

# **Insulating Oil Dielectric Loss and Resistivity Tester**

**Model: PS-2001A**

## **Operation Manual**



**Baoding Push Electrical Manufacturing Co., Ltd.**

# Product Catalog

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## Preface

Dear user:

Thank you for choosing Insulating Oil Dielectric Loss and Resistivity Tester ! For your convenience as soon as possible to operate the instrument, we were equipped with a detailed manual, from which you can get information about the product introduction, use method, instrument performance and safety precautions and many other aspects of information.

Before the first use of the instrument, please read this manual carefully, and maintenance according to the manual of equipment for the operation and use, it will help you to better the product, and can prolong the service life of the instrument.

In writing this manual, although we work in a scientific and rigorous manner, and that the information provided in this manual is correct and reliable. However, Homer sometimes nods, this manual may have errors and omissions. If you find a manual error, please be sure to your time, please inform us as quickly as possible, and we quickly correct supervision! All staff of the company will be greatly appreciated!

The company reserves the right to use the function of the instrument to improve the power, such as found in the use of the instrument in the process of its function and operation manual is inconsistent, please use the actual function of the instrument shall prevail. We hope this instrument can make your work become relaxed, happy, wish you in busy work experience office automation easy and beautiful feeling!

When you are satisfied with the company's instruments, please recommend to your friends! When you have valuable opinions and suggestions on this instrument, please be sure to contact us, the company will do everything possible to give you a satisfactory answer. Thanks again for your support to our company!

## **1、 Summary**

Insulating Oil Dielectric Loss and Resistivity Tester is based on GB/T5654-2007 《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 dielectric loss factor and the DC 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 more relaxed and convenient.

The instrument adopts digital technology, intelligent automatic measurement, equipped with a large screen color touch screen, full Chinese menu, each step has Chinese tips, test results can be printed, the operator does not need to be skilled in the use of professional training.

## **2、 Instrument characteristics**

1. High automation, heating, measuring dielectric loss, measuring resistivity can be completed once.

2. The three electrode type structure with an GB/T5654-2007 standard, inter electrode spacing 2mm, can eliminate stray capacitance and leakage effect on the dielectric loss test results.

3. Instrument 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., so that the accuracy of the instrument after a long time to use is still guaranteed.
6. Large screen color touch screen, man-machine dialogue convenient, concise operation, clear.
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. Automatic storage measurement data, can store 100 sets of measurement data.
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 is highly automated and can automatically complete the oil cup cleaning.

### 3、Main technical indexes of products

Measuring range:	Capacitance	5pF~200pF
	Relative capacitance	1.000~30.000
	Dielectric loss factor	0.00001~100
	DC resistivity	2.5 MΩm~20 TΩm
Measurement accuracy:	Capacitance	±(1% reading +0.5pF)
	Relative capacitance	± 1%
	Dielectric loss factor	±(1% reading +0.0001)
	Direct current resistivity	± 10% reading
Resolution:	Capacitance	0.01pF
	Relative capacity	0.001
	Dielectric loss factor	0.00001

Temperature range: 0 ~ 125℃

Temperature measurement error: + 0.5℃

AC experimental voltage: 0~2000V continuous adjustable ,frequency 50Hz

DC test voltage: 0 ~ 500V continuous adjustable

Power consumption: 100W

Dimensions: 420mm\*380mm\*385mm

Total weight: 21Kg

### 4、the use of conditions

1. Ambient temperature  $0\sim 40^{\circ}\text{C}$
2. Relative humidity  $\leq 80\%$
3. Power supply AC 220V ( $1\pm 10\%$ )
4. Power supply frequency 50 Hz ( $1\pm 10\%$ )
5. Power consumption  $< 200\text{ W}$

## 5、 Panel description



Insulating Oil Dielectric Loss 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

## 6、Operation step diagram

1. The measured signal line and the temperature signal line as shown in Figure 2 are intact. The temperature signal line is placed in the socket of the center of the oil cup.

2. Connect the ground and equipment intact, turn on the power cord, open the power switch, the device will automatically enter the main interface as shown in



figure 3.

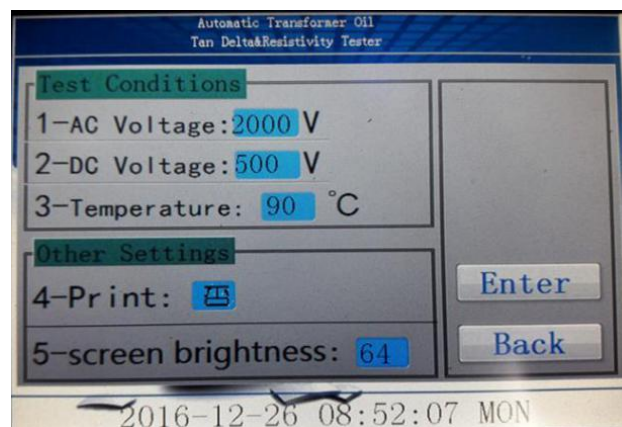


figure 3

3. Before the test is done, the oil sample must be injected into the test oil cup first. The oil cup has two ports, one (coarse) is the oil injection mouth, and one (fine) 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 injection, let the oil sample go into the oil cup and flush the oil cup, open the oil leakage switch and open the oil cup. The oil sample will be slowly imported into the oil cup, and the oil sample will flow out automatically from the drain pipe. When the cleaning is finished, click the oil spill switch, close the oil discharge system, when the oil sample inlet and the liquid level tube are at normal level.

4. In Figure 3 interface, according to the test conditions key, the device into 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 default parameter of the device is the default parameter. If you need to change, you will automatically pop up a small keyboard if you click the parameters that need to be changed. Like Figure 5, you can directly input the required parameters in the keyboard and click the confirmation key on the keypad to select the only time to print. To click the cursor, you can switch between yes and No. After setting, click OK to return to the main interface of Figure 3.

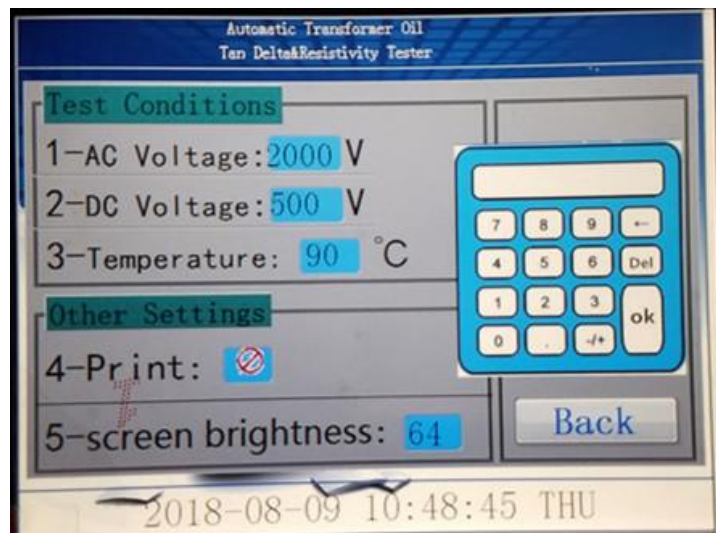


figure 5

6. Under the figure 3 interface, click the empty cup test into Figure 6. The empty cup test is mainly to verify the cleanliness and assembly of the oil cup before oil injection. The dielectric loss factor and relative capacitance and volume resistivity can be selected. The test or non test can be selected by clicking the cursor in front of the test project. The smaller the air cup, the smaller the better. After selecting the test item in Figure 6, you can enter the figure 7 after clicking on the test item. In Figure 7, the device can be measured at the set of 90, and can also be tested at the temperature at that time.

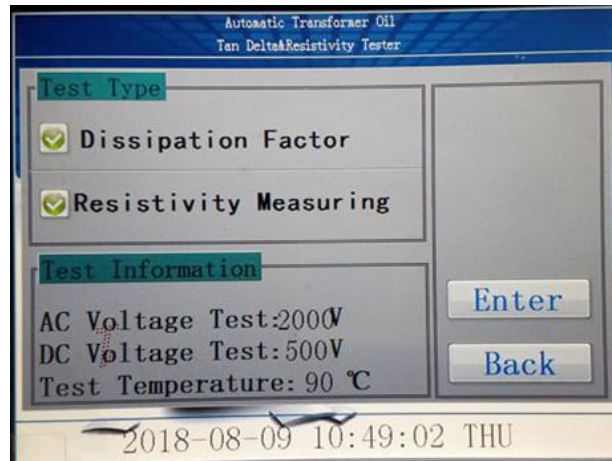


figure 6

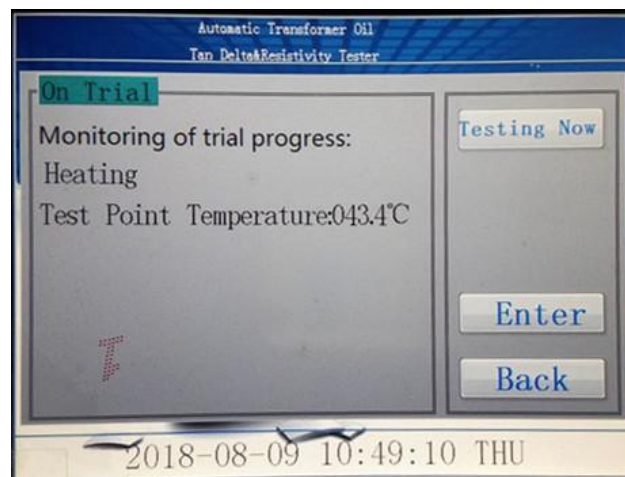


figure 7

After the empty cup has been tested, the inner electrode of the cup is removed and placed on the oil cup, and the oil sample to be measured is placed in the oil cup. (note that the injection of the oil sample must not appear when the bubble is not appeared, should be slowly injected along the cup wall). After the injection of the oil sample, the inner electrode of the oil cup is slowly placed in the position. (move to slow, prevent action too fast, exhaust not timely, overflow the oil sample), pick up the measurement signal line and temperature signal line, click the automatic test in Figure 3, enter the interface of Figure 6 and Figure 7 interface, the general measurement oil is measured according to the regulation 90 C, and also can choose the immediate test at the current temperature.

7. Click on the data in Figure 3 to figure 8 query interface, click on page and the next page to read, you can click on the print, print the data; you can also click on the delete key to delete the data, press the eject button to return to the main interface.

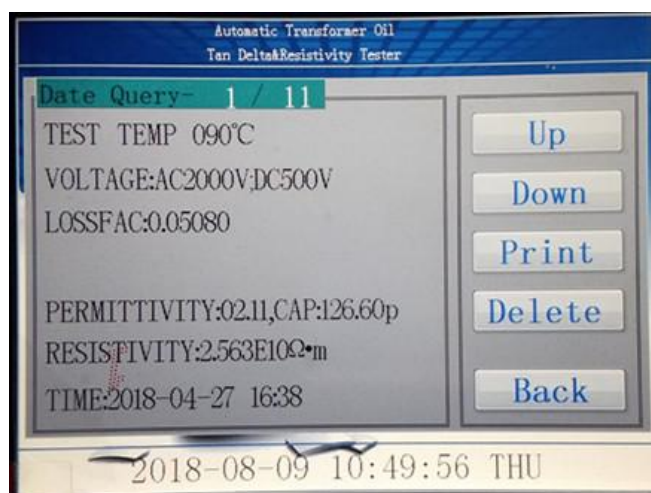


figure 8

#### Seven. Precautions

- 1、 Abide by the safety regulations of high pressure test.
- 2、 Because of the high pressure and high temperature inside the instrument, it is forbidden to open the oil cup cover during the working process.
- 3、 The instrument should be reliably grounded during the use of the instrument.
- 4、 Attention should be paid to the cleaning of the use of the instrument.
- 5、 The installation and cleaning of oil cups should be carried out strictly according to the regulations, otherwise, the oil cup will be discharged and the instrument will not work properly.
- 6、 When the safety pipe is damaged, the same size safety pipe must be replaced.

## **Nine. The complete set of instruments**

- 1 Host1
- 2 Oil cup 1
- 3 Oil exhaust pipe 1
- 4 Test line 1
- 5 Temperature sensor 1
- 6 Power cord 1
- 7 Instructions 1
- 8 Insurance management (5A) 2
- 9 Print paper 1
- 10 Certificate 1
- 11 Factory inspection report 1
- 12 Packing list 1

## **Ten、 After-sale service**

Instrument within one year from the date of purchase, product quality issues free warranty, life-long provision of maintenance and technical services. If you find the instrument is not normal or malfunction, please contact with our company, in order to arrange for you the most convenient and effective treatment program.