Dear Client,

Thank you for Purchasing our HTZZ-100A Transformer winding DC resistance tester. Please read the manual in detail prior to first use, which will help you operate the equipment skillfully.

Our aim is to continually improve and perfect the company's products, 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 in/pull out test line or power outlet, they will cause electric spark. PLEASE CAUTION RISK OF ELECTRIC SHOCK! To avoid risk of electric shock, be sure to follow the operating instructions!

Company Address:

- **T4， No. 1, High-tech 2 Road，East Lake High-tech Development Zone，Wuhan**
- Sales Hotline: 86-27-87492243
- After Service Hotline**:** 86-27- 87459656
- Fax: 86-27- 87803129
- E-mail: whhuatian@163.com
- Website: www.whhuatian.com

◆ 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 personal injury and to prevent the product or any other attached products being damaged. In order to avoid possible danger, this product can only be used within the scope of the provision..

Only qualified technician can carry out maintenance or repair work.

--To avoid fire hazard or personal injury:

Use Proper Power Cord

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

Connect and Disconnect Correctly

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

Grounding

The product is grounded through the power cord; besides, the ground pole of the shell must be grounded. To prevent electric shock,

the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, please do check that the product is properly grounded.

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 Wire and Charged Conductor

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

Do Not Operate with Suspicious Faults

If you encounter operating faults/suspect there is damage to this product, 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.

Content

I、Overview

The DC resistance of transformer is a necessary test item in transformer manufacturing, including semi-finished products, finished products factory test, installation, overhaul, change of tap changer, handover test and preventive test of power department. It can check the welding quality of the winding joint and whether there is inter turn short circuit in the winding, whether the contact of each position of the voltage tap changer is good, whether the actual position of the tap changer is consistent with the indicated position, whether the outgoing line is broken, and whether there is broken strand in the parallel winding of multiple wires. The new power supply technology is adopted in the instrument, 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 single-chip microcomputer, with high degree of automation, automatic discharge and discharge alarm function. The instrument has the advantages of high precision and easy operation, which can realize the rapid measurement of transformer direct resistance。

II、Safety measures

1. This manual must be read carefully before use.

2. The instrument shall be kept away from rain, corrosive gas and other places.

3. The instrument should avoid violent vibration.

4. The maintenance and debugging of the instrument should be carried out by professional personnel.

5. After the test, be sure to turn off the power supply and remove the test line after the discharge alarm stops.

6. When measuring the no-load voltage regulating transformer, it is necessary to wait for the discharge indication alarm tone to stop before switching gears.

During the test, it is forbidden to move the test clamp and power supply line

III、Performance characteristics

1. High degree of automation and easy operation.

2. Adopting high-frequency switching power supply technology with large output current, suitable for DC resistance measurement of large and medium-sized transformers.

3. The protection function is perfect, which can reliably protect the impact of the back EMF to the instrument, and the performance is more reliable.

4. With audible discharge alarm, clear discharge instructions, reducing misoperation.

5. The response speed is fast, and the on-load tap switch can be directly switched in the measurement state, and the instrument automatically refreshes the data.

6. The vertical chassis structure is adopted, which is convenient for on-site use.

7. Intelligent power management technology, the instrument always works in the minimum power state, effectively reducing the internal heating of the instrument and saving energy.

8. Dot matrix LCD, Chinese menu.

9. Thermal printer, high speed, silent, print out test results.

IV、Technical index

1、 Output currnt：5A、10A、20A、50A、100A

2、 Range：10μΩ～100mΩ （100A gear）

50μΩ～400mΩ （50A gear）

100μΩ～1Ω （20A gear）

500μΩ～2Ω （10A gear）

1mΩ～4Ω (5A gear）

3、 Accuracy：0.2%

4、 Resolution：0.1μΩ

5、 Operating temperature：-10～40℃

6、 Environment humidity：≤80%RH，No condensation

7、 Power Supply：AC220V±10%，50HZ±1HZ

V、System introduction

The instrument panel is shown in Figure 1

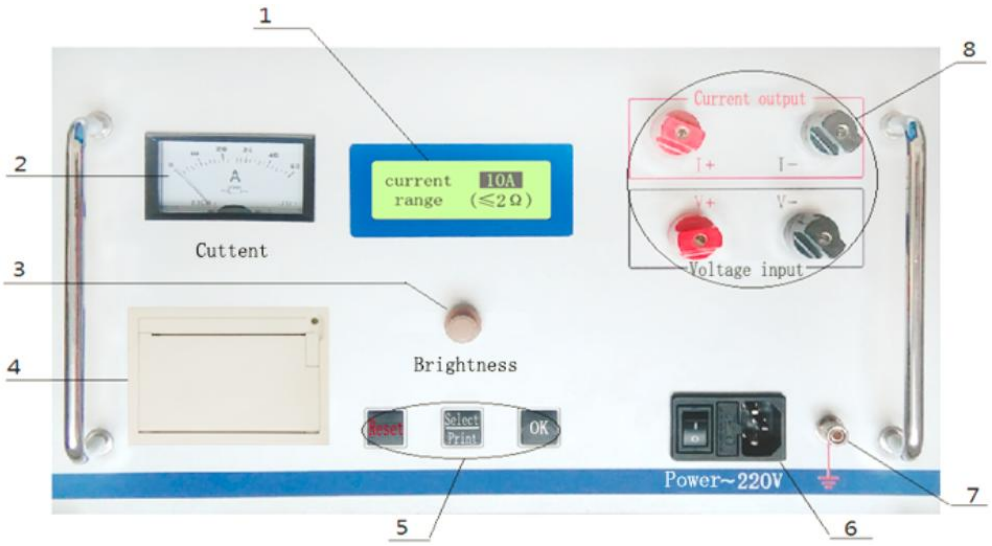


Figure 1

1. Display screen: 128×32 dot matrix liquid crystal display, Chinese operation.

2. Current meter head: indicates the output current.

3. Brightness adjustment: the contrast of displayed characters can be adjusted.

4. Printer: Print the result of measuring resistance value.

5. Buttons: perform various operations of the instrument：

Reset：Press the reset button at any time to return to the initial interface and cut off the output current。

Choose/Print：Select the output current, after the measurement data is displayed, press this key for 1-2 seconds to print the resistance value

Confirm：After selecting the current, press this key, and the instrument will test. After the resistance value is displayed, press this key for 1-2 seconds to retest to speed up the data stability.。

6. Power ~ 220V: AC220V power socket (with insurance) and instrument power switch.

7. The grounding pole is used for grounding the shell of the whole machine and is a protective ground.

8. Terminal:

I+, I-: output current binding posts, I+ is the output current is positive, I- is the output current is negative.

V+, V-: Sampling voltage terminal, V+ is the positive terminal of the voltage line, V- is the negative terminal of the voltage line。

VI、Test and operation method

1、Wiring

A: Directly measure the wiring, see the figure below:

Connect the thick wire of the red test wire to I+, the thin wire to

V+, and the test clamp to one end of the sample,

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

Please confirm that the wiring is correct and the connection is firm, and at the same time connect the ground wire。

Figure 2

B、The wiring of the assisted magnetic method is shown in Figure 3 to 5 (applicable to Y(N)-d-11 connection group).

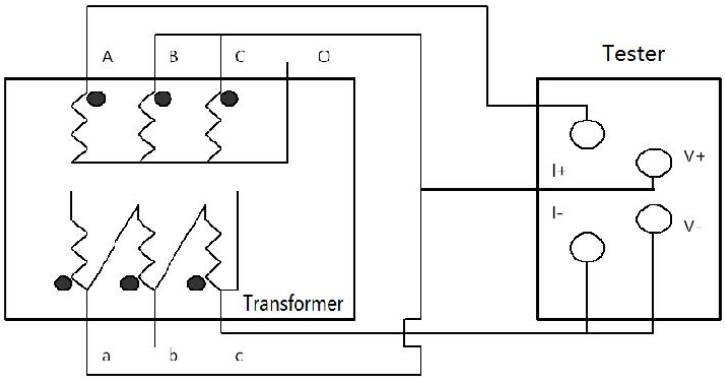


Figure 3

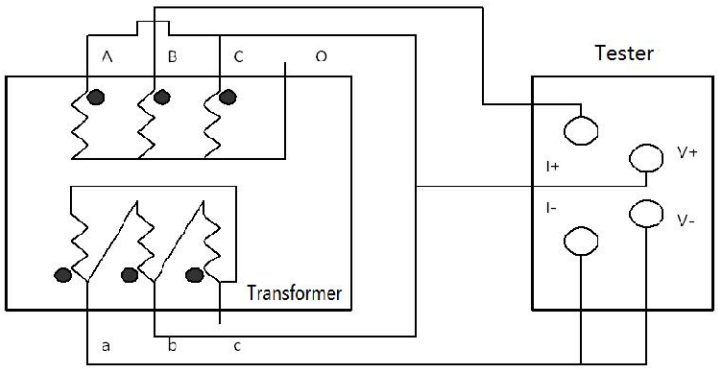


Figure 4

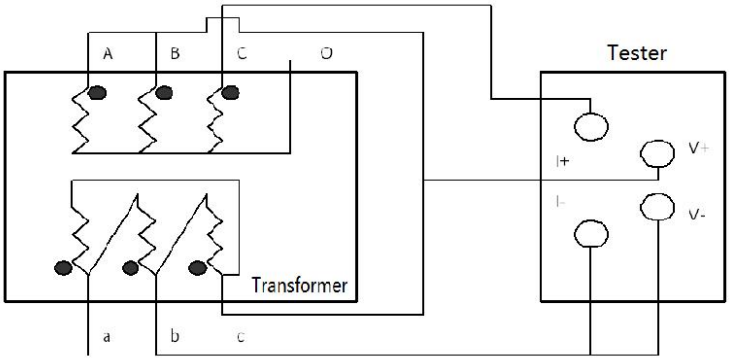


Figure 5

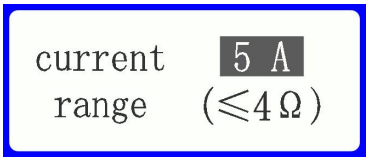
When measuring the low-voltage side of a large-capacity transformer, if the maximum current of the DC resistance tester is relatively small under existing conditions, or in order to speed up the measurement speed, you can choose the magnetic method to measure. In the above figure, Figure 3, Figure 4, Figure 5 are the wiring methods for measuring low voltage Rac, Rba, Rcb respectively。

2、Start up, test, print, discharge

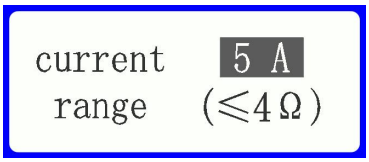
After connecting the wires, confirm that the wires are correct and firm.

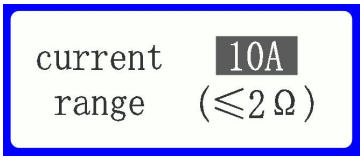
Turn on (I on the switch is on, O is off), the screen displays as shown

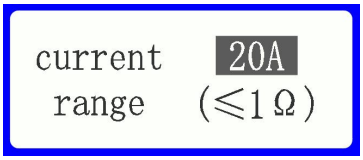
below：

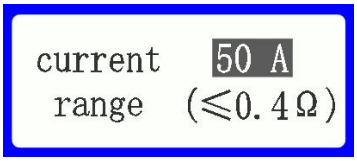


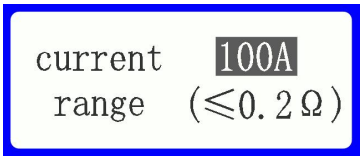
◆**Current selection**： you can go through **choose/print** to choose the test current,Press the key to select the test current. Each time you press the key, the display will scroll through the following interfaces (the interface displays the selectable test current and the corresponding range of the current)::











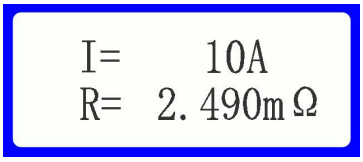
◆**Test**：After selecting the current, press **confirm** button，start the test, the display shows "charging"。

At the same time, the ammeter indicates the current output current value.

After a few seconds, "Testing" is displayed：

At this time, it indicates that the charging is completed and the test state is entered.

After a few seconds, the test result will be displayed, as shown below。



Note: At this time, the instrument still has output current, and the test results are also refreshed at any time (cannot be disconnected at this time)。

◆Print test result：After the test result is displayed, press **select/print** key for 1-2 seconds，The printer will output the printing result (if not printing, please check whether the printing paper is used up or whether the printing paper is installed correctly)。

◆Discharge：After the tests are done，pressresetbutton，The power supply of the instrument stops outputting current, at the same time the discharge sound alarm sounds, and the ammeter returns to the zero position. At this time, the display screen returns to the initial interface. After the discharge sound is over, you can reconnect the wiring for the

next measurement or remove the test wire and The power cord ends the measurement.

VII、Instrument self-test

If the user suspects that the instrument is malfunctioning or the test result is inaccurate during use, the instrument can be self-checked with the standard resistance provided with the instrument. The standard resistance is as follows：

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

Test the resistance value of the standard resistor according to the

normal test procedure. If the test result is consistent with the resistance value marked on the standard resistor (with an error within 0.2%), it means that the instrument is in normal condition and can be used continuously.

VIII、Precautions

1、Before testing the reverse tapping of the no-load regulating transformer, you must pressResetbutton to discharge， After the discharge is over, the alarm sound will stop for more than 10 seconds, and the tap can be switched after the electric energy is fully released.

2、Before removing the wire after the test is completed, be sure to press Reset to discharge， After the discharge is over, the alarm sound will stop for more than 10 seconds. Wait for the electric energy to be fully released before removing the wire。

3、When selecting the current, please refer to the range in the technical index column, and do not use over range or under range. When the range is exceeded, the instrument is always in the "charging" state because the current does not reach the preset value. When the range is under-range, “current too small” is displayed. When these two states appear, confirm the range and select the appropriate current for testing.

4. Pay attention to the range when using the magnetic method. Because two high-voltage coils are connected in parallel and one is

connected in series, 1.5 times the resistance of the high-voltage coil is added to the entire test loop, which should be included when selecting the range. If the output current cannot reach the set value or the output current is unstable if the range is exceeded.

5. When the short contacts of the three wires of the magnetic assist method are removed after the discharge is completed, there may be residual current, and may spark and discharge when removed. This is a normal phenomenon.

6. When the test clip is connected to the lead-out end of the transformer winding, pay attention to the lead-out end being exposed to the air for a long time. The surface of the lead-out end is covered with a layer of oxide film, which may cause unstable or inaccurate measurement results, so when wiring Pay attention to clean the oxide film, or after the test clip is connected to the terminal, twist the test clip several times to break the oxide film to ensure a good connection.

X、After-sales Service

The instrument will be repaired free of charge for product quality problems within one year from the date of purchase, and lifetime warranty and technical services will be provided. For instrument failures that have passed the warranty period or are not caused by product quality problems, our company provides lifetime maintenance services (costs are charged). If you find that the

instrument is abnormal or malfunctioning, please contact the company in time to arrange the most convenient solution for you.