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Before using this instrument, please read this manual carefully. It is the users responsibility to ensure safety.

1. summary

1.1. Product brief introduction

Transformer DC resistance is a test project of semi-finished products and finished products in transformer manufacturing, and it is also a required test project of transformer installation, overhaul, change separation, handover test and preventive test. The instrument can check the following conditions: the welding quality of the winding joint, whether the winding has an inter-turn short circuit, whether the contact of the voltage tap switch is good, whether the actual position of the tap switch is consistent with the indicated position, whether the lead line is broken, whether multiple strands and the wire is broken, etc.

The instrument adopts the new power supply technology, which has the characteristics of small volume, light weight, large output current, good repeatability, strong anti-interference ability and perfect protection function. The whole machine is controlled by high-speed Scontroller with high degree of automation and automatic discharge and discharge alarm function. This instrument has high test accuracy and simple operation, and can realize the rapid measurement of transformer DC resistance.

1.2. Performance and characteristics

1) The whole machine is controlled by high-speed Scontroller with high degree of automation and simple operation.
2) Adopt new power technology, gear, wide range, can be automatically selected according to the load.
3) Suitable for the measurement of DC resistance of various transformers or transformers of 110KV and below
4) 480＊270 True color LCD touch screen, clear display under strong light, touch screen / button dual use.
5) RS232 (reserved) and U disk interface, available for data communication and U disk storage.
6) Perfect protection function, can reliably protect the impact of the reverse

potential on the instrument, more reliable performance.

7) With discharge sound alarm and screen prompt, clear, reduce misoperation

8) Fast response speed, stable measurement data, and automatic refresh of the data during the test process.

9) Micro thermal printer, print the test results at any time.

10) Built-in lithium battery pack power supply, easy to use.

11) Intelligent power management technology, effectively reduce the instrument internal heating, save energy.

12) No power clock and no power memory, can permanently save data.

1.3. Technical indicators

Current gear and measuring range	voluntaril	0～50KΩ
	10A	0～1.6Ω
	5A	0.03Ω～3.2Ω
	1A	0.06Ω～20Ω
	200mA	0.1Ω～100Ω
	40mA	0.3Ω～500Ω
	<5mA	100Ω～50kΩ
resolution	0.1μΩ	
accuracy	± (0.2% ± 2 words)	
data storage	1600 Articles	
ambient	-10℃～40℃	
relative	80% RH, with no condensation	
working	Built-in lithium battery pack	

2. Notes for use

2.1. Safety measures

1) Be sure to read this manual carefully before using this instrument.

2) It is forbidden to use it in rain, corrosive gas and dust to avoid damage to the instrument.
3) It is forbidden to use them in flammable and explosive gases to avoid accidents caused by electric sparks.
4) This instrument is a high precision equipment and should avoid violent vibration.
5) The operator shall have the general knowledge of using general electrical equipment or instruments.
6) Repair, maintenance and adjustment of instruments shall be made by professional personnel.
7) Do not place in a high temperature, wet, condensation may place for a long time.
8) Do not remove the instrument without our permission. If the function fails due to unauthorized disassembly, no free warranty, return and replacement (cost charge), so the company will not be responsible for personal and property injury.

2.2. Matters needing attention

1) Do not measure the live test article: please remove the tested product from other power sources and discharge adequately before measuring.
2) When the test clamp is connected with the measured object, because the lead end is exposed to the air for a long time, the surface is covered with a layer of oxide film, and the test clamp can be twisted several times to cut the oxide film to ensure a good connection.
3) When selecting the current, refer to the range, do not exceed the range and underrange.
4) Due to the programming, the automatic gear selection starts from the high current gear test. If you select the automatic gear, please confirm that the tested product can withstand 10A current, otherwise please select the specific current gear according to the range.
5) During the test process, it is strictly prohibited to move the test pliers or disconnect the test line or power supply line.
6) Before measuring the on-load voltage regulating transformer, we must press the

reset key to discharge, and the discharge alarm sound stops, and the electric energy is fully released.

7) After the test is completed, be sure to press the reset button, such as the discharge alarm sound stop, the power is fully released, before the disassembly.

8) When the instrument is abnormal, press the reset key, then shut down, check the wiring and remove the fault.

9) Note the range when using the paramagnetic method. Because the high voltage coils are two in parallel and one in series, 1.5 times the high voltage coil resistance is added to the whole test loop, which should be converted when choosing the range. If the output current of the oversized range cannot reach the set value or the output current is unstable.

10) When the short contact of the three lines of the magnetism process, there may be residual current after the discharge, and it may fire and discharge when dismantling, which is a normal phenomenon.

11) If there is a sudden automatic shutdown during the test, it may be caused by the lack of power. At this time, the test current below 5A can be set for emergency test.

2.3. Instructions for battery charging

Note: Due to the characteristics of lithium battery, it is not charge when there is serious power loss, which will cause irreversible damage to the battery. In order to extend the good state of the battery as far as possible, please charge in time. The battery damage caused by serious power loss belongs to human reasons, and the company is not responsible for free replacement (charge cost).

The user should charge the instrument in time (at least once a month), plug in the supporting charger when charging, when the indicator light on the charger turns red, and start to charge the instrument battery. When the charging indicator turns green, the battery is fully charged, and the charger can be unplugged. Please use the special charger equipped with the instrument. Do not equip the charger to avoid battery damage caused by parameter mismatch.

3. usage method

说明：

★ 本仪器为**触屏**与**按键**双重操作方式：

触屏：直接通过触摸屏操作，执行相应功能；

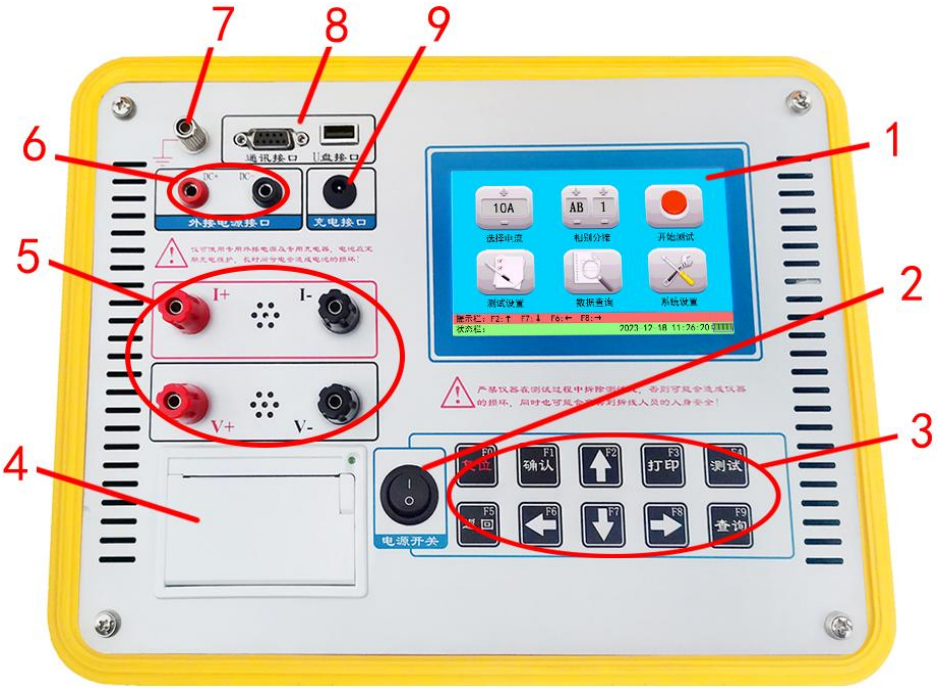
按键：① 用方向键将光标移动至该图标，按 确认 键执行相应功能。

② 图标上标有按键号的，直接按此按键，也可执行相应功能。

例如：右侧图标，触摸此图标或按 F2 键，均可执行上翻操作。

下文中“选择某项功能”，通过此两方法都可实现，相似操作不再赘述。

3.1. System introduction



1) LCD touch screen: display interactive information and can conduct touch operation. The instrument is equipped with a touch screen pen which can be operated by hand or a stylscreen pen to meet different operating habits. The stylus is shown as follows:

2) Switch: To perform the switch machine operation.

3) Key: Each key is different according to the different functions of the interface, please refer to the operation method of each function.

4) Printer: micro printer, print output test data.

5) wiring terminal:

I +, I-: Test the current output terminal.

V +, V-: Sampling voltage input terminals.

6) Standup battery interface.

7) Ground column: protective grounding.

8) Communication interface: RS232 interface (reserved), and U disk interface, used for data transmission.

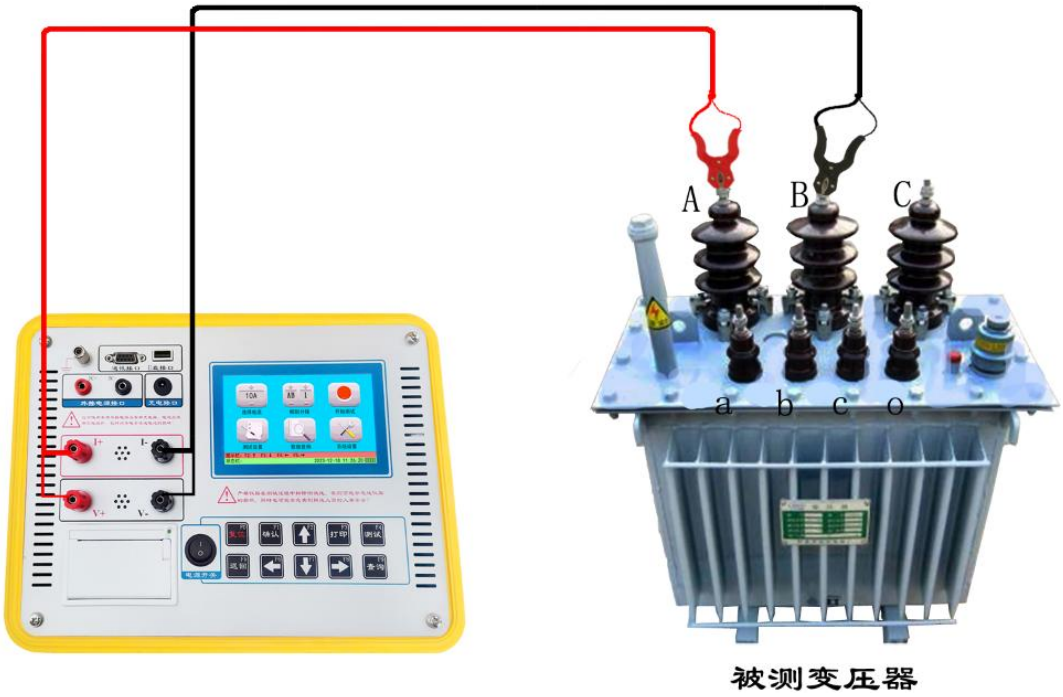
9) Charging interface: built-in battery charging interface (please use the special charger for the instrument)

3.2. Wiring

3.2.1, direct measurement

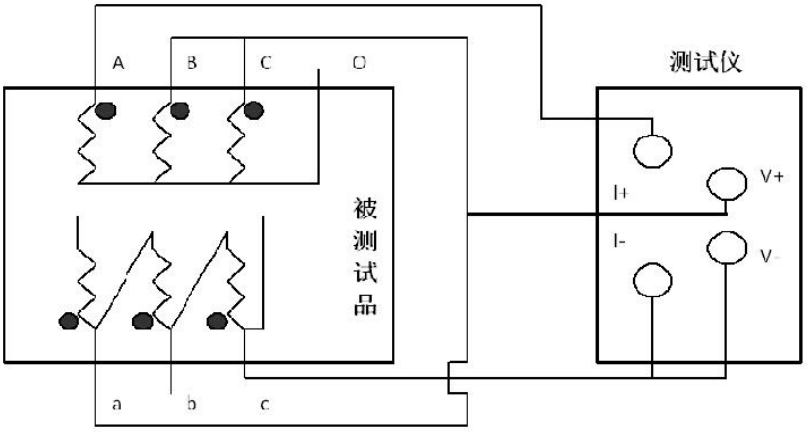
Connect the thick line of the red test line to I +, the thin line to V +, and the test clamp to one end of the test article,

Connect the thick line of the black test line to I-, the thin line to V-, and the test clamp to the other end of the test article.

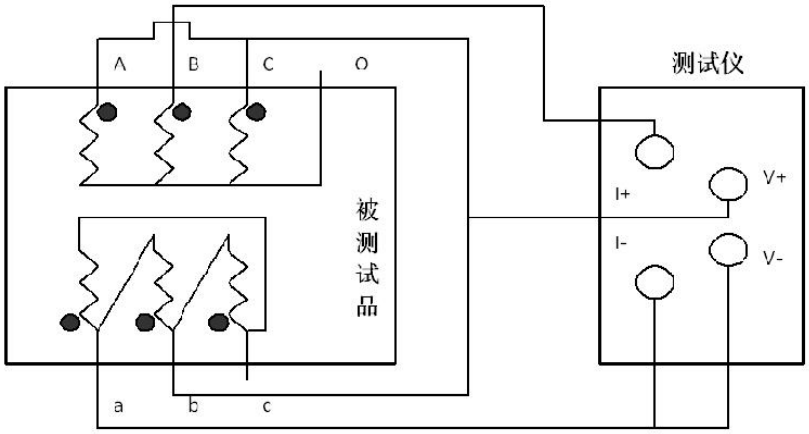


3.2.2. Magnetic aid method

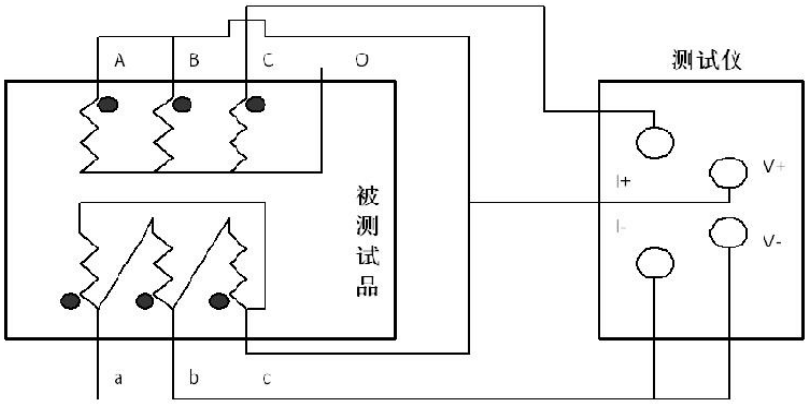
See the following three drawings for the auxiliary magnetic method wiring (applicable to $Y_{(N)}$ -d-11 coupling group).



（1）



（2）

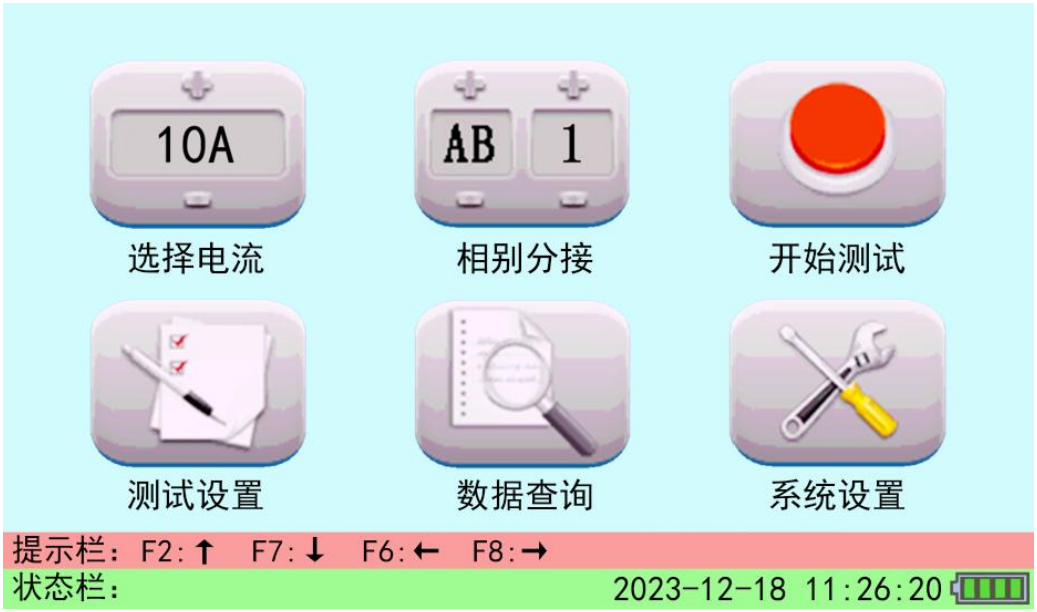


（3）

For the low-voltage side measurement of the large-capacity transformer, in the existing case, if the maximum current of the DC resistance tester is relatively small, or in order to speed up the measurement speed, the magnetic aid method can be selected. In the above figure, figures (1), (2) and (3) are the wiring methods for measuring low pressure Rac, Rba and Rcb respectively.

3.3. Boot up

After starting up, the screen will display the instrument initialization status and enter the initial interface later:



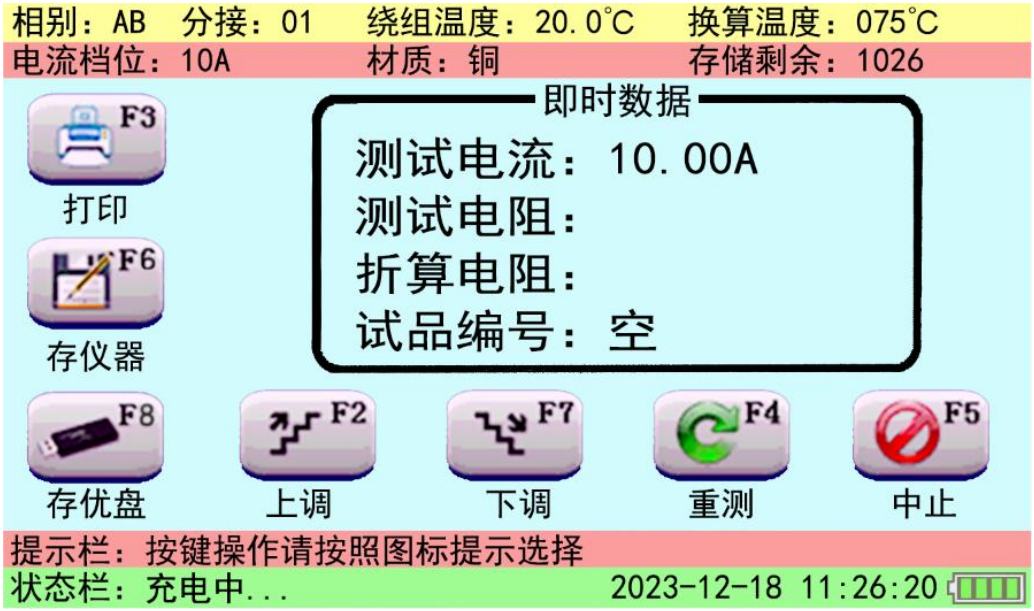
By touching the + - -on the icon, select the desired current and select the tap and tap to be tested.(Also by key operation).

When selecting the current gear, refer to the applicable range of the gear, and do not exceed the range or underrange. If you do not know the approximate resistance value, you can choose the automatic gear, and the instrument will automatically select the gear according to the test product situation.

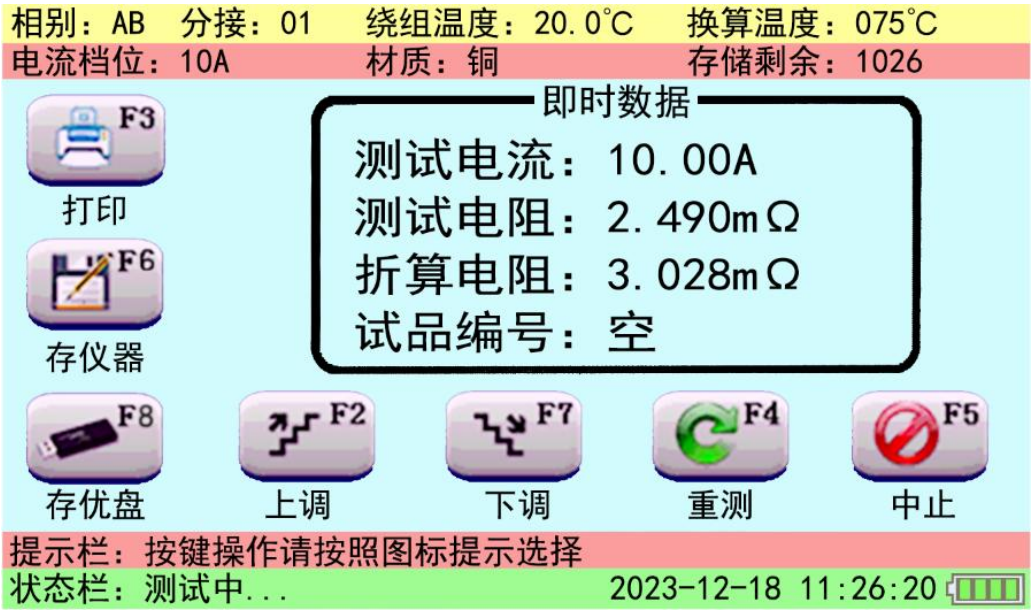
Separation and separation are only convenient for data recording and data storage, and do not affect the test process and test results.

3.4. Test, printing and storage

After selecting the test current and separation, select to start the test, the instrument enters the interface:

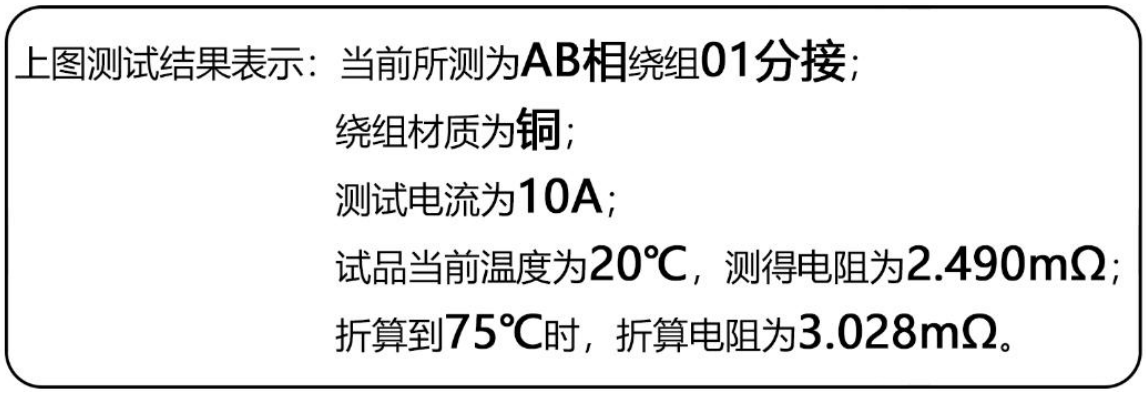


The status bar in the lower left corner of the screen shows "charging", and the "test current" of the instant data shows the current value through the test article.



After a while, the status bar shows "in test...", indicating that the charging is finished and the test state is entered. Wait for the electromagnetic balance, the data is stable, can be read.

"Test Resistance" shows the measured resistance value, and "Conversion Resistance" shows the resistance value of the tested product at the preset conversion temperature.(Please refer to this manual: 3.5. Set the conversion parameters).



This page enables the following actions:

①. Print: Print the test data

②. Save the instrument: store the test data to this machine

③. Save the optimal disk: store the test data to the U disk

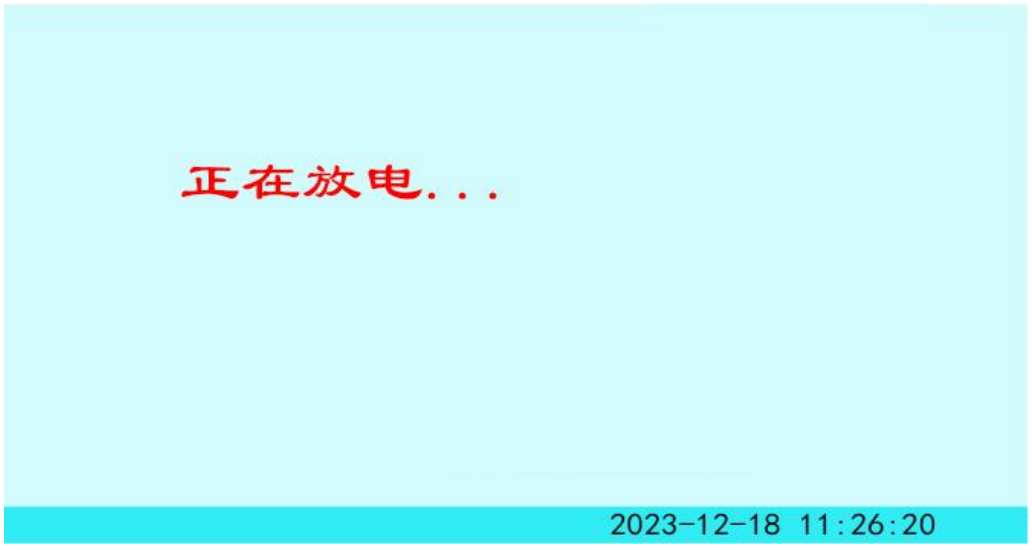
④. Up or down: up or down for the next test and record results

Note: During the test, before connecting the no-load tap switch, you must stop the test first. After the discharge alarm sound is completely finished, wait for a moment before the reverse split, otherwise it may damage the instrument or lead to safety accidents.

⑤. Re: refresh the test data immediately.

⑥. Abort: Stop the test. You can also press the reset key to stop testing.

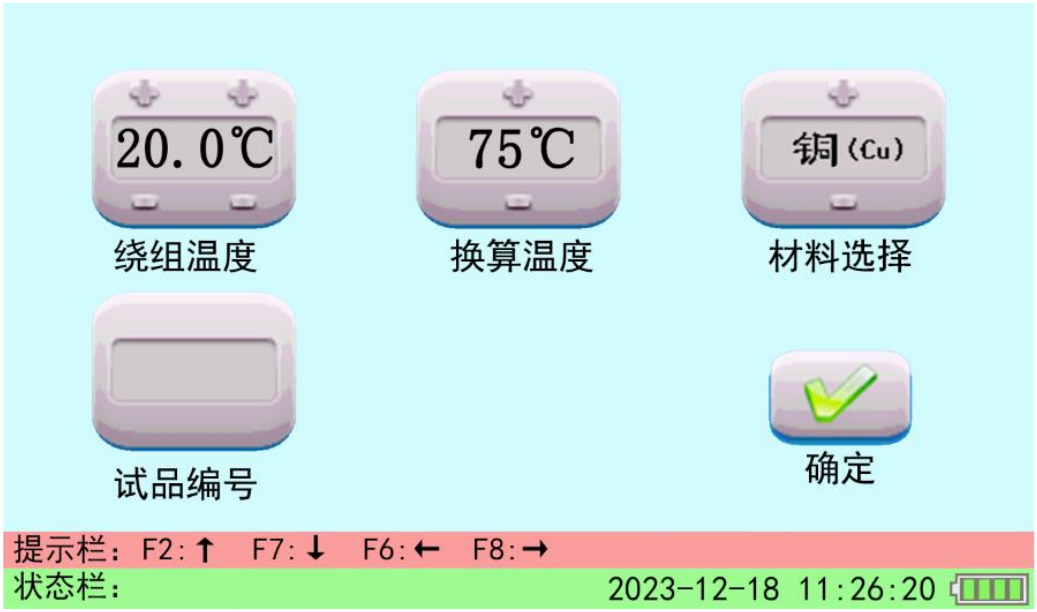
After stopping the test, the instrument discharges the test article first, the discharge alarm sound rings, and the screen shows "discharging...":



Please wait patiently for the discharge to end and the instrument to return to the main page for subsequent operation.

3.5. Set the conversion coefficient

Select the test settings in the initial interface and enter the interface:



Winding temperature: the current temperature of the tested article;

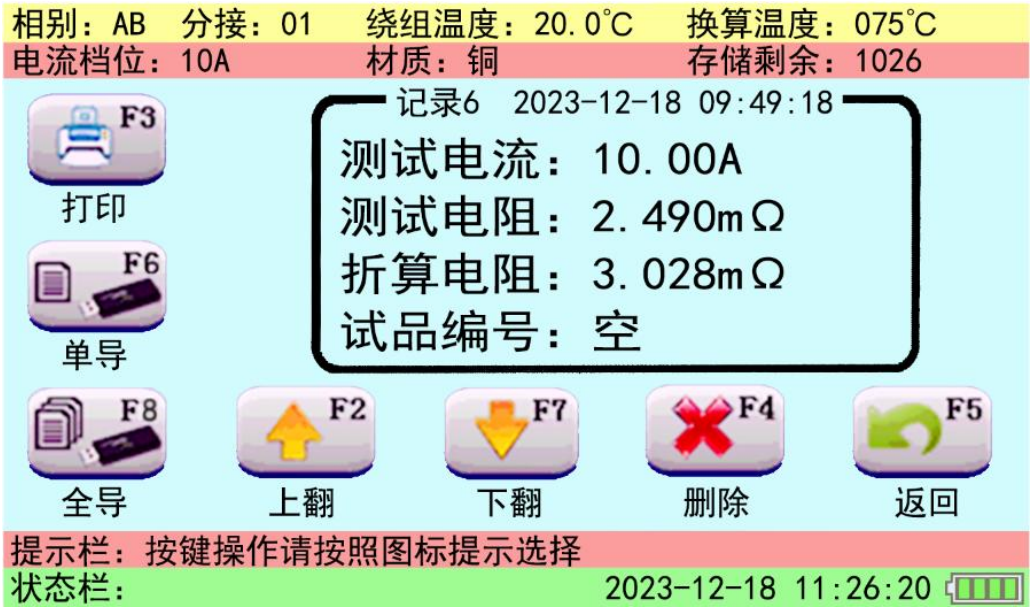
Conversion temperature: the measured resistance value is converted to this temperature to obtain the conversion resistance value;

Material selection: Material of the tested product.

After modification, select the "Return" icon to return to the initial interface, and then the test results will be converted according to the setting. If not set, the default is the last setting.

3.6. Data query

Select the data query and enter the query interface:



This page enables the following actions:

①. Print: Print the current data

②Full guide: Export all data to U disk

③. Single guide: export the current single data to the U disk

④. Turn up: query the previous data

⑤Turn down: query the next data

⑥. Delete: Delete the current data

(To delete all test data, please refer to manual 3.7, System Settings-Clear data)

⑦. Return: Return to the initial interface

3.7. System Settings (clock, brightness, clear data)

Select the system Settings and enter the interface:

3.7.1. Modify the instrument clock

Select the clock setting and enter the interface:

You can now modify the clock. Save after the change, or return to discard the change.

3.7.2. Adjust the screen brightness

Select the screen brightness and enter the interface:

You can adjust the screen brightness.

3.7.3. Clear all existing data

Select to erase the data and enter the interface:

At this point, all the test results can be cleared by selecting erase data stored in the instrument.

Note: It cannot be recovered after data clearing.

3.8 Example of test results and U disk storage

Printing: In the test interface and the data query interface, the test results are printed as follows:

U disk storage: you can save the test data to the U disk in either the test interface or the query interface, and you can check the U disk on the computer, and a file will appear:

Open the file to view the exported test data, as shown below:

4. Instrument self-inspection

If the user suspects the instrument failure or the test results are not accurate, the instrument self-test with the standard resistance equipped with the instrument. The standard resistance is shown below:

Connect the standard resistance to the terminal post of the instrument, as shown below:

Test the resistance value of the standard resistance according to the normal test steps. If the test result complies with the resistance value indicated on the standard resistance (within 0.2% error), the instrument is in normal condition and can continue to be used.

5. after-sale service

Instrument from the date of purchase within one year, belongs to the product quality problems free maintenance, lifelong warranty and technical services. For instrument failure caused by warranty period or non-product quality problems, our company will provide lifelong maintenance service (cost). If the instrument status is abnormal or faulty, please contact our company in time to arrange the most convenient solution for ou.