HZBB-10B INTELLIGENT TESTER OF TRANSFORMER RATIO

IsoTest
Instrumentación Electrónica y Laboratorio de calibración

USER MANUAL

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Preface

Dear Respected Users,

Thank you for choosing HZBB-10B intelligent tester of Transformer Ratio and Connection Groups. This detailed operating manual provides you with product introduction, usage instruction, performance, safety precautions, and other relevant information for your convenience.

Before using the for the first time, be sure to read this manual carefully and operate and maintain the tester in accordance with this manual, which will help you to use the product better and extend the life of the tester.

We work in a scientific and rigorous manner while writing this manual and believe that the information provided here is correct and reliable. However, if you find any mistake in the manual, please be sure to inform us and we will correct it as soon as possible.

Our company reserves the right to improve the function of the tester. If inconsistency with the manual exists in course of operation, please take the actual function of the tester as standard. We hope that this tester will make your work easier and enjoyable, so that you can enjoy the relaxed pleasure in automatic operation.

You are welcome to recommend the tester to your friends if you are satisfied with our product. Please contact us if you have any comments or suggestions, the company will make every effort to give you a satisfactory answer. Thank you again for your support!

Contents

I. Overview

HZBB-10B Intelligent Tester of Transformer Ratio and Connection Groups adopts popular ARM processor, 168M frequency, 128M memory available to be extended to 4G memory card. The LCD screen adopts 5-inch high-definition color touch screen, combined with emwin display, making the tester interface simple and user-friendly in full touch screen and non-keyboard operation. The tester supports database and can be exported from the USB drive or through the data cable to the background computer.

Elaborate and compact design, unique thinking, makes the tester superior and powerful with small size and light weight. The tester uses a programmable signal source, can output single-phase, two-phase or three-phase standard Sine signal or high-frequency Sine signal, with adjustable output phase frequency. It is especially suitable for special transformers such as Z-type transformers, rectifier transformers, Scott or anti-Scott transformers, etc. The tester adopts the new algorithm developed by our company to measure the ratio of three-phase transformer and ensure the measurement accuracy without adjusting the balance of the three-phase power supply. Therefore, the transformer ratio and wiring method can be measured in about 3 seconds.

Wiring and notice: When using the tester, please follow the instructions.

1. The ground terminal or the ground wire in the power cable should be grounded reliably.
2. Please note that the four-color test wires at the high-voltage side in yellow, green, red and black correspond respectively to the transformer A, B, C, N terminals. The three-color test wires at the low-voltage side in yellow, green and red correspond respectively to the transformer a, b, c, n terminals. Be sure to make correct connections.
3. When testing the Scott transformer, the high voltage side is the same as the above, low-voltage side a, β, n correspond to a, b, c terminal.
4. For single-phase transformer, high-voltage side A, X correspond to A, C terminals, low-voltage side a, x corresponds to a, c terminals.
5. For general Y / y, Y / d, D / d, D / y, ZN / y, ZN / d normal connection group measurements, connection to the neutral point N terminal is not needed. For single-phase transformer measurements, please use the yellow, green test clips at high-voltage side and the yellow, green test clips at low-voltage side.
6. Current Transformer (CT), primary side A, X Corresponding to the low-voltage side of the instrument a, c terminal, secondary side a, x Corresponding instrument's high-pressure side A, C terminal.
7. Please enter correct setting parameters before test. The group label and the measured transformer must be consistent. If not sure, choose unknown to be measured by the tester automatically.
8. If you the rated ratio is not put in, results only show the measured ratio value, and do not show the error.
9. Test The instrument application of the instrument built-in output,

external standard voltage divider test should not be used standard voltage transformer test (due to voltage transformers non-linear accuracy of the accuracy can not be accurate).

10.When the battery power is low, it will shut down automatically. When charging, connect 220V power socket. Then the charging indicator light is red, indicating that it is charging. When the charging indicator turns green, the charging is completed.

11.Battery maintenance, the battery belongs to the consumption of parts, service life and the use of the environment and the number of charge and discharge, the general service life of about 2 years, if not for a long time, to the battery in time to recharge (once every two months)

II. Main Functions and Characters

1. The tester makes automatic measurement with no need to set any parameters and automatically completes the three-phase ratio and connection group measurements with easy operation. All you need to do is to press a button.
2. The tester measures three-phase and single-phase transformer ratios automatically, and calculates the ratio error.
3. The tester has inner three-phase signal source, which can make measurement of Y / y, Y / d, D / y, D / d, ZN / y, ZN / d, rectifier transformer, traction transformer and all kinds of ratios of transformer connection groups.
4. The tester can measure transformer connection group label and polarity to clearly display the first and second winding connection vector.
5. The tester can track the transformer on-load tap-changer position automatically, and indicate the current tap point automatically.

6. The tester can display a transformer's first and secondary voltage Oscillograms and phase relationship. It can measure transformer's first and second harmonic voltages, to facilitate the analysis of transformer failure.
7. Can test CT, PT ratio, polarity test function.
8. The tester has perfect and reliable automatic protection, to ensure the intactness of the tester under abnormal conditions.
9. The tester is small size and light weight. It makes accurate measurement at fast speed (about 3 seconds to complete the test).
10. The tester is available to store and print all the test results. It has Built-in 128M memory (extendable to 4G memory card), available to export the database by USB, or upload to computer. The database supports excel spreadsheet opening, easy for edit or archive.
11. The tester has 5-inch true color touch screen operation, emwinGUI interface and Chinese input, which is easy and convenient. It also has no power-down calendar and clock function. The test time can be stored at any time.
12. The tester support on-site record print by Bluetooth or serial printer.

III. Main Technical Specifications

1. Ratio measurement range: 0.8-20000
2. Ratio measurement accuracy: 0.2% (0.8-2000), 0.5% (2000-20000)
3. Input voltage: HV side AC 24V, LV side AC 4V
4. Working power: AC220V ± 15%
5. Operating temperature: -10 ℃ -40 ℃
6. Environmental humidity: 10% -85%
7. Volume: 270 × 190 × 70mm
8. Weight: 2kg (not including test wires)

IV. Key Set

The tester is a full touch screen operation, with 16 keys of the numeric keypad and digital phonetic alphabet (similar to the computer keyboard).

Figure:

Numeric key “0-9”: Used to input data in parameter input state. “a-z” key is used to switch from the numeric keypad to the alphabet keyboard. “123” is used for the alphanumeric keyboard to switch to the numeric keypad. “C/e” and “c/E” is used to switch between the alphanumeric keypad and Pinyin input method. “X” is used to close the soft keyboard. “keybod” is used to move the keyboard freely on the screen. Click the button by hand to drag the keyboard to any position on the screen. “Back” is the backspace key to clear the character before the cursor, “CE” is to clear the current entry for all the characters, “Ent” is the Enter key.

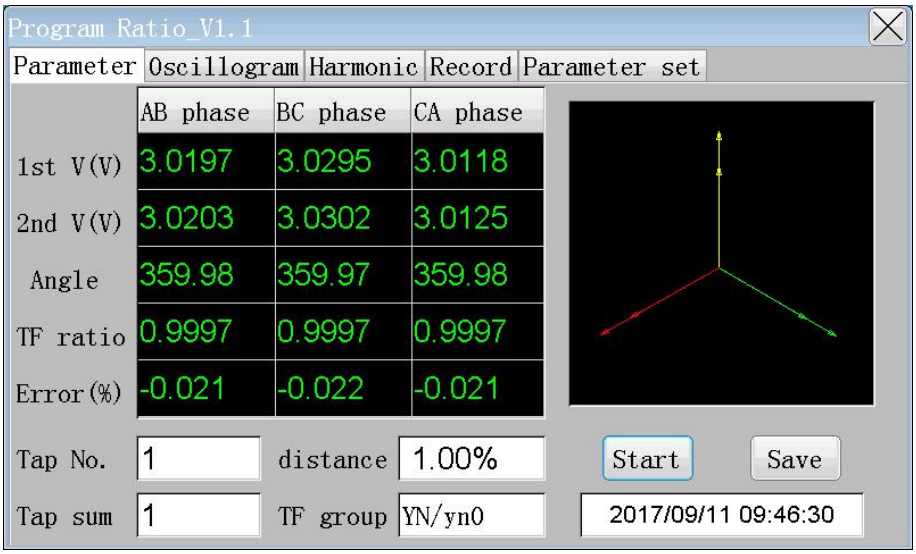
V. Directions

Connect the power wire, test wire and ground wire according to the instruction 2,3,4,5 in this manual. Turn on the power and enter the main interface of the computer.

Figure:

Click on the screen to run the program icon to enter the transformer ratio test program interface.

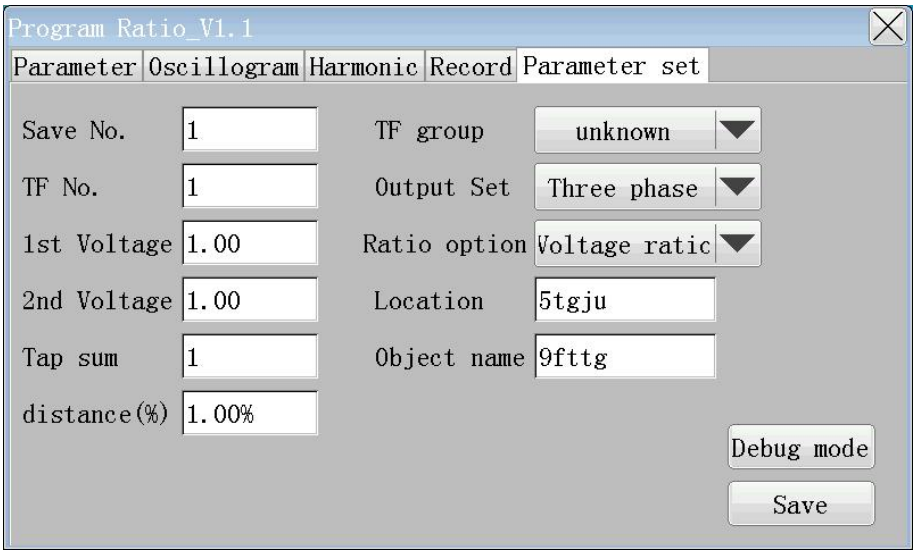
Figure:



Parameter Setting

Set parameters before the test. Click the parameter settings button to enter the parameter settings interface.

Figure:



Click the input box which needs to be set.

Storage No.: To set which record the test is to be stored.

Transformer No. and Model: To store information about the

transformer under test.

Rated transformer ratio: the rated transformer ratio tested at the connection tap (usually the rated ratio at the middle tap). If the rated ratio is not put in, the test results do not show ratio error.

Total tap number: The total number of tap points for multi-tap transformer. If it's not multi-tap transformer, the total tap number should be set as 1 (initial value 1).

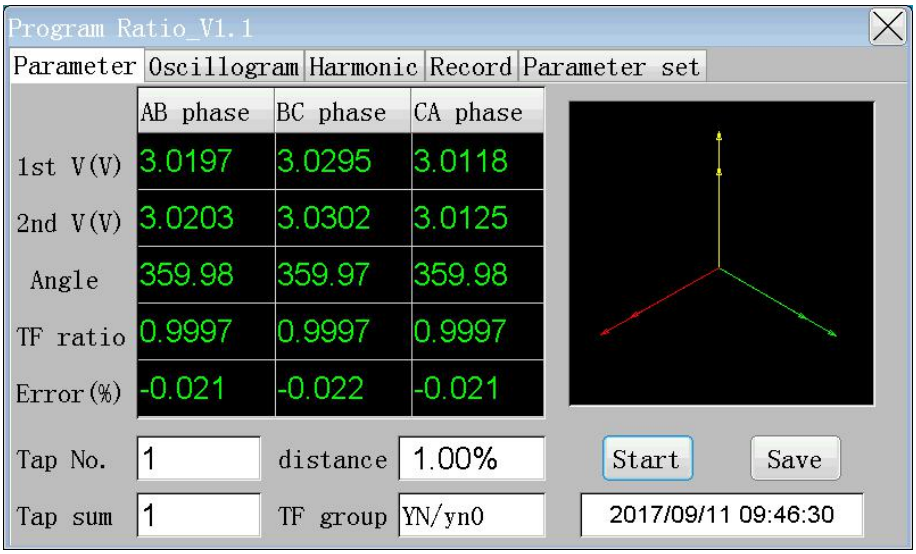
Tap distance: Percentage of each tap ratio adjustment, e.g. 1.25%, 1.25 should be entered.

Connection group: Select the transformer wiring methods such as: Y / y \ D / y, ZN / y, etc. If not sure about the wiring method, please select unknown, then the tester will automatically test. Click the Save button after the setting to save the information to the database.

Parameter measure

Click the parameter measurement button to make the ratio test.

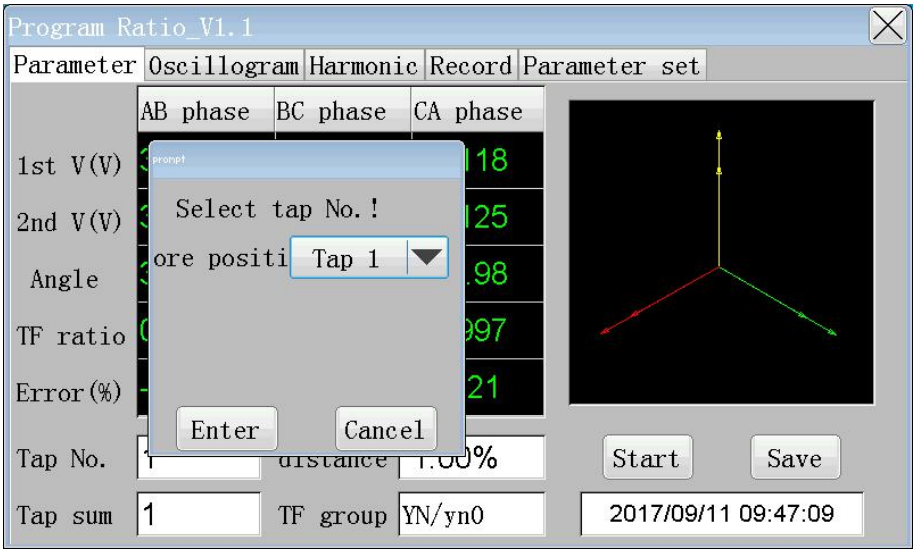
Figure:



Click the start button to start the test, about 3 seconds to complete the test and display the test results. First and second are the first and second voltage of the tested transformer. Angle is the difference between the first and the second voltage angle (clock time). Ratio is of measured change. Error is the error with the standard ratio. Tap position is the present tap measured by the instrument. Wiring method is also actual measured method.

Click save, the system prompt shows which tap records it is to be stored to. Select the correct tap to store the current test results into the database.

Figure:

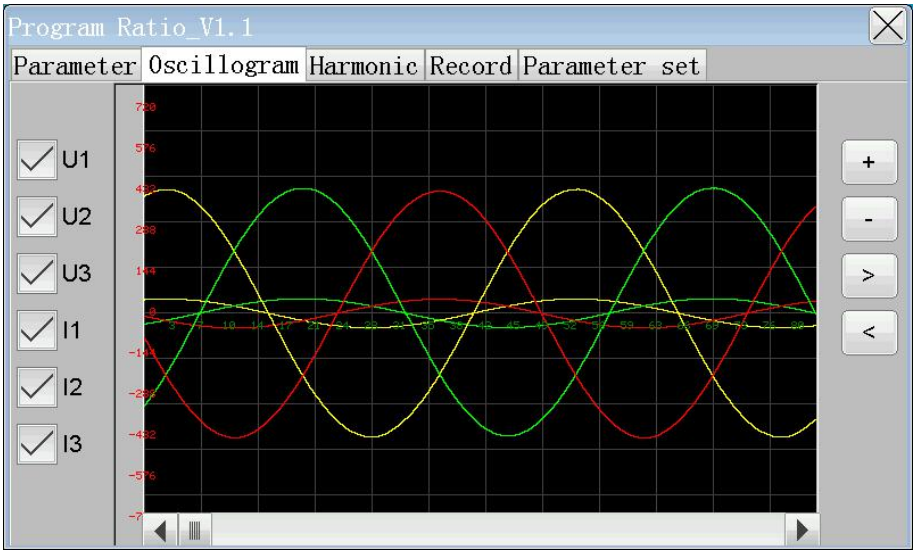


The Scott and Anti-Scott transformers are two phase ratios, shown in BC and CA phase.

Oscillogram

After the test is started and before the test is complete, click the Oscillogram button to display the voltage waveforms of the current applied transformer.

Figure:

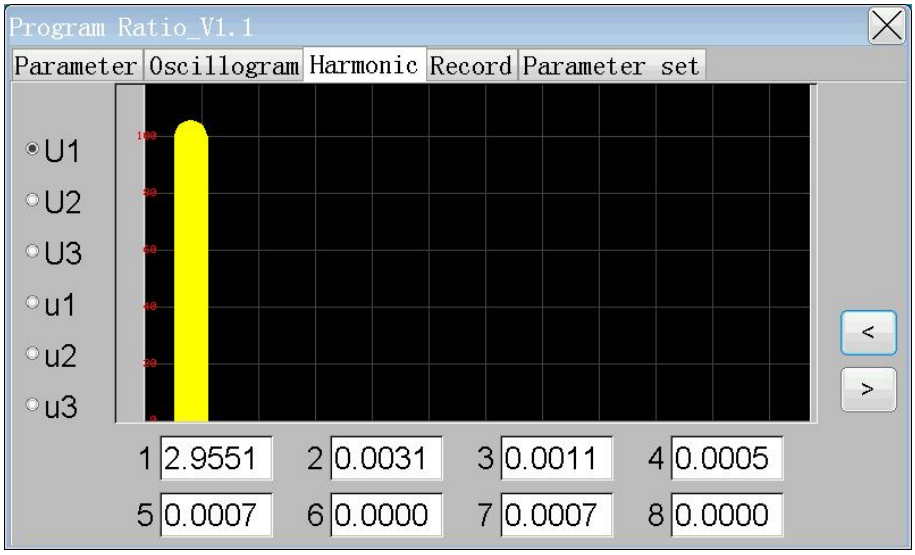


Click on the corresponding input items to display or not to display a phase waveform.

Harmonic analysis

After the test is started and before the test is complete, click the Harmonic Analysis button to analyze the harmonic content of the first and second phase voltage.

Figure:



Record

After the test is completed, the test results can be inquired and exported to the USB or uploaded to computer.

Figure:

The left side shows the number of records on the database, the

right side displays details of one record. Click the main scroll bar to scroll up and down or left and right to display all the information. Select a record and click the print button to print the test results through serial port or Bluetooth. Insert USB drive to export. The entire database can be exported to the USB (insert the USB to wait two or three seconds, so that the instrument detects the USB). USB database adopts Dbase3 format, available to open, edit and print by excel spreadsheet, with no need to install background management software, which makes it convenient for user management.

VI. After-sales service

The company provides free maintenance for quality problem within one year after purchase and life-long warranty plus technical services. If any abnormal condition or fault about the tester is detected, please contact the company in a time so that we can arrange the most convenient scheme for you, and to provide you with the fastest on-site service.