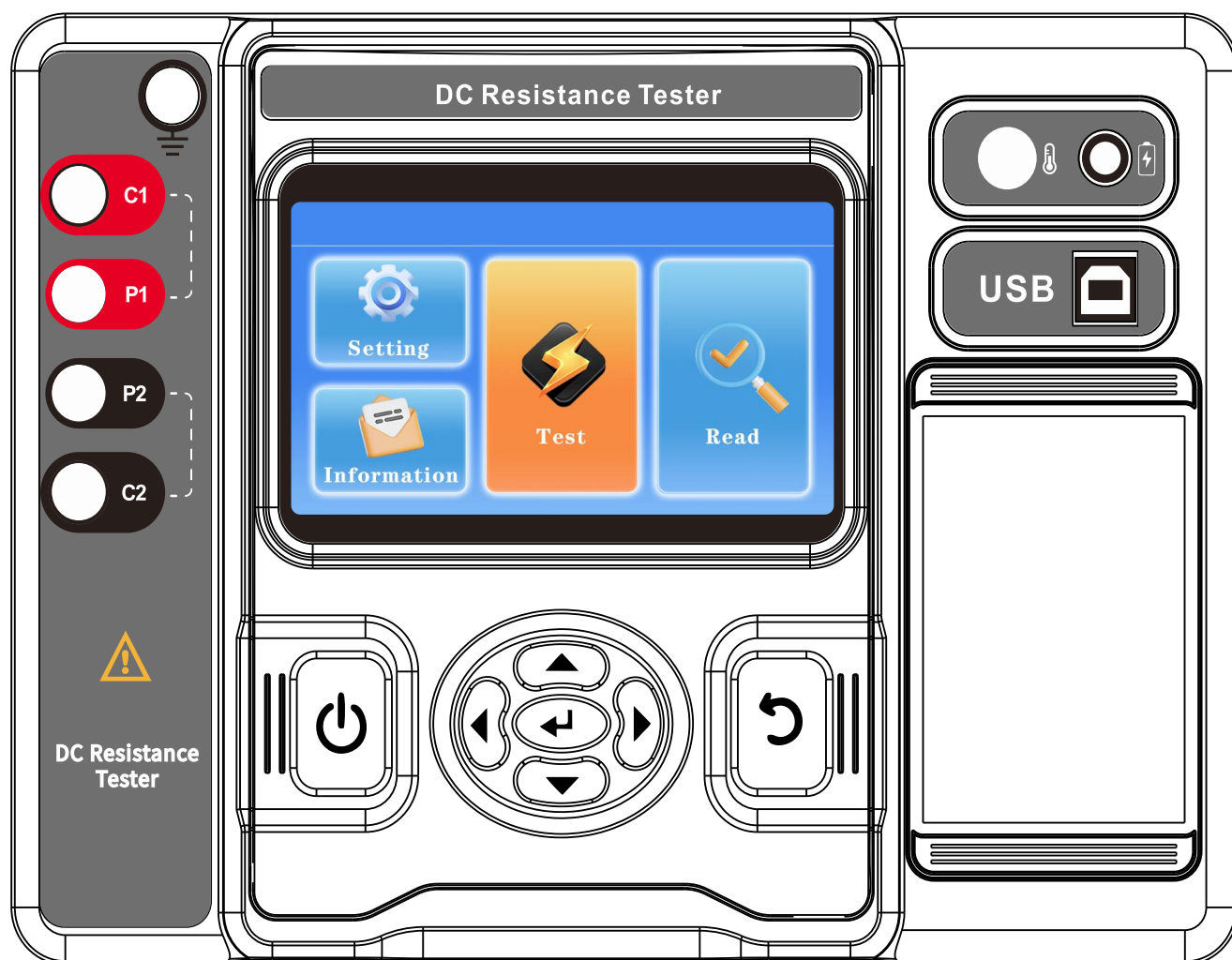


DC Resistance Tester



ES3072

User Manual

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GuangZhou ZhengNeng Electronic Technology Co. LTD

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1. Safety rules and precautions

Thank you for purchasing the DC resistance tester of our company. Before you use the instrument for the first time, in order to avoid possible electric shock or personal injury, please read carefully and strictly abide by the safety rules and precautions listed in this manual.

- ✧ In any case, special attention should be paid to safety when using this instrument.
- ✧ This instrument is designed, produced and inspected according to IEC61010 safety standards.
- ✧ In any case, special attention should be paid to safety when using this instrument.
- ✧ Pay attention to the words and symbols on the label on the body of the instrument.
- ✧ Before use, confirm that the instrument and accessories are in good condition, and that the insulation layer of the instrument and test wires is not damaged, exposed,
- ✧ Can be used without disconnection.
- ✧ During the measurement, it is strictly forbidden to touch the exposed conductor and the circuit being measured.
- ✧ Confirm that the connecting plug of the wire has been tightly inserted into the instrument interface.
- ✧ Do not measure in flammable places, sparks may cause explosion.
- ✧ When the instrument is in use, if the case or test line breaks and the metal is exposed, please stop using it.
- ✧ Do not place and store the instrument for a long time in a place with high temperature and humidity, condensation or direct sunlight.
- ✧ Pay attention to the measuring range and operating environment stipulated by this instrument.

- ✧ The use, disassembly, calibration and maintenance of this meter must be operated by authorized personnel.
- ✧ Due to the reason of this instrument, if continuing to use it will bring danger, stop using it immediately and seal it immediately.
- ✧ Deposits are handled by authorized institutions.
- ✧ The safety warning sign “” in the instrument and the manual, the user must strictly follow the instructions in this manual. for safe operation.

2. INTRODUCTION

ES3072 DC resistance tester, also known as transformer DC resistance tester, DC resistance quick tester, ground continuity tester, adopts microprocessor technology, four-wire method test, safe, precise and reliable. It is mainly used to measure the resistance of transformer windings, winding resistance of transformers, grounding downconductor continuity test, wire resistance of cables, switches, connectors, contact resistance of relays, coils, motors, and equipment casings, lightning protection belts, grounding Connection resistance test between metal components of beams, structures, cabinets, steel bars, water pipes, windows, guardrails, radiators, assembly lines, etc. Widely used in telecommunications, electricity, meteorology, computer rooms, oil fields, power distribution lines, tower transmission lines, gas stations, factory grounding grids, lightning rods, etc.

ES3072 DC resistance tester is composed of host, monitoring software, test line, communication line and so on. The main unit has a charging function, no need to find electricity on site, full-color large-screen LCD display, easy to see at a glance, easy to use touch screen operation, port overload prevention function. Large capacity storage of 800 sets of data. The upper computer software has the functions of reading, consulting and

saving historical data.

3.Range And Accuracy

3.1、 Temperature Measurement Accuracy

type	Range	maximum display	resolution	Test accuracy
Temp probe	-10.0°C~60.0°C	60.0°C	0.1°C	±1.0°C
Internal temp	-10.0°C~60.0°C	60.0°C	0.2°C	±1.0°C

3.2、 Resistance Measurement Accuracy

measuring current	Measuring range	precision	resolution
20A	10.0uΩ~1000.0uΩ	±0.2%FS±10dgt	0.1uΩ
	1.000mΩ~10.000mΩ	±0.2%FS±10dgt	0.001mΩ
10A	10.00mΩ~100.00mΩ	±0.2%FS±10dgt	0.01mΩ
5A	100.0mΩ~1000.0mΩ	±0.2%FS±10dgt	0.1mΩ
1A	1.000Ω~10.000Ω	±0.2%FS±10dgt	0.001Ω
0.1A	10.00Ω~100.00Ω	±0.2%FS±10dgt	0.01Ω
10mA	100.0Ω~1000.0Ω	±0.2%FS±10dgt	0.1Ω
1mA	1.000KΩ~10.000KΩ	±0.4%FS±30dgt	0.001KΩ
	10.00KΩ~100.00KΩ	±0.4%FS±30dgt	0.01KΩ
	100.0KΩ~1000.0KΩ	±1.5%FS±50dgt	0.1KΩ
Temperature characteristics: plus test accuracy × 0.3/°C within the operating temperature range. (outside 18°C to 28°C) Calculation method: accuracy = (accuracy of current gear) + 0.3×(number of			

temperature difference)×(accuracy of current gear)

Example: use the environment 8°C/20A current file, the accuracy of this file is
 $\pm 0.2\%FS \pm 10dgt$

$$\text{Accuracy} = (0.2\%FS \pm 10dgt) + 0.3 \times 10 \times (0.2\%FS \pm 10dgt) = 0.8\%FS \pm 40dgt$$

(Note: 1mA current 1000K gear test accuracy is only valid at 18°C to 28°C)

Long-term testing of high-current gears is prone to heating and affecting accuracy.
If there is any deviation, you need to wait for a while before testing.

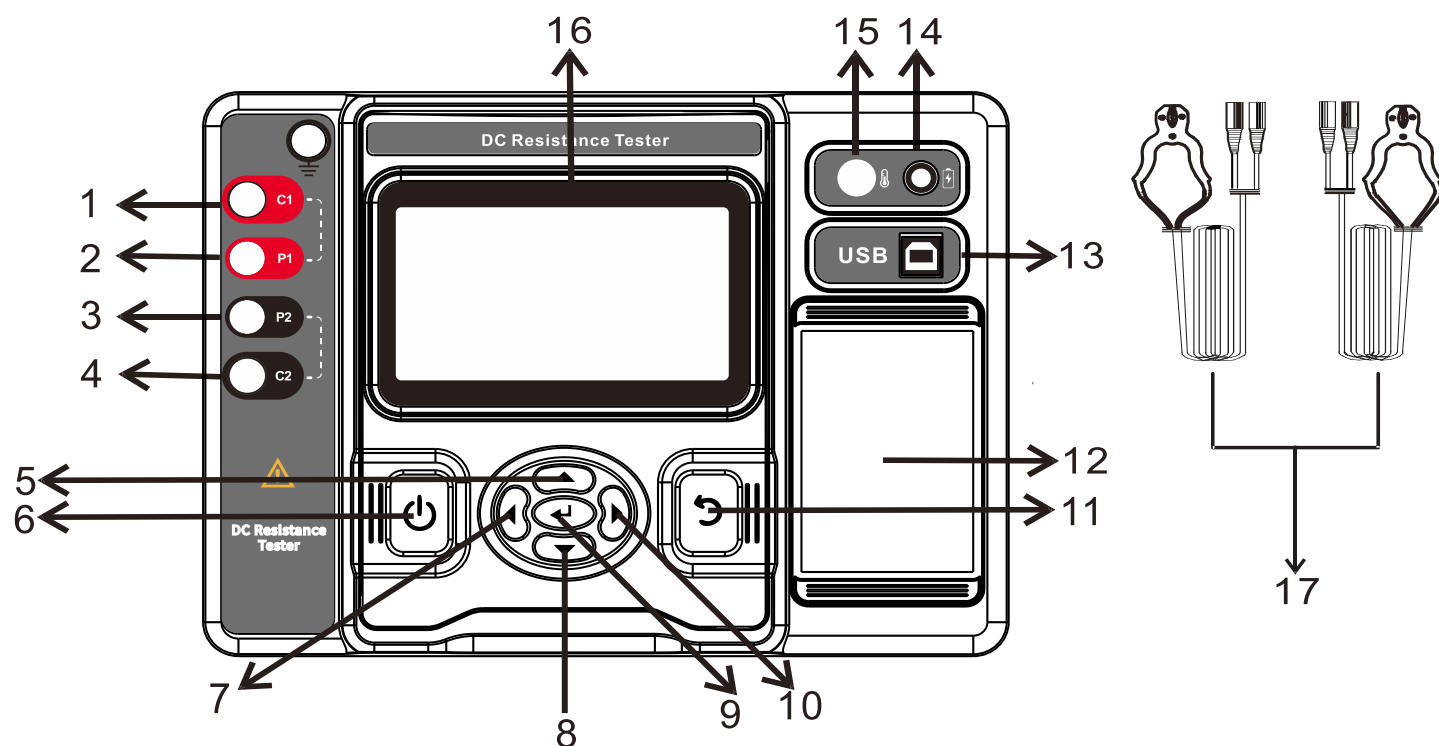
4. Technical specifications

Function	It is mainly used to measure transformer DC resistance, transformer winding resistance, ground grid connection continuity, cable wire resistance, switch, connector, relay contact resistance, coil, motor, transformer winding resistance and metal riveting resistance, metal components Interconnection resistance test, low value resistance test, contact resistance test, etc.
Sample type	Optional Cu copper, Al aluminum, Fe iron, Au gold, Ag silver material
Resistance Range	10.0uΩ-1000.0KΩ
Resolution	0.1 uΩ
overflow display	"OL" symbol display when over-range overflow
Detection method	Four-wire test
test current	20A、10A、5A、1A、0.1A、10mA、1mA
short circuit current	20A

temperature check	Yes, external temperature probe, internal temperature sensor, dual sensor design
Temperature conversion	Yes, temperature conversion, can convert 75 °C measurement results
overload protection	Have
automatic discharge	Have
Power	DC14.6V 12000mAh Large capacity lithium battery
charging function	Have
display mode	5-inch touch screen (854dots×480dots) full-color LCD display
interactive mode	Touch screen/button
LCD size	length and width: 108 mm×65mm
Meter size	length width height: 277.2mm×227.5mm×153mm
Test line length	5 meters, 1 red and 1 black
Mobile APP	Have, Bluetooth connection
Computer PC	Have, USB cable connection
data storage	800 Group
data review	Data lookup function
printer	There is a printer embedded in the instrument panel, press the print button to print the test results
battery voltage	The battery power is displayed in real time, prompting that the battery needs to be charged in time when the voltage is low
Automatic shut-down	Optional off, 5 minutes, 10 minutes, 15 minutes, 20 minutes, 25 minutes, 30 minutes
Power	Standby: about 4W (30% brightness)

consumption	Measurement: 100W Max
quality	Meter: 3.1kg (including battery)
	Test line: 850g
Working temperature and humidity	-10°C~40°C; 70%rh following
storage temperature and humidity	-20°C~60°C; 70%rh following
Insulation resistance	More than 10MΩ (500V between the circuit and the shell)
Pressure resistance	AC 3700V/rms (between the circuit and the case)
Electromagnetic properties	IEC61010-4-3, radio frequency electromagnetic field≤1V/m
Suitable for safety regulations	IEC61010-1, CAT III 600V, pollution degree 2, JJG724-1991 "Verification Regulations for DC Digital Ohmmeter", JJG166-1993 "Verification Regulations for DC Resistors", "DL/T967-2005 Loop Resistance Tester and DC Resistance Fast Tester Verification Regulations"

5.Instrument



1. Positive terminal of C1 current

2. Positive terminal of P1 voltage

3. Negative terminal of P2 voltage

4. Negative terminal of C2 current

5. Up key

6. Power off key

7. Left key

8. Down key

9. Confirm key

10. Right key

11. Back key

12. Printer

13. USB interface

14. DC charging port

15. Temperature probe interface

16. Display screen

17. Test wire

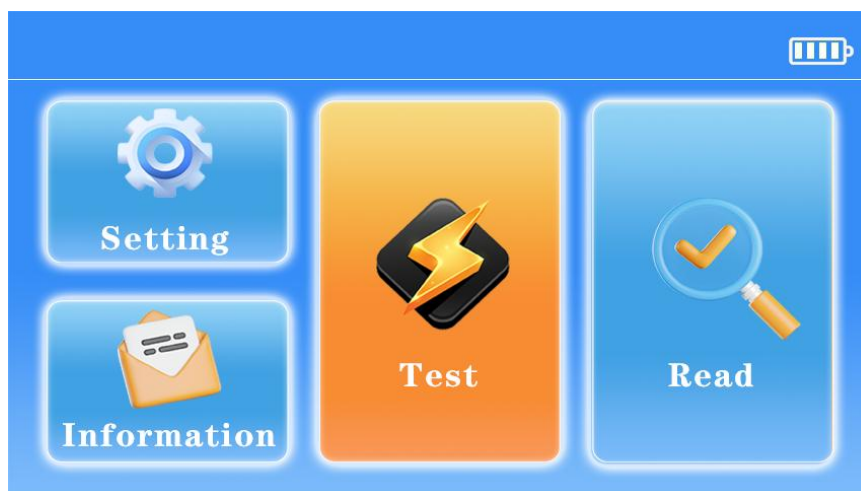
6. Operation method

6.1, switch machine

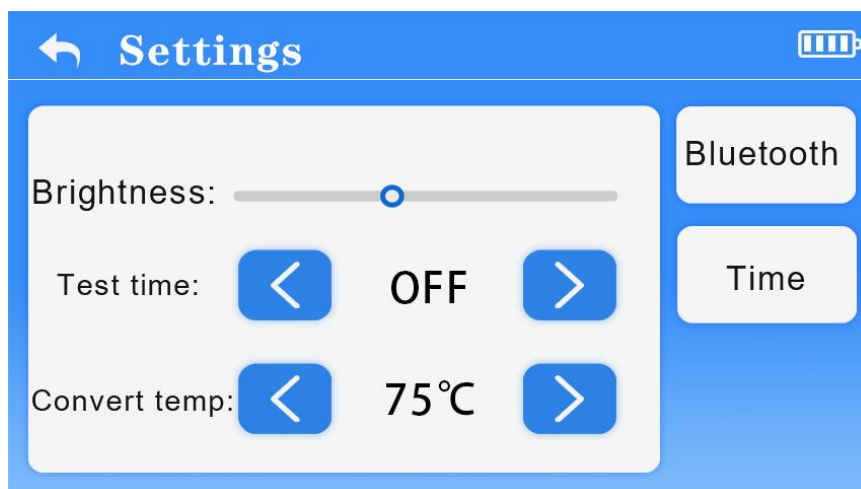
Press the "On/Off" key to turn on the machine in the off state, and press the "On/Off" key to turn off the machine in the on state.

6.2、 interface introduction

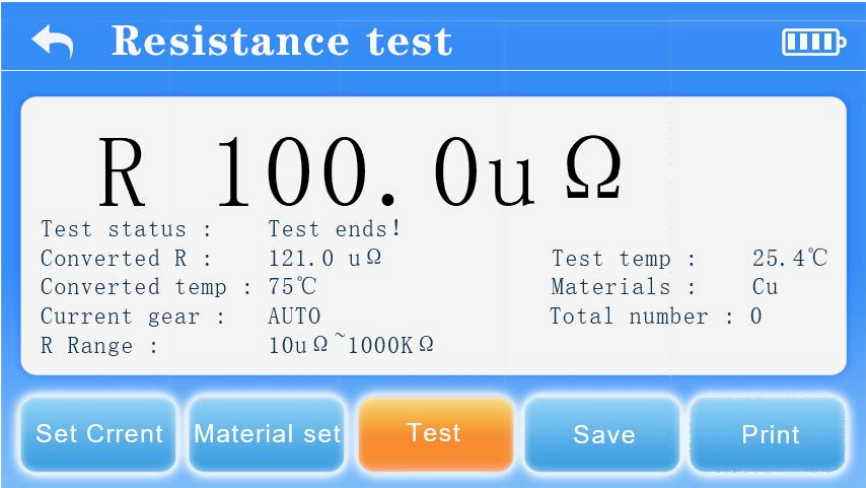
6.2.1、 Main interface



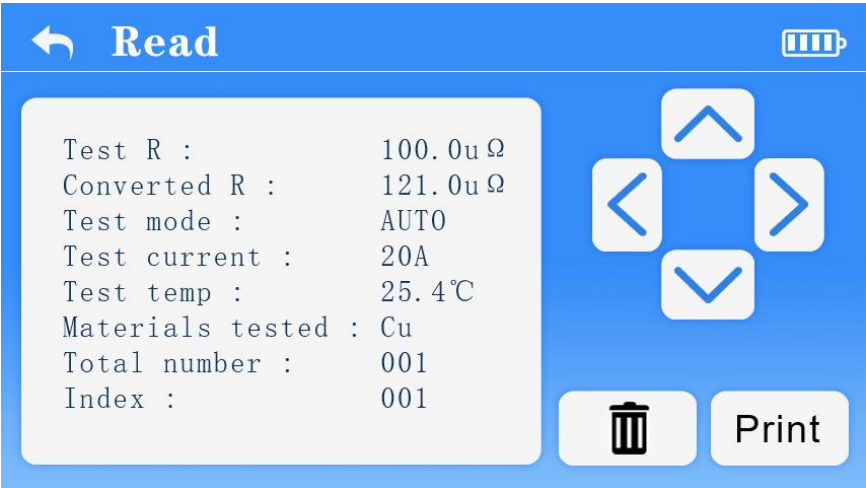
6.2.2、 Set interface



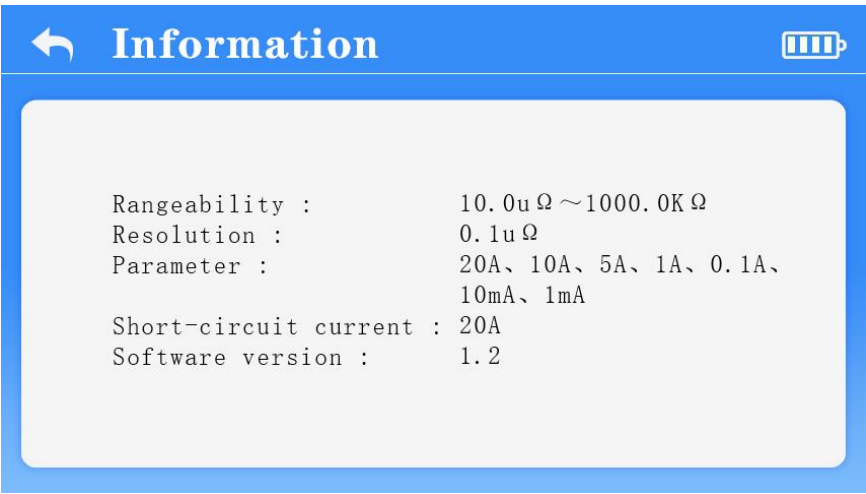
6.2.3、Resistance test interface



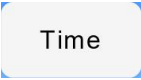
6.2.4、View interface



6.2.5、Product Information Interface



6.3、Icon Description

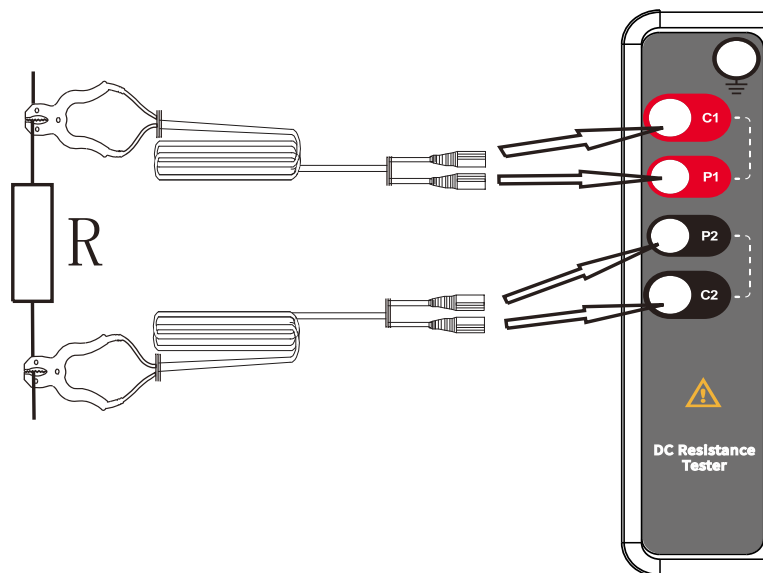
	test switch		Dimming
	Current gear setting		return
	Material settings		enter delete
	save data		data printing
	Indicates that the data is saved successfully		confirm deletion
	bluetooth switch		undelete
	Test stop time setting		Minus 1 step-by-step review
	bluetooth on		Add 1 step to view
	Minus 10 step-by-step review		Add 10 steps to view

6.4. Battery power check

1. After starting up, if the low battery voltage symbol "" is displayed on the upper right corner of the LCD, it means that the battery is low, please charge it in time. Only when the battery power is sufficient can the accuracy of the measurement be guaranteed.
2. The power consumption during the test is higher than that of the standby mode. If the LCD displays the low battery voltage symbol "" during the test, it means that the battery power is about to run low. Please charge it up in time. In order to ensure the accuracy of the test.
3. When the power is not enough to support the test, it will automatically shut down, please charge it before testing.

6.5、 Resistance test

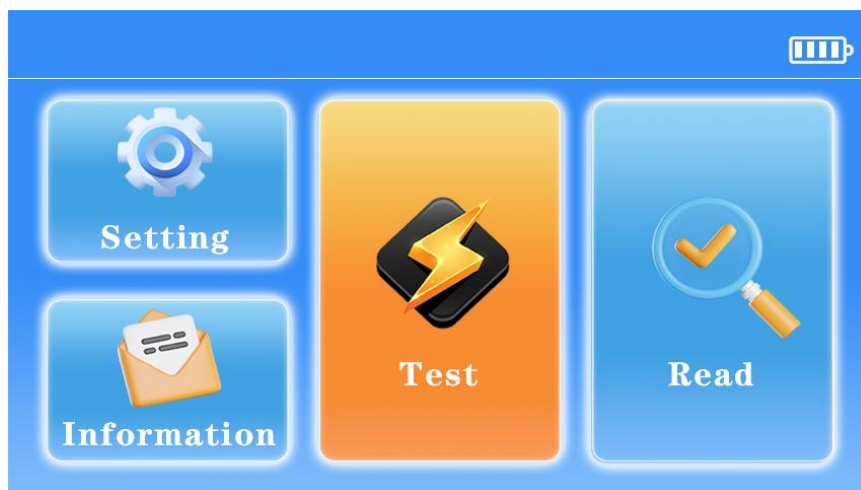
6.5.1、 Wiring method



Connect the red test wire to C1 and P1, connect the black test wire to C2 and P2, and connect the two test clips to both ends of the DUT. Note: There are two thick and thin test lines, the thick line is connected to the current C1, C2, and the thin line is connected to P1, P2

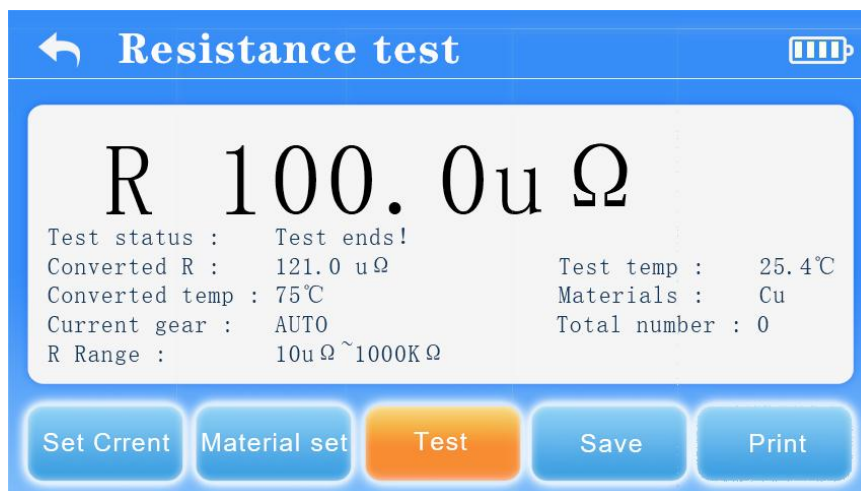
6.5.2、 Test operation

On the main interface, click the "Resistance Test" icon to enter the resistance test interface. as indicated in the figure below:



The automatic current gear will be selected by default every time it is turned on. If you need to manually select other currents, please click the icon in the lower left corner to switch to the corresponding current gear.

As indicated in the figure below:



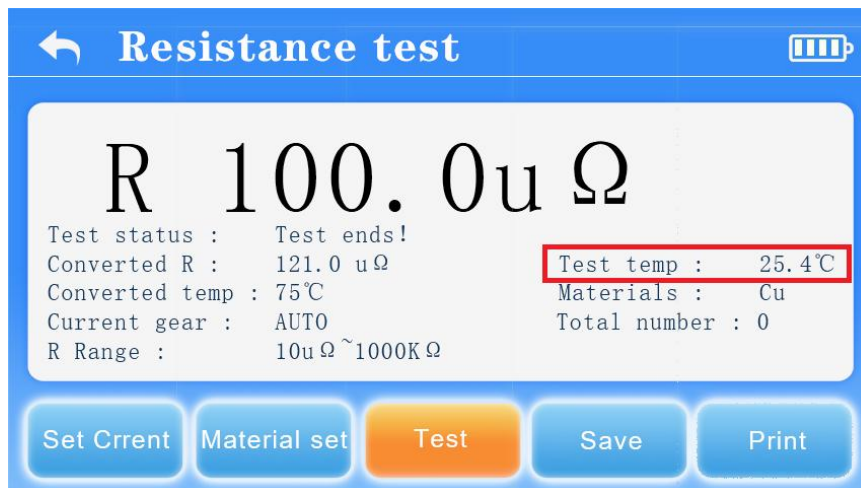
Click the "Test" icon to start the test. During the test, the buzzer will beep, the icons "●" Will blink, and the test status in the display area will display "Testing...".

At the end of the test, the instrument will automatically discharge. During the discharge process, it cannot be operated. Please wait for the end of the discharge before proceeding to the next step.

During the test, the test current cannot be switched, and the data cannot be saved, nor can it return to other interfaces. Please complete the test before operating.

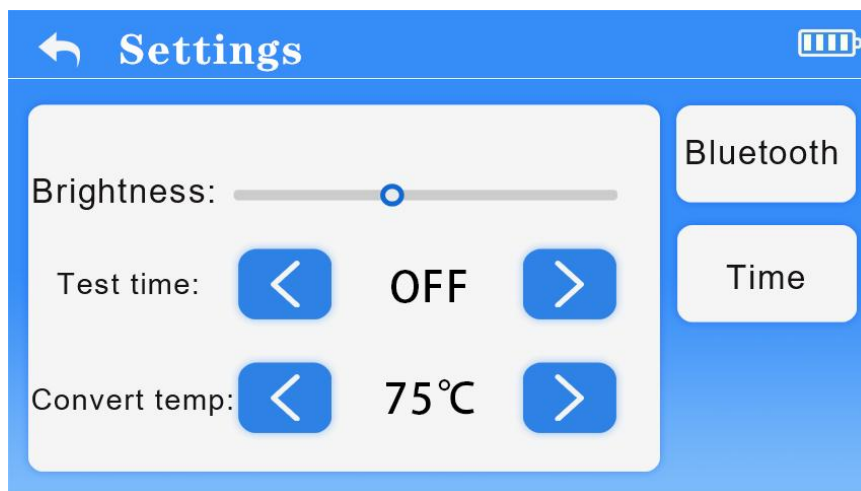
Please pay attention to the display and prompts in the LCD for specific conditions during use.

6.6、 Temperature display



When the external temperature probe is connected, the screen displays the temperature measured by the external temperature probe. If the temperature probe is not connected, the screen displays the temperature measured by the internal temperature sensor of the instrument.

6.7、 Backlight and auto power off settings

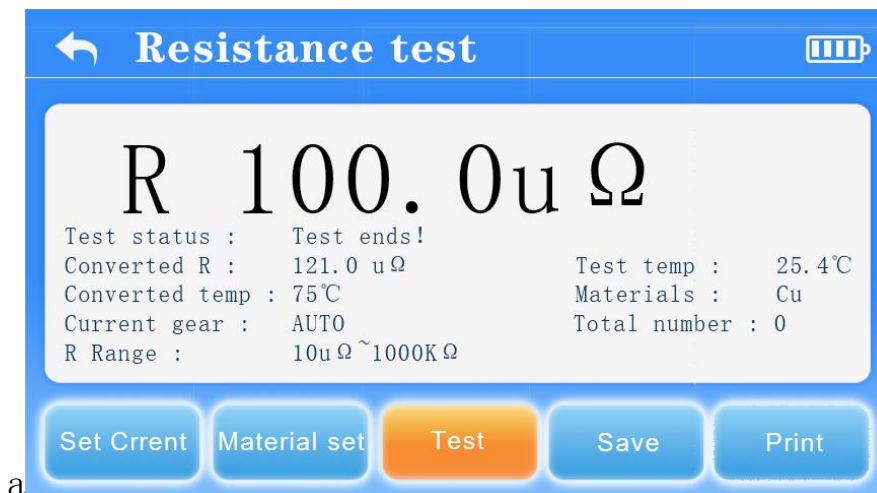


Backlight setting: Enter the setting interface, drag the "  " icon to the left or right to adjust the brightness.

Automatic shutdown setting: Press the left and right keys to select the automatic shutdown countdown of "off", "5 minutes", "10 minutes", "15 minutes", "20 minutes", "25 minutes" and "30 minutes". As indicated in the figure below:

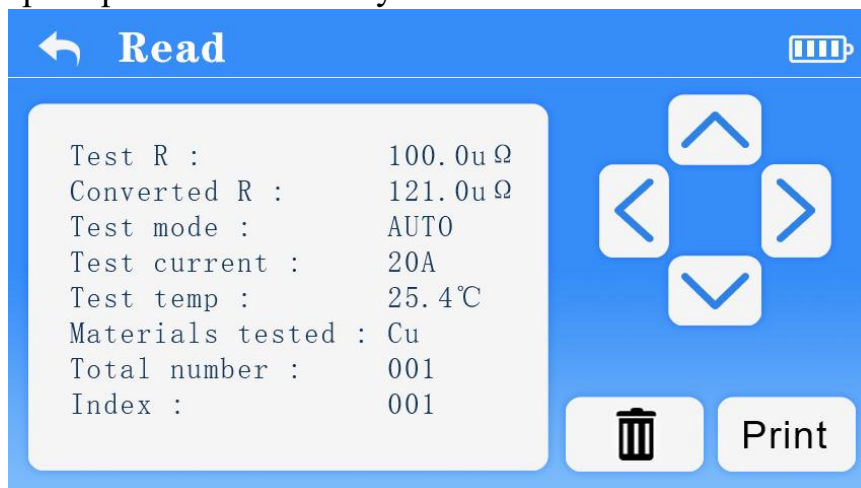
6.8、Data Storage

On the resistance test interface, after each test, click  the "Save" icon to save the current test data (as shown in the figure below). If the save is successful, the  icon will change to a  icon.



6.9、Data query/deletion/print

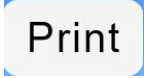
On the main interface, click the "View" icon to enter the query interface for data query and deletion (as shown in the figure below). If the instrument has not saved any data, the interface will prompt "No saved data yet!".



If the total number of saved data sets is not more than 10, you can check the data by clicking the " " icon plus 1 step, or click the " " icon minus 1 step to look up the data.

If the total number of saved data sets is greater than 10, you can check the data by clicking the " " icon plus 1 step, or click the " " icon minus 1 step to look up the data. You can also check the data by clicking " " plus 10 steps, or click " " minus 10 steps to view the data.

If you want to delete the data, you can click the "" icon to enter the deletion state, and then select the "" icon to confirm the deletion of the total data, or select the "" icon to cancel the deletion of the total data.

If you need to print the data, you only need to click the "" icon to print the data.

6.10、 Product Information Check

On the main interface, click the "Product Information" icon to enter the product information interface to view product technical specifications and software version information.

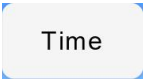
6.11、 overload protection

Each time the instrument is turned on and before testing resistance, the instrument will perform an overload check. If an overload is detected, it will perform overload protection and prompt. Please shut down and ensure that the test body is not charged before starting the test.

After overload protection, please disconnect the connection, and then restart the instrument to start normally.

6.12、 Test stop time setting

In the case that the instrument cannot normally measure large inductive loads within the default test stop time of 60 minutes, you canIn the setting interface, click the

"" icon in the lower left corner to enter the test stop time setting state to modify the time. The default time will be restored to 60 minutes each time the device is restarted. The test time is within 60 minutes, and the test process will make intelligent judgments, then display and wait for the data to stabilize before the test ends early. The data display does not mean the end of the test, and the test will not Stop, you need to judge by yourself to end the test. If the modification time is longer than 60 minutes, it will not be intelligently judged to stop, and it needs to wait until the setting is reached. Timed test to end.

6.13、APP and PC upper computer operation

This instrument supports connecting Android APP and PC host computer。

PC host computer connection instructions:

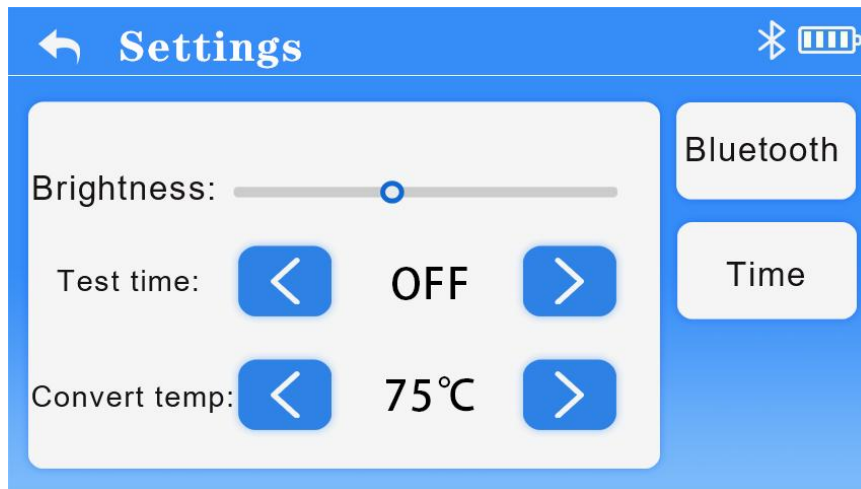
(The USB driver and host computer software in the CD should be installed before connection)

After the instrument is turned on, use the instrument accessories USB cable to connect one end to the instrument's USB port and the other end to the computer's USB port, and run the host computer software. The software will automatically search for the port and connect. After the connection is successful, you can check the historical data through the software. , generating excel reports and other operations。

Android APP Connection Instructions:

1. Confirm before use:

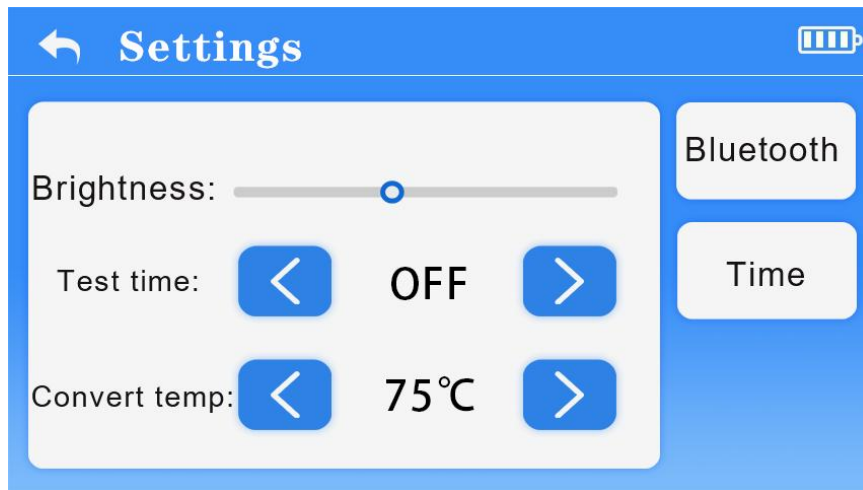
1. The system version of the mobile phone or tablet computer is Android 5.0 or above.
2. The "DC Resistance Tester" APP is installed in the smart device
2. On the "Settings" page, click the "" icon to turn on Bluetooth, as shown in the figure below:



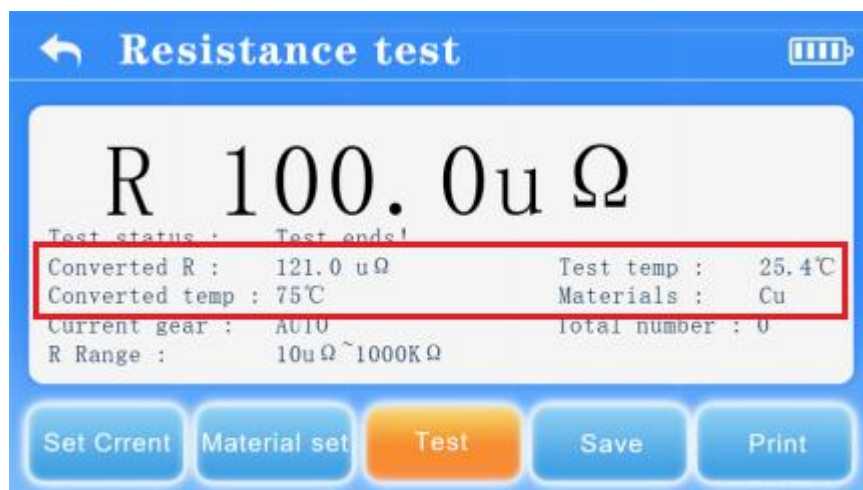
3. Open the app. Search for "DCR" (abbreviation of DC Resistance Tester) and connect, the connection is successful. After that, functions such as wireless control measurement and data browsing can be realized.

6.14、 Setting and Use of Conversion Resistors

Set the desired temperature to be converted in the settings interface. The value ranges from -40°C to 150°C .



The resistance test interface tests the resistance value, and calculates the resistance value corresponding to the set conversion temperature based on the temperature tested by the machine and the selected material.



7、Quantity of Standard Accessories

Tester	1pcs
Test line	2pcs (Red1pcs, black 1pcs)
Temperature probe	1pcs
CD	1pcs
Standard resistance	1pcs
Data line	1pcs
Charger	1pcs
Instructions, Warranty	1set
Tester tool box	1pcs

The content of this user manual cannot be used as a reason to use the product for a special purpose.

The company is not responsible for other losses caused by use.

The company reserves the right to modify the content of the user manual. If there is any modification, no further notice will be given.



GuangZhou ZhengNeng Electronics Technology CO.,LTD
Address: 4 / F, Building 6, Hongjie Industrial Park,
Xingshan Middle Road, Baisha Village, Zhongluotan Town,
Baiyun District, Guangzhou, China
Post code: 510540
Tel: +86-020-36544172
E-mail: sales@fuzrr.com
Website: <http://www.fuzrr.com>