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# Operation Manual

## Transformer Oil Tan Delta Tester

**GTD-61A**



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## **1.Preface**

Thank you for selecting GTD-61A Oil Dissipation Factor and Resistivity Tester ! For your easy operation, here with a detailed manual, from which you can get information about the product introduction, operation method, instrument performance,safety precautions and many other aspects of information.

Before using of the instrument, please read this manual carefully,and maintenance according to the manual of equipment, which will help you to operate easily,correctly, and can prolong the service life of the instrument.

## **2.Summary**

GTD-61A Oil Dissipation Factor and Resistivity Tester is based on IEC 60247(1978)

《liquid insulating material of relative permittivity, dielectric loss factor and the DC resistivity measurements》 design and manufacture of high precision integrated testing instrument. Mainly used for measuring Oil Dissipation Factor and Resistivity of oil liquid and insulating medium, the internal integration of the dielectric loss of oil cup, temperature control instrument, temperature sensor, dielectric loss test bridge, AC test power supply, standard capacitor, high resistance meter, high voltage DC source etc..

The instrument uses advanced measurement and control technology, complete automatic warming, temperature control, high-speed data sampling, operation, display, print and storage process. Advanced measurement principle and high digital technology, make your work easy and convenient.

## **3.Instrument characteristics**

- 1). Heating, measuring dielectric loss, measuring resistivity can be completed automatically one time.
- 2). The three electrode type structure with an IEC 600247(1978) standard, inter electrode spacing 2mm, can eliminate stray capacitance and leakage effect on the dielectric loss test results.
- 3).Using medium frequency induction heating, PID temperature control algorithm. This heating mode has the advantages of non-contact oil cup and heating body, uniform heating speed, convenient control, the temperature control in temperature within the preset range error.
- 4). Using advanced DSP and FFT technology to ensure data stability, accurate and reliable.
- 5). Internal standard capacitor for the SF6 charging three pole capacitor, dielectric loss and capacitance of the capacitor is not affected by ambient temperature, humidity, etc., the accuracy is still guaranteed after a long time use.
- 6). With Large color touch screen,easy operation.
- 7). With the lid off the high voltage, high voltage electrode cup short reminder, eliminate safety hazards, to ensure the normal operation of the safety of operating personnel and equipment.
- 8). With real-time clock, test date, time can be saved with the test results, display, print; equipment can display the ambient temperature, real-time detection of the test environment.
- 9).Can store 100 sets of measurement datas automatically.

10).Calibration function of empty electrode cup. The capacitance and dielectric loss factor of the empty electrode cup are measured to judge the cleaning and assembling condition of the empty electrode cup. The calibration data are saved automatically to facilitate the accurate calculation of relative capacitance and DC resistivity.

11) .The equipment can complete the oil cup cleaning automatically.

#### **4.Main technical indexes of products**

Measuring range:

Electric Capacity	5pF~200pF
Relative Permittivity	1.000~30.000
Dielectric loss factor	0.00001~100
DC resistivity	2.5 MΩm~20 TΩm

Measurement accuracy:

Electric Capacity	±(1% reading +0.5pF)
Relative Permittivity	± 1%
Dielectric loss factor	±(1% reading +0.0001)
DC resistivity	± 10% reading

Resolution:

Electric Capacity	0.01pF
Relative Permittivity	0.001
Dielectric loss factor	0.00001
DC resistivity	0.001MΩm

Temperature range:	0 ~ 125°C
Temperature measurement error:	+ 0.5°C
AC test voltage:	0~2000V continuous adjustable ,frequency 50Hz
DC test voltage:	0 ~ 500V continuous adjustable
Power consumption:	100W
Dimensions:	420mm*380mm*385mm
Total weight:	21Kg

### **5.the use of conditions**

. Ambient temperature	0~40°C
. Relative humidity	≤80%
.Power supply	AC 220V (1±10%)
. Power supply frequency	50 Hz (1±10%)
. Power consumption	100 W

### **6.Panel description**



GTD-61A Oil Dissipation Factor and Resistivity Tester

figure 1

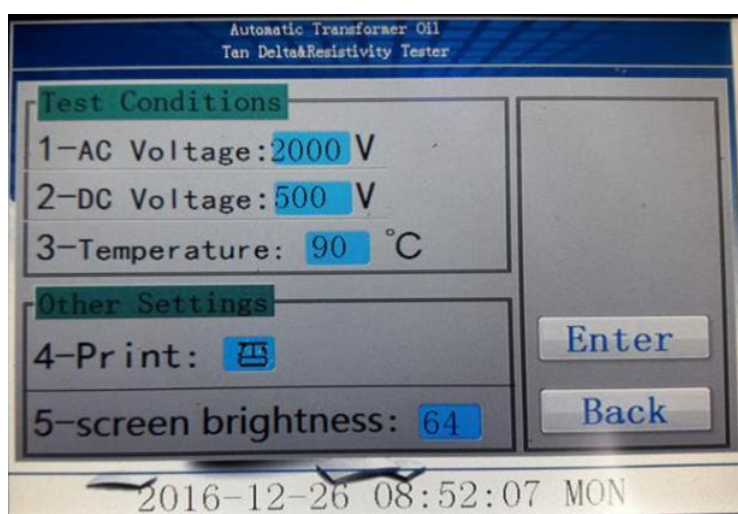


figure 2

- 1). LCD screen: Display date, time, operating parameters, test results, menu prompts and other related information;
- 2). Printer: Print single and multiple test results average;
- 3). Power supply socket and switch: AC 220V 50Hz plug power line; power switch power supply on-off control instrument;
- 4). Oil cup: A container for testing oil samples;
- 5). Measuring signal socket: For inserting a measurement signal line;
- 6). Temperature signal line: Add or remove the open cup, close the rear can be tested;
- 7). Earth column: Reliable ground connection column

## **7.Operation step diagram**

- 1). The measured signal line and the temperature signal line as shown in Figure 2 are connected well. The temperature signal line is placed in the socket of the center of the oil cup.
- 2). Connect the ground wire well, turn on the power cord, open the power switch, the device will automatically enter the main interface as shown in figure 3.





3).Before testing, the oil sample must be injected into the test oil cup firstly. The oil cup has two ports, one (thick) is the oil filling port, and one (thin) is the liquid level tube, which is used to display the height of the liquid level. We should open the oil leakage switch in the main interface before the oil filling, rinse the oil cup with the oil sample. Click on the oil leakage switch, the front of the switch will display  $\sqrt{}$ , the oil sample to be tested will be slowly introduced into the oil cup. The oil sample will automatically flow out of the drainage pipe, when the cleaning is completed, click the oil leakage switch, close the oil drainage system, When the oil sample inlet and level tube height are held at a level.

4).In Figure 3 interface, press the test conditions key, the device enters the next menu as shown in figure 4.



figure 4

5).In the figure 4 interface, you can set the test parameters separately. In the diagram the parameter is default. If y need to change, a small keyboard will automatically pop

up.If you click the parameters that need to be changed. as shown in Figure 5, directly enter the required parameters in the keypad and click the confirmation key on the keypad.choose to print by clicking on the cursor to switch between yes and no. After finish setting,click Back to return to the main interface of Figure 3.

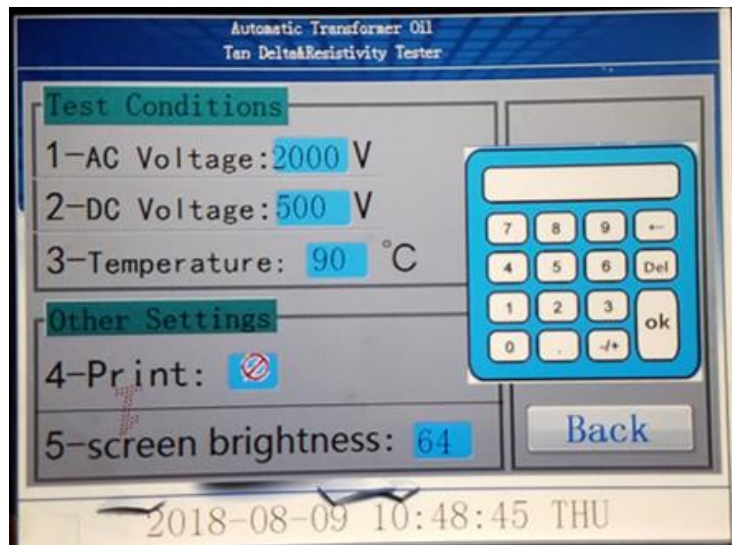


figure 5

6). Under the interface of Figure 3, click on the empty cup test to enter Figure 6, the empty cup test is mainly to verify the cleanliness and assembly of the oil cup before oil injection.Can choose 'Dissipation factor' and 'resistivity measuring' by clicking the cursor in front of the test item. The smaller the empty cup loss value, the better.After selecting the test item in Figure 6, click 'Enter' to enter Figure 7,In Figure 7 the device can measure at the set 90 °C, or click 'testing now', measured at the temperature at that time.

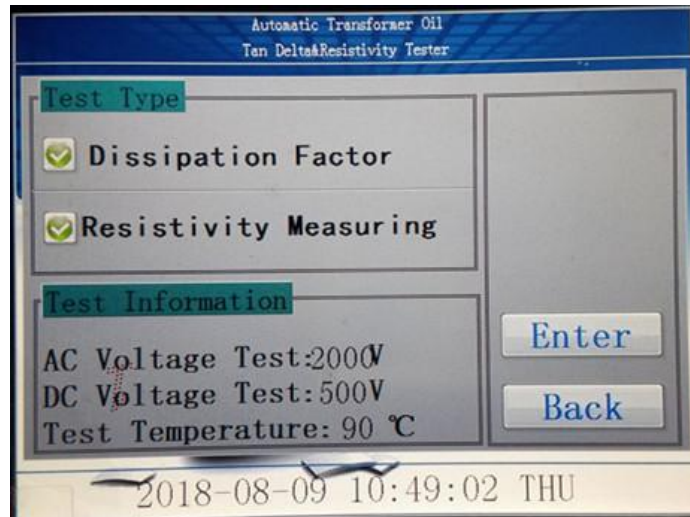


figure 6

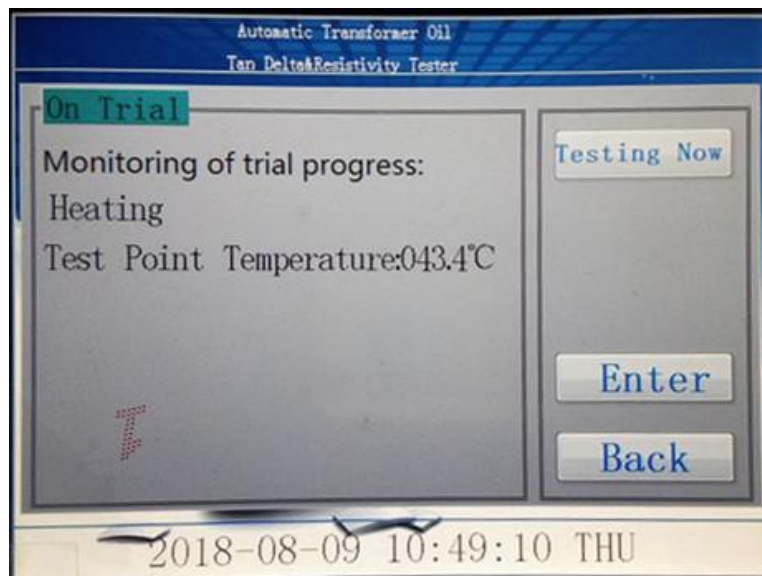


figure 7

7). After the empty cup is tested ok, take out the inner electrode of the oil cup and place it on the oil cup holder, take 40ml of the oil sample to be measured into the oil cup (Note: when injecting the oil sample, must pay attention to the fact that bubbles cannot appear, and should be slowly injected along the cup wall). After the oil sample is injected, the inner electrode of the oil cup is slowly put in place. (The action should be slower. If the action is too fast, the exhaust is not timely, so that the oil sample will overflow). Connect the measurement signal line and the temperature signal line, click

the automatic test in Figure 4, enter the interface of Figure 6 and the interface of Figure 7.

8).Click the data query in Figure 4, enter the interface of Figure 8.Click Up or Down to review;Click Print to print the data; Click the Delete button to delete the data;Click the Back key to return to the main interface.



figure 8

### **8. Attentions:**

1. Comply with the safety working procedures of high voltage test.
2. Due to the high voltage and high temperature inside the instrument, it is forbidden to open the oil cup cover during the measuring process.
3. The instrument should be reliably grounded during use.
4. Pay attention to the cleanliness of the measuring environment.

5. The installation and cleaning of the oil cup should be carried out strictly in accordance with the regulations, otherwise it will cause the oil cup to discharge, resulting in the instrument not working properly.
6. If the fuse is damaged, must be replaced with the same specifications.

### **9.Packing list**

1. Host	1
2. Oil cup	1
3. oil exhaust pipe	1
4. Oil cup carrier	1
5. Glass syringe	1
6. Test line	1
7. Temperature sensor	1
8. Power cord	1
9. certificate of conformity	1
10. Manual	1
11. Factory inspection report	1
12. Fuse (5A)	2
13. Print paper	2

## **10.After-sale service**

The instrument is granted with free repair and replacement for problems arising from product quality within 1 year from the date of purchase, and lifetime warranty and technical services. For any abnormality or fault of the instrument, please contact us in time for the most convenient solution.