

LNBB2000

Transformer Turns Ratio Tester

User Manual

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1.Product Overview

For the power system, transformers are the core equipment in the system, so the long-term and reliable operation of transformers will be related to the stability and reliability of the entire system. Before the newly installed transformer is put into operation and in accordance with the preventive testing regulations of State Grid, it is required to conduct regular turns ratio or voltage ratio tests on the operating transformer. The traditional variable ratio bridge operation is cumbersome, the reading is not intuitive, and necessary conversions need to be made. The test result is only the value of one phase change ratio. This transformer ratio tester overcomes the shortcomings of traditional ratio bridge testing. The screen adopts a large high-resolution LCD display screen, which is convenient for on-site use. It has a Chinese menu prompt function, easy and intuitive operation, and can complete three-phase ratio testing in one go. The testing speed is fast and the accuracy is high.

2.Performance Characteristics

2.1 The three-phase CNC sine inverter power supply output has soft start and soft stop functions, so the testing speed is fast and the accuracy is high.

2.2 Three phase transformer, single-phase transformer, PT, CT, Z-type transformer ratio, group, polarity testing function.

2.3 CT ratio polarity testing function.

2.4 It has angle difference testing function during single-phase testing.

2.5 The tap changer can be tested up to 99 gears.

2.6 Wide testing range, up to 10000.

2.7 High and low voltage reverse connection reminder.

2.8 Output short circuit reminder.

2.9 Non power-off clock and date display; The data storage method is local storage, with 100 test data pieces. The stored data can be transferred to a computer (PC);

2.10 Thermal printer printing function.

2.11 Small size, light weight, convenient for carrying and use.

3. Technical Indicators

Range	0.8~10000
Accuracy	$\pm (\text{reading} \times 0.1\% + 2 \text{ words})$ (less than or equal to 1000)
	$\pm (\text{reading} \times 0.2\% + 2 \text{ words})$ (greater than 1000 but less than or equal to 3000)
	$\pm (\text{reading} \times 0.3\% + 2 \text{ words})$ (greater than 3000)
Resolution Ratio	0.9~9.9999 (0.0001)
	10~99.999 (0.001)
	100~999.99 (0.01)
	1000~9999.9 (0.1)
	10000 (1)
Working power supply	AC100-240V, 50/60Hz (battery charging voltage)
Host weight	4.5Kg
Volume	320mm(L)×280mm(W)×135mm(H)
Operating temperature	-10°C~50°C
Relative Humidity	<90%, no condensation

4. Panels and Wiring Terminals

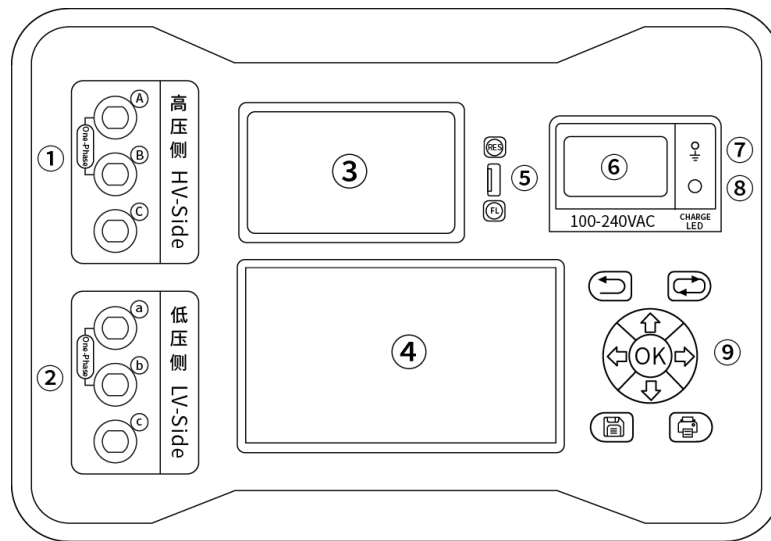


Figure 1: Instrument Panel

1.High voltage testing end: yellow, green, and red wiring sockets correspond to three-phase A, B, and C, and are connected to the red testing line with a spring rod side. The other end of the testing line has yellow, green, and red testing pliers, which correspond to three-phase A, B, and C on the high voltage side of the tested transformer.

2. Low voltage testing end: yellow, green, and red wiring sockets correspond to three-phase A, B, and C, respectively, and are connected to the black testing wire with a spring bar side. The other end of the testing wire has yellow, green, and red testing pliers, corresponding to three-phase A, B, and C on the low voltage side of the tested transformer.

3.Printer: Print test results.

4.Display screen: 800x480TFT5.0 inch color LCD, displaying operation menu and test results.

5. USB interface: can upload locally stored data to a computer (PC) through a data cable.

6. Power socket: Insert the three core power cord that comes with the instrument, supporting AC 100-240V mains power. The fuse socket is integrated with the power socket, with a fuse specification of 250V/1.5A and a size of $\phi 5\text{mm} \times 20\text{mm}$, the same specification of safety tube should be used.

7. Grounding terminal: The instrument must be reliably grounded, and the on-site grounding point may have paint or rust, which must be cleaned.

8. Charging indicator light: Red indicates charging is in progress, green indicates charging is over, battery level is above 90%, instrument defaults to not charging, protecting lithium batteries from repeated charging and affecting their service life.

9.Button: Used for operating instruments:

Ⓞ OK Confirm key

 Cursor movement key

 Return button

    Up, down, left, and right directional keys

 Save key

 Print key

5.Introduction of Operating

5.1 Testing wiring

Connect the test cable correctly based on the condition of the tested product.

5.1.1 Wiring for single-phase transformer or single-phase PT testing

Connect the yellow and green test clamps of the red test wire at the high-voltage testing end to the high-voltage end of the tested product; Connect the yellow and green test clamps of the black test wire at the low-voltage test end to the low-voltage end of the tested object.

5.1.2 Single phase CT test wiring

Connect the yellow and green test clamps of the red test wire at the high-voltage testing end to the secondary side of the tested product; Connect the yellow and green test clamps of the black test wire at the low-voltage testing end to the primary side of the tested object.

5.1.3 Three phase transformer testing wiring

Connect the yellow, green, and red test clamps of the red test wire at the high-voltage testing end to the A, B, and C phases of

the tested product's high-voltage end; Connect the yellow, green, and red test clamps of the black test wire at the low-voltage test end to the A, B, and C phases of the tested product's low-voltage end.

5.2 Instructions for using the printer

The printer button and printer indicator light are integrated. After the printer is powered on, the indicator light remains on normally, but flashes when there is a shortage of paper. Press the button once to feed the printer.

Printer self-test: Press and hold the button while powering on the printer to print a self inspection strip.

Printer paper replacement: Use a wrench to open the paper bin cover; Load the printing paper and pull out a section (beyond the tearing teeth), paying attention to placing the paper neatly. The direction of the paper should be the side with the medicine solution (smooth surface) facing upwards; Close the paper compartment cover, press the paper feed shaft of the print head back onto the print head with slight force after aligning the print paper, and push the rotary wrench in to reset.

6. Operational Instructions

6.1 Three phase testing

After all test wires are connected, turn on the power switch and initialize the instrument as shown in the following figure.

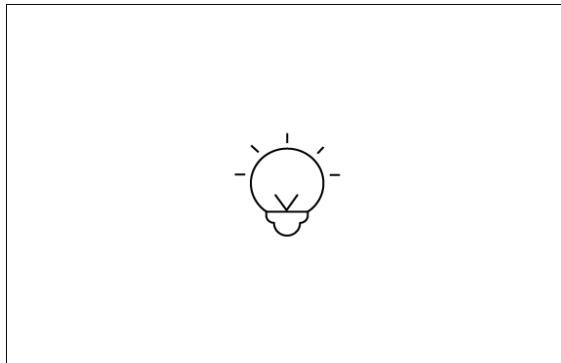


Figure 2: Startup Interface

The initialization is completed, and the instrument enters the HOME main operation interface as follows:

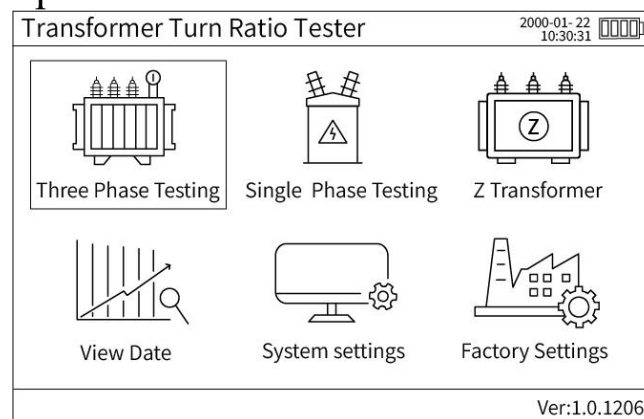


Figure 3. HOME interface

Move the cursor to the three-phase test icon and press  Enter three-phase testing settings

The interface is as follows:

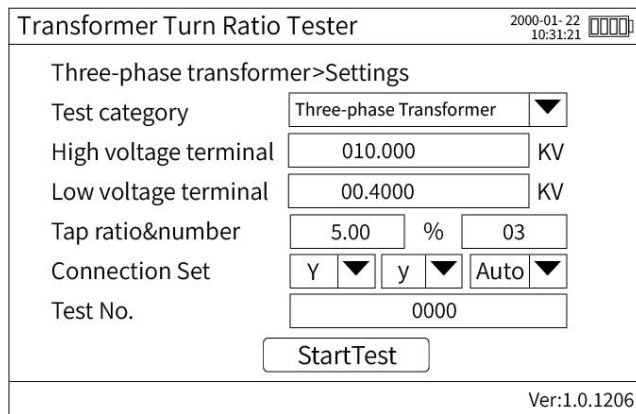


Figure 4. Three phase test setting interface

The cursor defaults to [Start  Test], press the key , Move  the cursor to adjust the setting content, press the key  to change the setting content, and then move the cursor to **【 Start Test 】**, Press  key Start the test, the instrument automatically saves the current settings when entering the test, and the next test setting data will remain valid. The tap changer is set with a tap spacing of x.xx% and the total number of tap switches. After testing, the instrument automatically analyzes the current tap changer position and calculates the ratio error.

The testing interface is as follows:

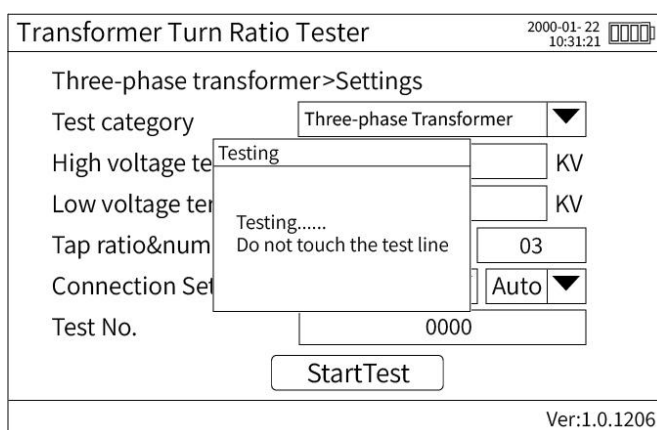


Figure 5. Testing

dialog box

During the test, the instrument outputs a three-phase sinusoidal AC voltage. Do not touch the test line at this time to

avoid errors in the test results. To stop the test, press the return button to terminate the test. The normal testing of the instrument is completed, and a test result dialog box pops up as follows:

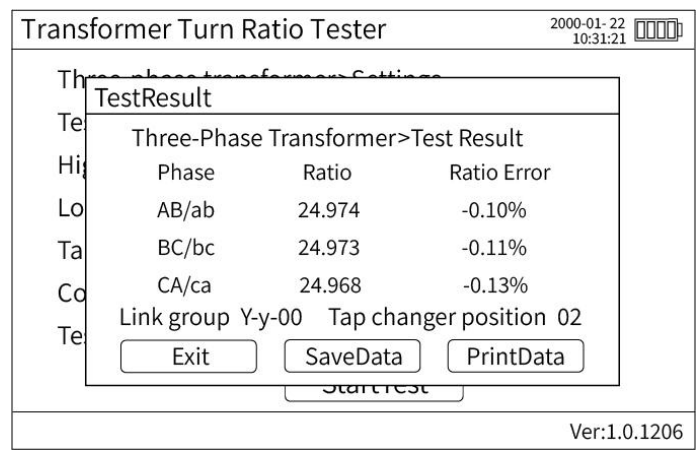


Figure 6.

Test Results dialog box

⇒⇐ Key Move the cursor left and right to select 【 Save Data 】 or 【 Print Data 】, (OK)
 Or Press the keyboard to (F5) (F6) save the printing shortcut key

6.2 Single phase testing

The single-phase test setup is the same as the three-phase test. The test results are as follows:

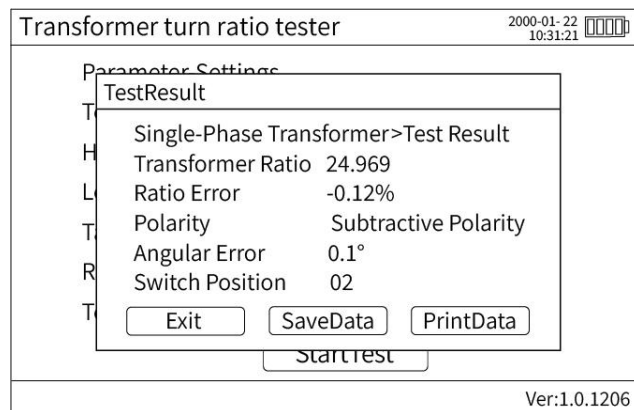


Figure 7. Single phase test results

6.3 Z-type test

The Z-type test is set up the same as the three-phase test.

6.4 View data

Enter the data viewing interface as follows:

[illegible]

Figure 9. Data Management dialog box

You can choose to print data, delete this data, or delete all data.

6.5 System Settings

Enter the system settings as follows:

Transformer turn ratio tester

2000-01-22 10:32:05

System settings

Set time

Year	Month	Date	Hour	Minute	Second
2000	01	22	10	32	05

Save Exit

Ver:1.0.1206

Figure 10. System Settings Interface

The testing interface can set the system clock, and the effective buttons are as follows:

-  Move the cursor
-   Adding and subtracting numbers
-   Move the number that needs to be adjusted in the current number box
-  Press to take effect when the cursor moves to [Save] or [Exit]

6.6 Factory Settings

This interface is factory set by the manufacturer and requires password login. Users do not need to operate it.

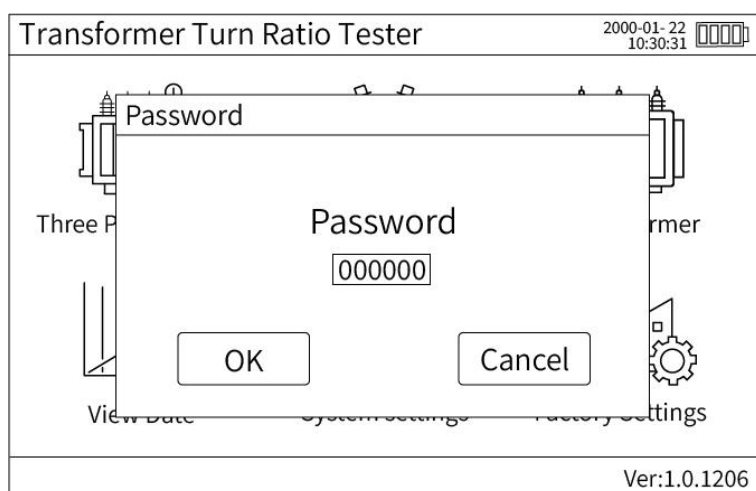


Figure 11: Factory settings interface

7. After-Sale Service

This meter is provided with free repairing and replacement in case of quality issues within one year since the date of purchase. It is rendered with life-long maintenance and technical service. If abnormal condition or malfunction is found, please contact us timely so that we can provide you the most convenient solution.

8. Attached Accessories

Name	Quantity
Host	1pcs
Testing Line	1set
Power Line	1pcs
Grounding wire	1set
User Manual	1pcs
Test Report	1pcs
Warranty	1pcs

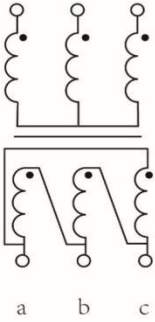
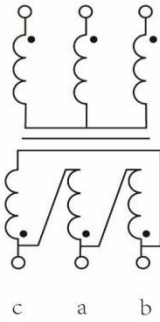
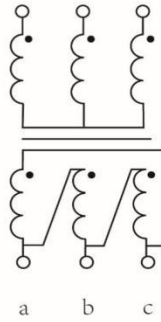
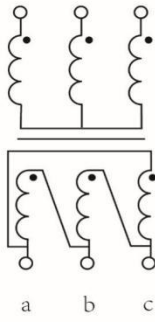
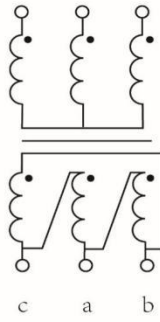
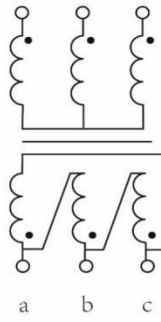
USB Line	1pcs
Print paper	2pcs
Fuse tube	3pcs

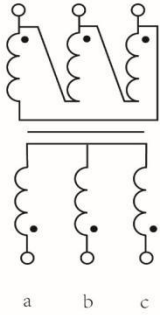
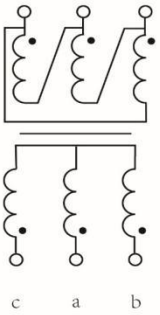
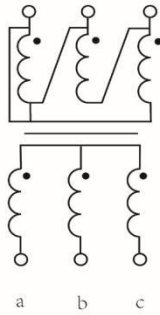
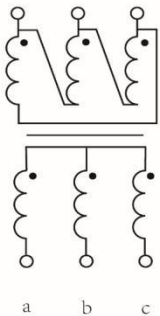
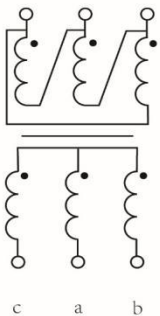
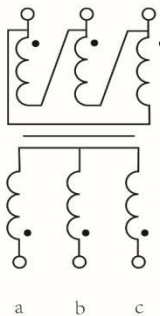
9. Notes

1. Do not put the tester on an unstable platform or desk to prevent it from drop impact.
2. The power used by this device is AC 100V~240V, and the tester can not be connected to a power which is not AC 100V~240V.
3. Don't let any foreign bodies fall into the chassis to avoid a short circuit.
4. Connect the ground rod on the device panel to the earth reliably before testing to avoid occurrence of danger.

10.Appendix

Yy0 A B C a b c Yy2 A B C b c a Yy4 A B C c a b	Yy6 A B C a b c Yy8 A B C b c a Yy10 A B C c a b
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Yd1	Yd3	Yd5
A B C  a b c	A B C  c a b	A B C  a b c
Yd7	Yd9	Yd11
A B C  a b c	A B C  c a b	A B C  a b c

Dy1	Dy3	Dy5
A B C  a b c	A B C  c a b	A B C  a b c
Dy7	Dy9	Dy11
A B C  a b c	A B C  c a b	A B C  a b c

Dd0	Dd2	Dd4
A B C a b c	A B C a b c	A B C a b c
Dd6	Dd8	Dd10
A B C a b c	A B C a b c	A B C a b c

