

HZBB-10A-I

Hand-Held Transformer Turns Ratio Tester



Dear user:

Thank you for choosing HZBB-10A-I Hand-Held Transformer Turns Ratio Tester.

We hope that this instrument can make your work easier and more enjoyable, so that you can get the feeling of office automation in the test and analysis work.

Before using the instrument, please read this manual, and operate and maintain the instrument according to the manual to prolong its service life. "Just a light press, the test will be completed automatically" is the operating characteristics of this instrument.

If you are satisfied with this instrument, please tell your colleagues; if you are not satisfied with this instrument, please call (0312) 6775656 to tell you to serve you at all times-Baoding Huazheng Electric Manufacturing Co., Ltd., our company will definitely make you satisfied !

Contents

I.Overview	1
II.Functional Characteristics	1
III.Technical Parameters	2
IV. Panel Instructions	3
V. Operation Declaration	3
VI. Wiring Instructions	8
VII. Precautions	9
VIII. Common Instrument Problems And Inspection Methods	10
IX. Custody	11
X. Packing List	11

I.Overview

In power transformer in the production of semi-finished products and finished products. Before the new installation of the transformer in operation. According to the national ministry of preventive test procedures, require the operation of transformer turn ratio or voltage ratio test, which can check the correctness of the transformer turn ratio, tap-changer condition, whether turn-to-turn short circuit, transformer whether can run well. Traditional variable ratio bridge reading is not intuitive, to convert, can only be measured phase by phase. XXF variable ratio tester overcomes the shortcomings of traditional variable ratio bridge test, simple and intuitive operation, using three-phase precision inveter power supply, fast test and accuracy.

II.Functional Characteristics

(1)The interior instrument uses three-phase precision inverter power supply, instead of single-phase mains power supply as the measuring voltage,which eliminating the harmonic influence of mains voltage when measuring, more accurate measurement. When the power supply is a generator, there is no impact.

(2)The three-phase output voltage is adopt to improve the test speed.It can measure the Angle between phases, also can measure the transformer with neutral point, automatic identification of transformer wiring group 0-11.

(3)Fitting to a wide variety of transformers, especially suitable for z-type change, rectification change, grounding change, electric furnace change, transformation and other transformer measurement,has the most comprehensive measurement parameters.

(4)The use of homemade precision three-phase inverter power supply, with high and low voltage reverse connection protection, transformer turns short circuit protection, tap switch is not in place protection, output full short circuit protection, increase the stability of the instrument.

(5)After Input the rated parameters can automatically measure the transformer turns ratio, error value and tap switch tap , the tap switch for asymmetric tap switch, also can accurately measure the transformer tap switch accurate position, up to 99 points can be measured tap switch.

(6) 7 inch high brightness touch color LCD, clear display under strong light, full touch screen operation, Chinese and English free switching.

(7) The instrument can be connected with the printer to print measurement data, convenient for paperless office. (optional) The multi-functional engineering plastic box with cold and temperature resistance, sealing and waterproof, anti-fall and shockproof, is convenient for field test.

III. Technical Parameters

(1) Test range: 0.9~1000

(2) Measuring accuracy: $\pm 0.1\% + 2$ words (0.9-500)

$\pm 0.2\% + 2$ word (501-2000)

$\pm 0.5\% + 2$ words (2001-10000)

(3) Angle accuracy: $\pm 0.2^\circ$

(4) Output voltage: automatic adjustment according to the load

(5) Resolution: minimum 0.0001 Point of view - 0.01°

(6) Working power supply: battery power supply

(7) Ambient temperature: $-10^\circ\text{C} \sim 40^\circ\text{C}$

(8) Relative humidity: $\leq 85\%$, no dew

(9) Dimensions: host 252*160*65(mm) Box: 425 * 335 * 210 (mm)

(10) Weight: host 2KG Box: 8 kg

(11) Test line length: standard length of 13 meters can be customized

IV. Panel Instructions



1. Display screen: 7-inch hd color touch screen LCD, digital adjustment backlight, display operation menu and test results.
2. High voltage terminal: connect to the yellow, green, red and black four-color terminals of the test line, corresponding to the A, B, C and O three phases of the high voltage side of the tested transformer.
3. Low voltage end: yellow, green, red and black correspond to the low voltage side of a, b, c and o of the tested transformer
- 4, USB: U disk storage
5. Charging hole

V. Operation Declaration

(I) Menu description, as shown in Figure 1



Figure 1

After the instrument is turned on, the opening interface is shown in Figure 1. There are six function options in the opening interface, including: [three-phase measurement], [single-phase measurement], [Z-type change], [time setting], [data query] and [system setting]. Click any function button to enter the setting.

(二) , **Three-phase measurement interface:**



Figure 2

1. Click [three-phase measurement] to enter the three-phase measurement interface, the text box can pop up the input keyboard, can enter a special value, the standard value can be changed by pressing the right button;

2. The test completion interface is shown in Figure 3:

Ratio Test			
Phase	Ratio	Error	Angle
A			
B			
C			
:		Tap Value:	
Connection:		Tap Position:	

Start

Save

Print

Back

Figure 3

◆ After the test is completed, press the [return] key back to the opening interface, click the [test] key to retest, click the [Storage] key to store the data in the U disk

◆ Turn ratio test: In the test interface Figure 3, click [variable ratio] to switch to [turn ratio], and the turn ratio data is updated immediately, as shown in Figure 4

Transformer turn ratio test			
Phase	Turn ratio	Error	Angle
A Phase	2.0116	-7.088%	29.36°
B Phase	2.0071	-7.293%	29.77°
C Phase	2.0126	-7.037%	29.53°
Current turn ratio: 2.1650		Tap value: -85.00%	
Connection method: YN/d-1		Tap position: 26.00	

Test

Save

Print

Back

13:43:04

Figure 4

1, the single-phase measurement, z-type change, and three-phase measurement setting methods are basically the same, will not be repeated;

4 The setting method of rectifier transformer is shown in Figure 5, and the test results

are shown in Figure 6. Click the right side of "High voltage connection"



push-button, Select D + or Y + and click to the right of Low-voltage Link



push-button, select "yd"

Info

HV HV CS

LV LV CS

VRR GV

RT TM

Start Back

Figure 5

Phase	Ratio	Error	Angle
A			
B			
C			

: Tap Value:

Connection: Tap Position:

Start Save Print Back

Figure 6

5. Click [Data Query] to enter the query interface as shown in Figure 7:

Rated high voltage	Rated low voltage	Voltage regulation ratio	Rated tap	Testing time
10.00kV	0.400kV	0.500%	3	2019-1-

Connection method	Measurement method	Measurement type	Name
YN/yn-0	Three groups	Three phase transformer	Three groups

Phase	turn ratio	Error	Angle
A Phase	25.000	0.000%	0.000°
B Phase	25.000	0.000%	0.000°
C Phase	25.000	0.000%	0.000°

Current turn ratio	Tap value	Tap position
25.000	0.00%	3

Previous Next Archived print Back

Figure 7

[Change ratio] Click the change ratio button to switch to the turn ratio data

[Previous] [Next] You can view and print historical data;

[Save U disk] is to store the current data to the U disk;

6. [System Settings] The interface is shown in Figure 8:



Figure 8

Manufacturer Settings: The internal parameters of the instrument require password input, and the user does not need to modify them.

Memory Management: Clear Data and Cancel are on display”

7. Click [Time setting] to enter the time setting interface as shown in Figure 9:



Figure 9

Click [year] [month] [day] [when] [points] [seconds] will pop up the keyboard can set the time, enter the value and click "Del" (can delete the entered value), click "Esc" (do not save the entered value and exit the keyboard), click "OK" (save the entered value and exit the keyboard), and then click [modify] to update the modification time. As shown in Figure 10,



Figure 10

VI. Wiring Instructions

1. Three-phase transformer Y-d-11, voltage combination of $110 \pm 81.25\% / 10.5$ transformer. Wiring according to Figure 11.

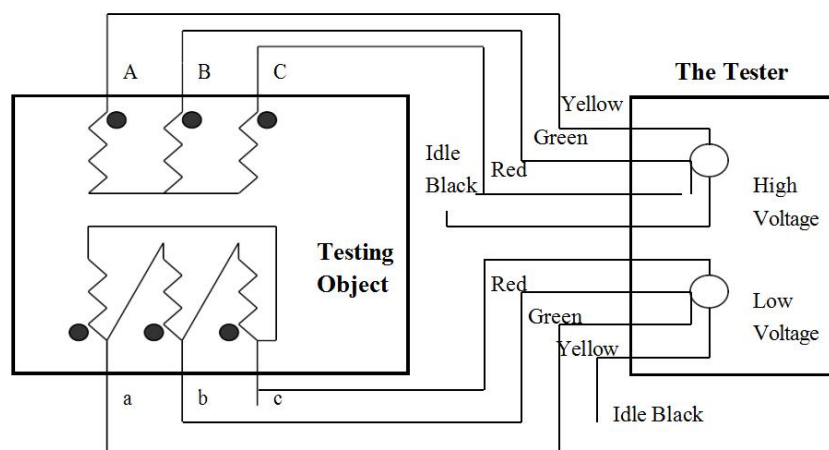


Figure 11

7. Single-phase transformer, voltage combination $525 / 3 \pm 42.50\% / 20$, wiring according to Figure 12

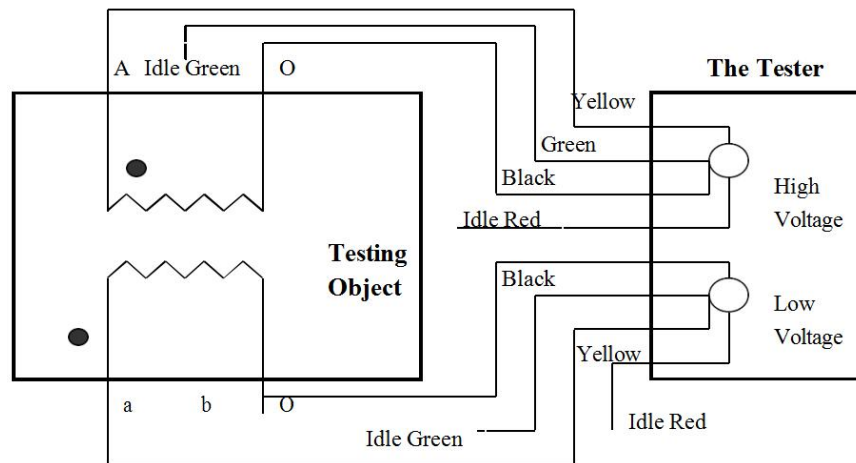


Figure 12

3. Z-type transformer, and wiring according to Figure 13

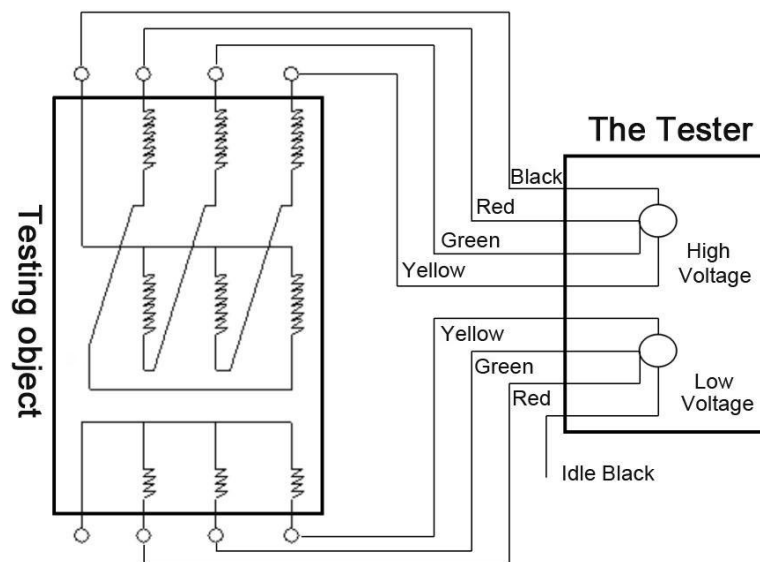


Figure 13

VII. Precautions

1 for a transformer with multiple tap, equal tap level, tap type, rated high and low voltage value input, is to make the test results can automatically calculate the error value, and the tap of the tap, once the rated data input, the test each points can automatically calculate the error value of the point and which tap (i. e., the tap is several), do not need to do data changes.

2 Equal tap level, also called tap distance, voltage combination $110 \pm 81.25\% / 10.0$ transformer, 1.25% is equal tap level.

3 tap type, voltage combination $110 \pm 81.25\% / 10.0$ transformer, equal tap level is $8 + 1$

that is 9, that is, the input rated position can be, so for the rated tap position is not in the middle point of the transformer, there will be no error for the split position of the measurement.

4 variable ratio, the measured voltage ratio of high voltage and low voltage, and the turn ratio is the ratio of high voltage to the number of circles of the low voltage winding. For high voltage is a star connection (whether it is neutral or not), low voltage is a triangular connection, the variable ratio is three times the turn ratio. For a transformer whose low voltage is a star connection (whether it is neutral) and whose high voltage is a triangular connection, the turn ratio is three times the variable ratio.

5 For transformers with neutral points, such as YN-d-11 transformers, measured by YN-d-11 and Y-d-11, the results are biased, and the theoretical analysis is better by Y-d-11.

6 If the transformer in gear 19,10,10,11 tap is the same value, the instrument should input the tap type 9.

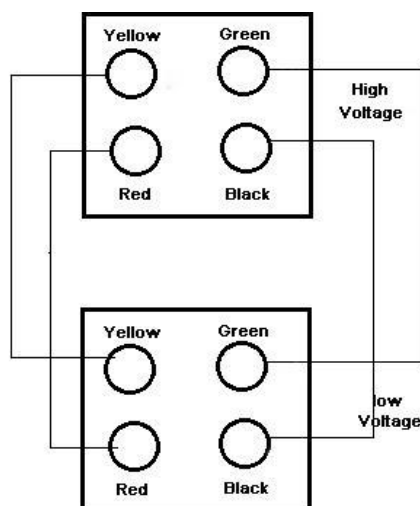
7 The transformer on the low voltage side shows the tap position and the actual tap position inverted.

8 For a transformer with low voltage grade, when the effective number of input voltage value is insufficient, it can input the high and low voltage by the constant such as 10 or 100 at the same time.

9 When testing the single-phase transformer, simply select the measurement option as "single".

VIII. Common Instrument Problems And Inspection Methods

当 When the test is abnormal, the following methods can be used for self-test, wiring as shown in the following figure:



After connecting the line, select Y-y-0 or D-d-0, and then press the confirmation key to start the measurement. The measurement value is 1.0000. The above display indicates that the instrument is normal, otherwise the instrument has problematic.

If there is no short wiring, the high voltage side yellow, green, red and black corresponding to the yellow, green, red and black wiring pliers of the test line can be short connected together (pay attention to the position of the clamp lead, and the end of the cable should be reliably connected together).

IX. Custody

1 The instrument and its supporting facilities should be kept indoors, the ambient temperature is 0°C ~40°C, the relative humidity is 30%~80%, and the air should not contain harmful substances causing corrosion.

X. Packing List

No.	Item	Qty
1	main engine	1
2	P-wire	1
3	power line	1
4	manual	1
5	certificate	1
6	packing list	1