Capacitance and inductance tester

Instruction manual

I.Product overview

With the development of electric power in our country, capacitor compensation device gets unprecedented development, but subsequently, the condenser accident rate rises sharply, and there appeared serious group injury accident. In order to prevent shunt capacitor accidents and ensure the safe and reliable operation of the power grid, the State Grid Corporation has formulated the Measures for Preventing High Voltage Shunt Capacitor Accidents. It is clearly proposed to "regularly measure the capacitance of a single capacitor in the capacitor bank, and it is recommended to use the measurement method without removing the connecting line, so as to avoid the failure of casing oil leakage due to the force caused by disassembling the connecting line".

This instrument is designed for the problems existing in the measurement of high voltage shunt capacitor bank at the substation site, and is specially developed by referring to national standards such as GB3983.2-1989 "High voltage shunt capacitor", DL/T840-2003 "Technical conditions for the use of high voltage Shunt capacitor" and JB5346-1998 "series reactor". It is mainly used to measure high voltage shunt capacitor banks and reactors of reactive power compensation devices.

The instrument uses a high-speed microprocessor, synchronous acquisition of the voltage signal and current signal of the subject, automatic calculation of capacitance value, inductance value equivalent. Field measurement capacitor without removing the connection line, simplify the test process, effectively improve the work efficiency. After the test, the capacitor capacity and other parameters of each phase are calculated automatically. It is easy to distinguish the capacitor quality change and the fault of the connecting conductor between devices.

II.Functional characteristics

- The instrument measuring group under the condition of not remove the single capacitance of parallel capacitor (single-phase capacitance and three-phase capacitor can measure), at the same time, the instrument can measure all sorts of reactor inductance, meet a variety of field use.
- This instrument shows that when the measurement of capacitance or inductance values at the same time also can display the measurement of voltage, current, frequency, impedance, phase Angle and other data.

- The instrument uses different frequency power output for testing, which greatly improves the anti-interference ability in the field, and can be tested in high intensity magnetic field without affecting the accuracy.
- Instrument USES the 7.0 -inch, 1024 x 600 Gao Qingbing, touch-screen operation, during the day night, can be observed clearly, switch freely in both English and Chinese, easy to operate.
- Instrument built-in high-capacity nonvolatile memory: can store 500 groups of measuring data.
- The instrument is equipped with a USB disk interface, which can store any group of measurement data (subject to the capacity limit of the USB disk).
- Built-in high precision real-time clock function for date and time calibration.
- The instrument comes with a printer, which can print measurement data.
- The instrument can use an Android phone or tablet, follow the wechat public account, download a special APP, control the whole process through the special software, and store and upload the test data for easy reference.

III.Technical index

1、Test voltage: AC 100V ±10%, 55Hz
AC 40V±10%, 55Hz
AC 8V±10%, 55Hz
AC 2V±10%, 55Hz

2、Measuring range and accuracy:

Measured capacitance range: 0.1uF ~ 10000uF ± (reading 1%+0.01uF)

Inductance range: 50uH ~ 20H ±(reading 3%+0.05uH)

Measuring current range: 5mA ~ 2A ±(reading 3%+0.05mA)

Measuring resistance range: 20mΩ ~ 20kΩ ±(reading 3%+0.1mΩ)

3、Dimensions: main engine 360×290×170 (mm) cable box 360×290×170 (mm)

4、Weight: host 5KG wire box 5KG

5、Test line length: Standard with 5 meters length can be customized

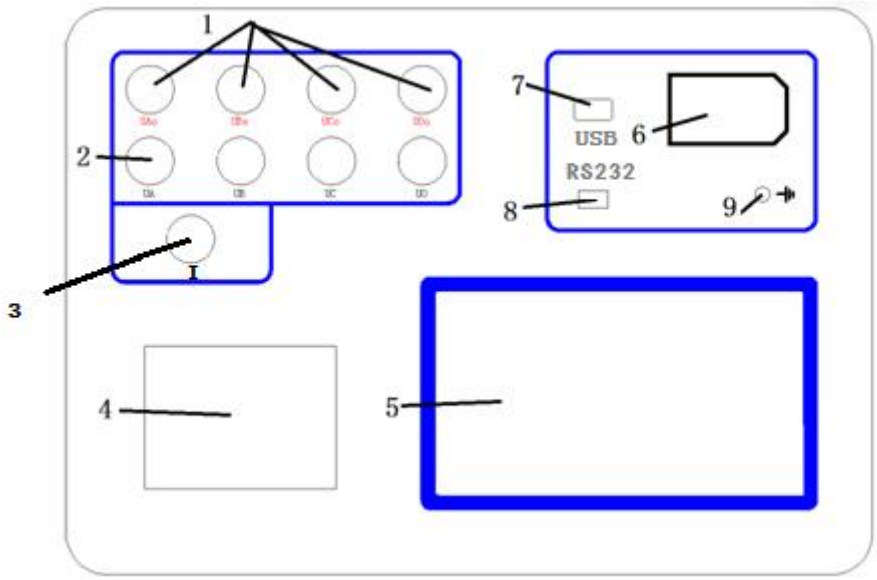
IV、Conditions of use

Ambient temperature -20 ° C to 40 ° C

Ambient humidity ≤85%RH

Working power supply: AC220V±10%, 50±1Hz

V、Panel introduction



Instrument panel description:

1. Voltage output terminal;
2, voltage input terminal;
3. Current input terminal;
4. Printer;
5, liquid crystal;
6, 220V power socket;
7, U disk interface
8. 232 Serial Communication Port (Extensible)
9. Ground terminal

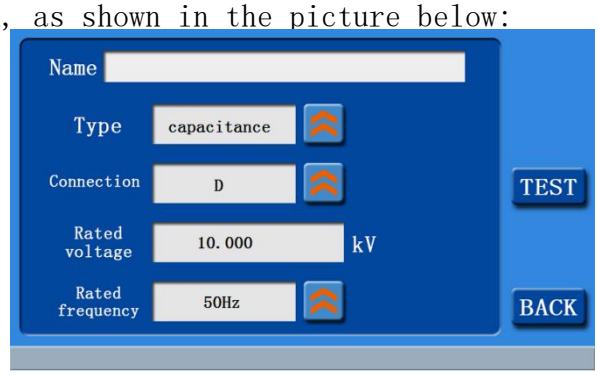
VI、Operating instruction

When the instrument is connected with the test wire and power cord as required, turn on the power switch, and the main interface is shown in the figure below:

Click different ICONS according to the project to be tested to enter different test interfaces.

1、Three-phase test

Click the "three-phase measurement" button to enter the screen of measurement parameter selection, as shown in the picture below:



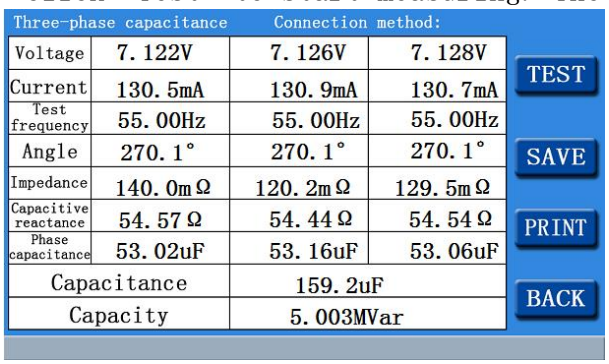
In the parameter setting screen,

Test type: select capacitance test, inductance test;

Connection mode: Yn, Y, D, III can be selected;

Rated voltage: Click the text box to enter the voltage value;

Once selected, click "Test" to start measuring. The interface is as follows:

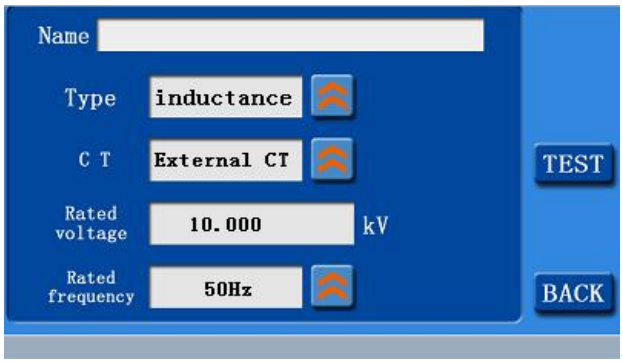


After the test, the test result will be displayed automatically. Press Test again to start retesting.

The three-phase test uses internal CT, which only needs to be connected to the voltage line, without external current pliers!

2、Single-phase test

Click the icon button of "single-phase measurement" to enter the screen of measurement parameter selection, as shown in the picture below:



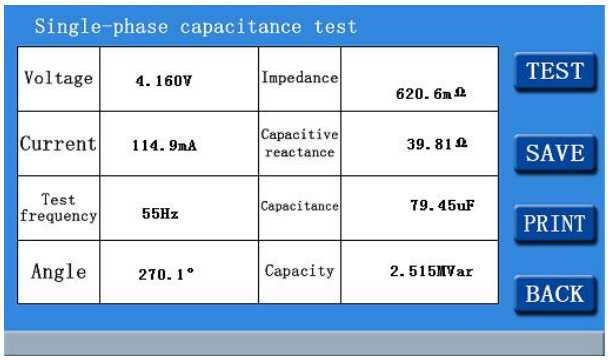
In the parameter setting screen,

Sample type: Select capacitance, inductance, resistance;

Current transformer: Current test can choose the built-in CT, or choose to use external current clamp

Rated voltage: Click the text box to enter the voltage value;

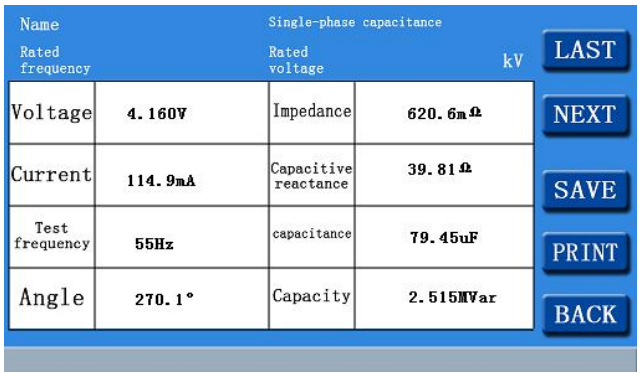
Once selected, click "Test" to start measuring. The interface is as follows:



After the test is complete, press "Test" to test again, and press "Store" and "Print" to perform corresponding operations.

3、Data query interface

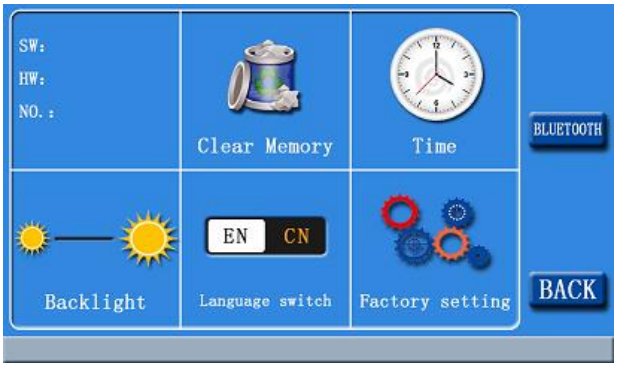
Click the "Data query" icon button to enter the data query interface, as shown in the picture below:



Click "USB flash drive storage" to save to the USB flash drive, and click "Print" to print data

4、Other operations

Directly tap "System Settings" to enter the system Settings screen. The interface is as follows:



Enter the "System Settings" interface and click "Time Settings" to enter the following interface to set the time. Click the text box of "year, month, day, hour, minute and second" to change the corresponding value. After changing the value, press "Modify" to update the time.

Click "Bluetooth" to pop up the two-dimensional code (as shown below), and scan the two-dimensional code with the corresponding software downloaded in the mobile phone. Realize the whole mobile phone control instrument

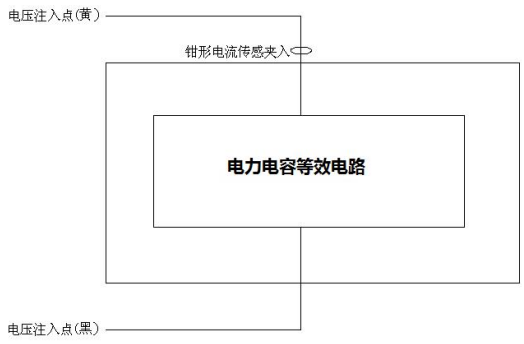
VII、Test wiring

Star connection (Y) and triangle connection (△) are generally used for internal connection of power capacitor banks.

The instrument can test the power high voltage shunt capacitor bank, its internal connection modes are: three-phase △ shape, three-phase Y shape, three-phase Yn shape, three-phase Ⅲ shape.

1、Single-phase capacitance, inductance, resistance measurement:

For single-phase capacitance measurement wiring method, the yellow clip is clamped on the positive polarity leading end of the capacitor and the black clip is clamped on the negative polarity leading end of the capacitor. The current clamp sleeve can be measured at the positive electrode of the capacitor. (If built-in CT is used, do not connect external current clamp)

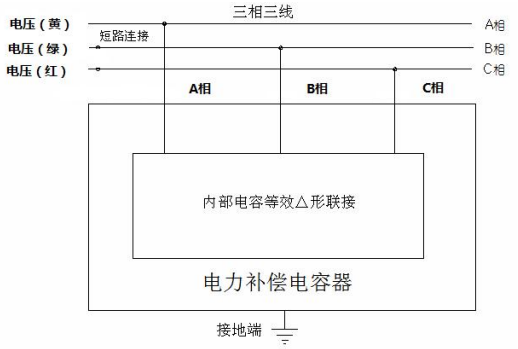


2、Measurement of three-phase delta capacitance:

(1) Y and △ shape connection measurement connection: (built-in CT is used for three-phase test, no current clamp is needed)

The measuring line is connected by the measuring output terminal of the instrument according to the color corresponding to phase A,B and C, and the phase sequence is switched automatically to complete the three-phase measurement automatically.

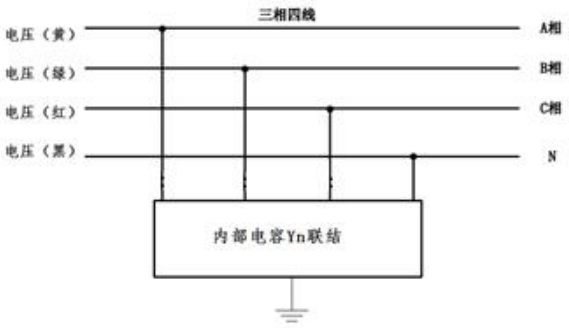
The three-phase wiring diagram is shown as follows:



3、Measurement of three-phase Yn capacitance: (three-phase test using built-in CT, no current clamp connected)

The measuring line is connected by the measuring output end of the instrument according to the color corresponding to phase A,B,C. The three-phase current clamp is placed above the corresponding lead of the high-voltage capacitor bank to measure, and the phase sequence is switched automatically to complete the three-phase measurement automatically.

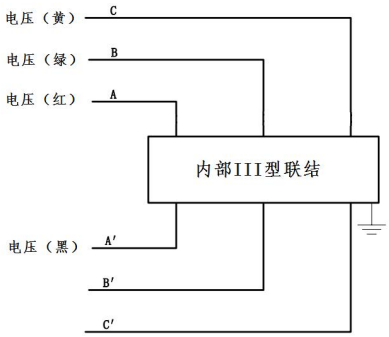
The three-phase wiring diagram is shown as follows:



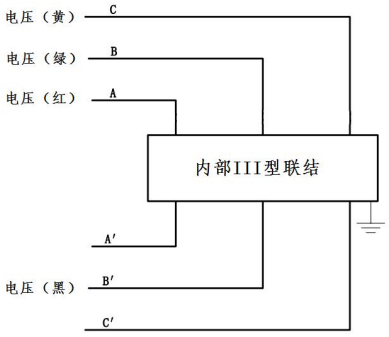
5、Measurement of three-phase III capacitance: (three-phase test using built-in CT, no current clamp connected)

The measuring line is connected by the measuring output end of the instrument according to the color of phase A,B and C, and the three-phase current clamp is placed above the corresponding lead of the high-voltage capacitor bank. After each phase is tested, the measurement will stop automatically. The black voltage clamp needs to be clipped to the next phase, and press the "Test" button in the interface to continue the test.

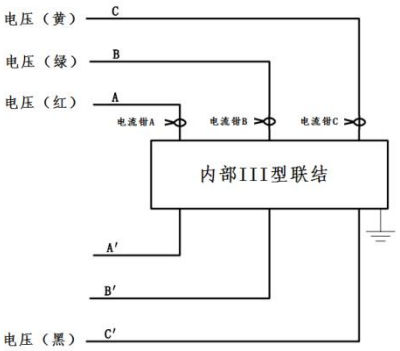
The wiring diagram is as follows:



A-phase



B-phase



C-phase

After receiving the instrument, the user should open the box according to the complete set of instructions of the instrument to check whether it is consistent with the above contents. In case of any deficiency, please contact the company immediately.

VIII、Matters needing attention

1 Please read the instruction carefully before using the instrument, and check the connection and grounding.

2. High precision current clamp is the key component of the instrument measurement, in the process of use to prevent bump.

3. Instruments, especially connecting test wires and clamp gauges, should be kept away from strong electromagnetic fields to avoid interference with measurement.

4. Instrument test wire, clamp, clamp table should be kept clean to ensure good test.

5. When testing, if the current direction is found to be reversed, just reverse the current clamp.

6. The instrument must be grounded reliably before testing.

7. When testing wiring, the contact between the wiring clamp and the tested item must be good, so as to avoid the phenomenon of open voltage.

8. Do not remove the cable until the measurement is complete.

IX、After-sales service

Instrument from the date of purchase within one year, product quality problems free repair and replacement, lifelong maintenance and technical services. If you find the abnormal situation or failure of the instrument, please contact the company in time, so as to arrange the most convenient solution for you.

X、Instrument package

product name	quantity
Main machine	1set
Test line	1set
Ground wire	1pcs
Power cord	1pcs
Printer paper	1pcs
Clamp current sensor	1pcs
Fuse	2pcs
Certificate	1pcs
Packing list	1pcs