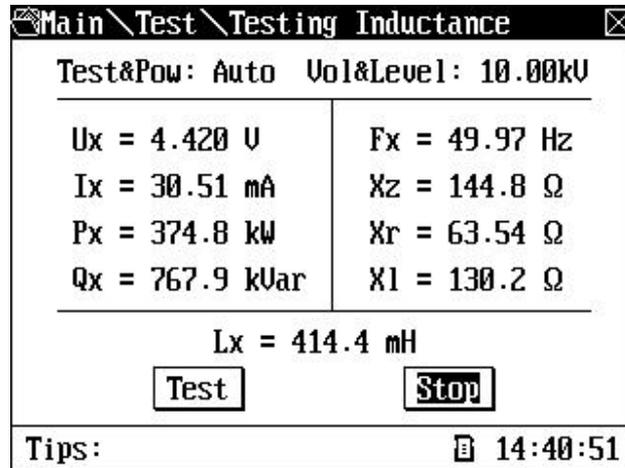
In the Testing Capacitance interface, press the < Back > key to cut off the output of the test power, and return to the Test Options interface.

6.2.2 Inductance Test

In the Main Menu interface, press <SEL> or the key <↑> and <↓> to select the **Test**, and then press the key <OK> to enter the Test Options interface. When performing the inductance test, you need to set the test parameters first. Select **1.Test SET** to enter the Trial Parameter Setting interface, and the operation is same with that of capacitance test function.

Note: in the trial parameter setting the connection mode is invalid for the inductance test parameter.

When the parameters are modified to meet the test requirements, select the function button **OK** and then press <OK> to return to the Test Options interface, select **3.Test Ind** into the Testing Inductance interface:



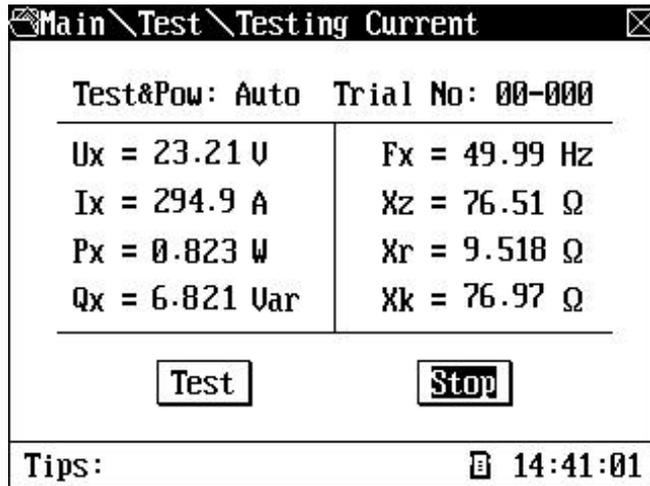
In the Testing Inductance interface, the current test results can be saved in local memory by pressing the key < Save> , and the current test parameters and test results can be printed by pressing the key <print>.

In the Testing Inductance interface, press the key < Back > to cut off the output of the test power, and return to the Test Options interface.

6.2.3 Current Test

In the Main Menu interface, press <SEL> or the key <↑> and <↓> to select the **Test** , and then press the key <OK> to enter the Test Options interface. Select **4.Test Cur** to enter the Testing Current interface.

Note: the operation is same with that of capacitance test function.

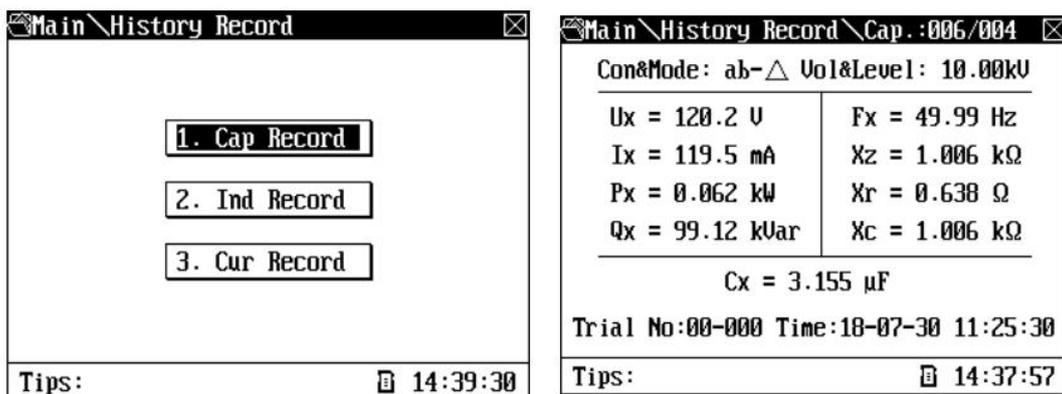


In the Testing Current interface, the current test results can be saved in local memory by pressing the key < Save> , and the current test parameters and test results can be printed by pressing the key <print>.

In the Testing Current interface, press the key < Back > to cut off the output of the test power, and return to the Test Options interface.

6.2.4. Record

In the Main Menu interface, press the key <SEL>, <↑> or <↓> to select the Record , and then press the key <OK> to enter the History Record interface.



In the History Record interface, press the key < SEL >, <↑> or <↓> to select **1. Cap Record**, **2. Ind Record** and **3. Cur Record**. After selecting the record to be viewed, press the key < OK> to enter the corresponding History Record Data

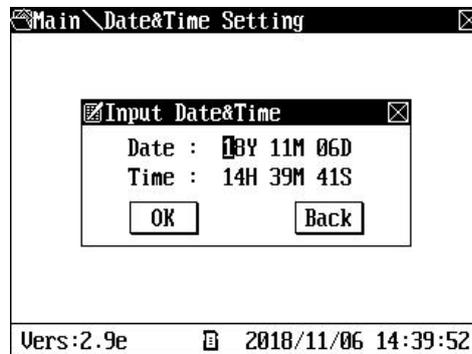
interface, The key <←> or <→> can be pressed to refer to different recorded data. Press the key < OK > to return to the **History Record** selection interface.

In the History Record Data interface, press the key < Save > to save the current historical data to the USB disk, and press the < Print > key to print the current recorded test parameters and test data.

In the History Record Data interface, press the key < Save > and < SEL > at the same time to format and delete all the history records. Please operate with caution.

6.2.5. Time&SET

In the Main Menu interface, press the key <SEL> , <↑> or <↓> to select **Time&SET** , and then press the key <OK> to enter the Date&Time setting interface:



In the Date&Time setting interface, press <←>, <→> to select an option or data bit. And press <↑>, <↓> to modify an option or a data bit. After the desired date and time is modified, select the option **OK** and press the key <OK> to save the settings and return to the main menu.

6.2.6. Instrument Calibration

Used to calibrate the parameters of the instrument itself, and the user does not need to care.

VII Attentions

7.1 Please read the instruction carefully before using this instrument. Check and ensure that the connection is correct and the ground is good.

7.2 High precision current clamp is the key component of the instrument,so it should be taken good care of during the process.

7.3 If the over voltage and over current protection act, identify the reasons and exclude the abnormal situation before continuing to test; do not blindly operate, so as to avoid unnecessary losses.

7.4 The wiring can not be removed until the measurement is completed and exit the measurement state.

7.5 If there is any problem that couldn't be solved , please contact the company timely.

VI. Packing list

No.	Name	QTY
1	Host	1
2	Test leads(red/black with clip, 5M)	1
3	220V AC power cord	1
4	Clamp Current Sensor	1
5	USB communication wire	1
6	Short circuit wire (with clip, 2m)	1
7	Ground wire	1
8	5A fuse	6
9	U-disk	1
10	Instruction manual	1
11	Test report	1
12	Certificate	1