Huazheng

HZBB-10A
Transformer Turns Ratio Tester

Huazheng Electric Manufacturing (Baoding) Co., Ltd

Dear user:

Thank you for choosing HZBB-10A 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 !

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I.Overview

In the production process of semi-finished and finished products of power transformers, before the newly installed transformers are put into operation and in accordance with the preventive testing regulations of the Ministry of Electric Power of China, it is required to conduct turn ratio or voltage ratio tests on the operating transformers. This can check the correctness of the turn ratio of the transformer, the condition of the tap changer, whether the transformer has inter turn short circuits, and whether the transformer can operate in parallel. The traditional ratio bridge reading is not intuitive and requires conversion, which can only be measured phase by phase. The HZBB-10A ratio tester overcomes the shortcomings of traditional ratio bridge testing, is easy to operate and intuitive, uses a three-phase precision inverter power supply, and has fast testing and high accuracy.

II. Functional Characteristics

1. The instrument adopts a three-phase precision inverter power supply internally, which eliminates the harmonic influence of the mains voltage during measurement and makes the measurement more accurate. When the working power source is the generator, there is no impact.

2. By using three-phase output voltage, the testing speed can be improved, and the phase to phase angle can be measured. The wiring group can be automatically identified as 0-11. For low voltage rectifier transformers with multiple windings, the low voltage side can measure the transformation ratio and angle deviation of 7.5 ° without the need to disassemble the wires.

3. Suitable for a wide range of transformer types, especially suitable for measuring Z-type transformers, rectifier transformers, grounding transformers, electric furnace transformers, phase-shifting transformers, and other transformers.

4. Equipped with high and low voltage reverse connection protection, transformer turn to turn short circuit protection, tap changer off/off protection, output full short circuit protection, and increased instrument stability.

5. After entering the rated parameters, the transformer ratio, error value, and tap

changer position can be automatically measured, especially for tap changer with asymmetric tap changer. The accurate position of the transformer tap changer can also be accurately measured, with up to 99 tap changer positions.

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

7. The instrument has both print output and USB interface, and can also be equipped with RS232 interface for paperless office.

8. Adopting a multifunctional engineering plastic box that is cold and temperature resistant, sealed and waterproof, and resistant to falls and shocks, it is convenient for field testing.

9. The instrument can use Android phone or tablet, follow WeChat official account, download special APP, control the instrument through special software, store and upload test data for easy reference.

III. Technical Parameter

1、Test range: Variable ratio -0.9 to 10000 degrees -0 to 360 degrees

2. Ratio accuracy: ± 0.1%+2 words (0.9-500)

± 0.2%+2 words (501-2000)

± 0.5%+2 words (2001-10000)

3. Angle accuracy: ± 0.2 °

4. Output voltage: automatically adjusted according to load

5. Resolution: Ratio - minimum 0.0001, angle -0.01 °

6. Working power supply: AC220V ± 10% 50 ± 1Hz

7. Environmental temperature: -10 ℃~40 ℃

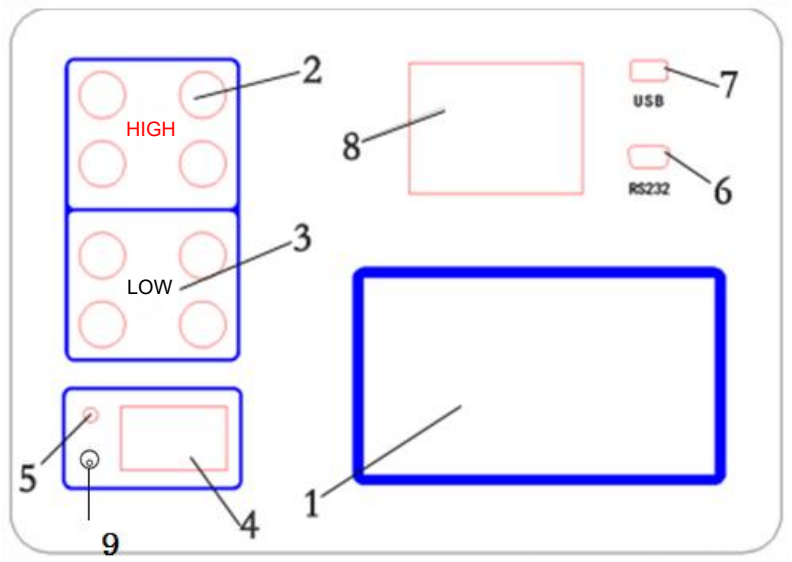
8. Relative humidity: ≤ 85%, no condensation

9. External dimensions; Host: 360 * 290 * 170 (mm) Cable box: 360 * 290 * 170 (mm)

10. Weight: 5KG for the main unit, Box: 5.6KG

11. Test line length: standard 13 meters length can be customized

IV. Panel Description



1. Display screen: 7-inch high-definition color touch screen LCD with digital adjustment backlight, displaying operation menu and test results.

2. High voltage terminal: Connect the test wire to the four color terminals of yellow, green, red, and black, corresponding to the three-phase A, B, C, and O on the high voltage side of the tested transformer.

3. Low voltage terminal: yellow, green, red, and black correspond to three-phase A, B, C, and O on the low voltage side of the tested transformer

4. AC220V: The power input port of the entire machine is connected to an AC220V power supply.

5、 ⏚ ：Protect the grounding pole.

6、Communication: serial communication

7. USB: USB storage

8. Printer: Print test results after measurement is completed.

9. Charging hole

V. Operating Instructions

（1）Menu description, as shown in Figure 1

Figure 1

（2）、Introduction to operating methods:

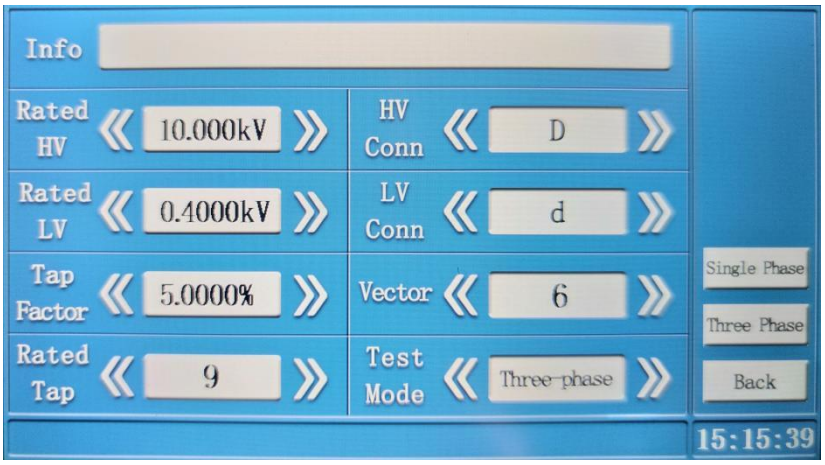


Figure 2

1. Click on parameter settings to enter the parameter settings interface. Click  to select and set settings in rated high voltage, rated low voltage, voltage regulation ratio, rated tap, high voltage connection, low voltage connection, connection group, and measurement method quality inspection. After setting, you can click on the single-phase or three-phase ratio for measurement. Click to return to the main page

2、The interface for completing three-phase testing is shown in Figure 3:

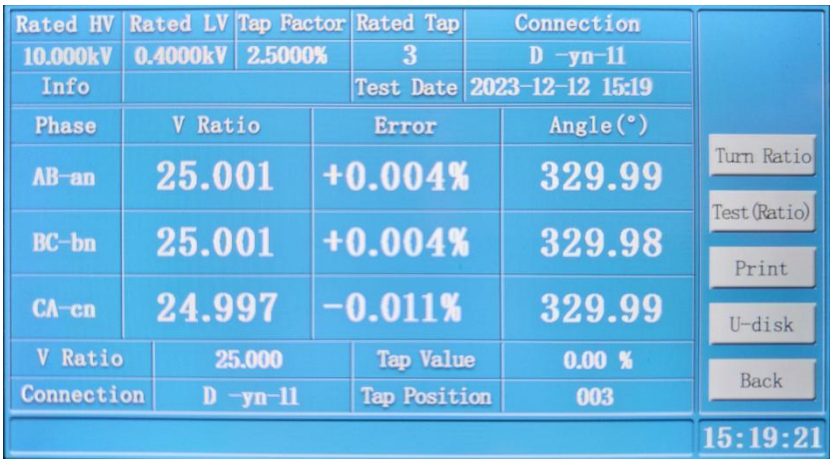


Figure 3

When clicking on the three-phase ratio, after the test is completed, the turn ratio can be queried based on the turn ratio; Continue testing by measuring the transformation ratio; Print test data according to data; Store test data on a USB drive.

3. The interface for completing single-phase testing is shown in Figure 4

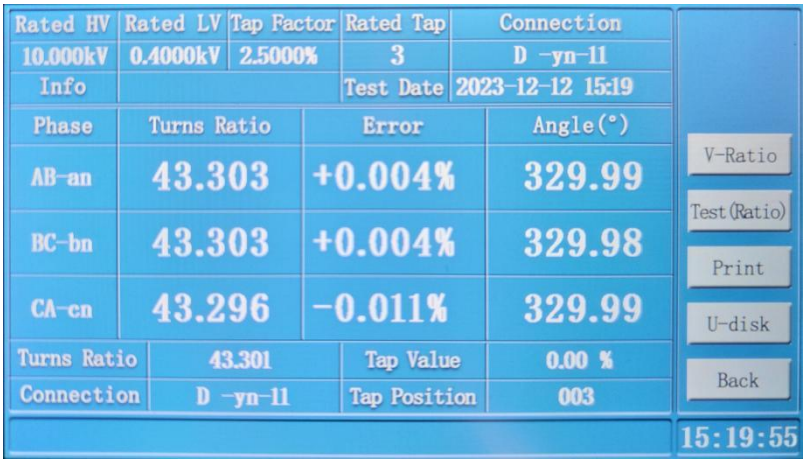


Figure 4

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

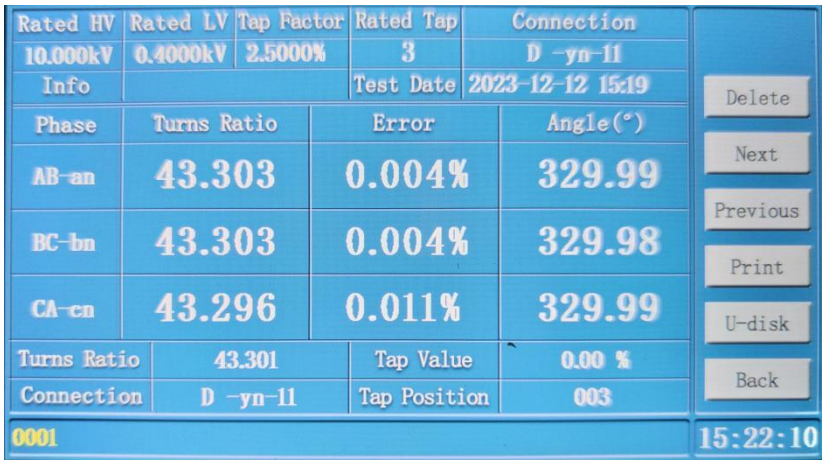


Figure 5

6、Click to **delete data** to delete it, and click **on the previous** and **next groups** to view the data; Click on data printing to **print the data**; Click on the **USB flash** drive to store data; Click to return to the homepage and return to the main interface;

7. Click on System Settings in Figure 1 to enter the System Settings interface, as shown in Figure 6:

Figure 6

Brightness adjustment: The screen brightness can be adjusted by moving the button according to the on-site environment

Bluetooth connection: Use the corresponding software downloaded from the phone to scan the QR code and achieve full control of the instrument on the phone.

Language settings: Click the button to switch between Chinese and English interfaces

Display Theme: You can choose different color themes

Manufacturer settings: Only the manufacturer can set

Set up and click to return to the main page, returning to the main interface

VI. Wiring Instructions

1、A three-phase transformer Y-d-11 with a voltage combination of 110 ± 8 × 1.25%/10.5. Connect according to Figure 12.

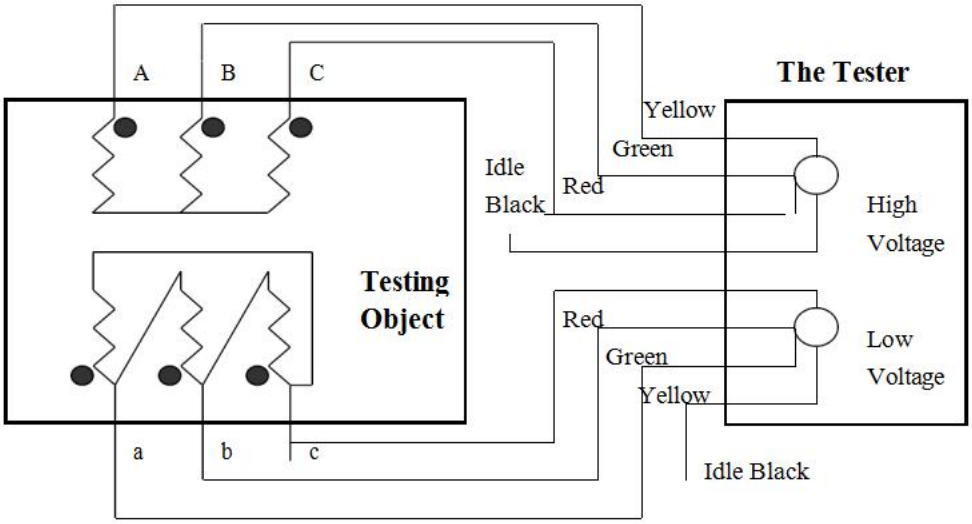


Figure 12

3、 Single phase transformer, voltage combination 525/√ 3 ± 4 × 2.50%/20, wired according to Figure 13

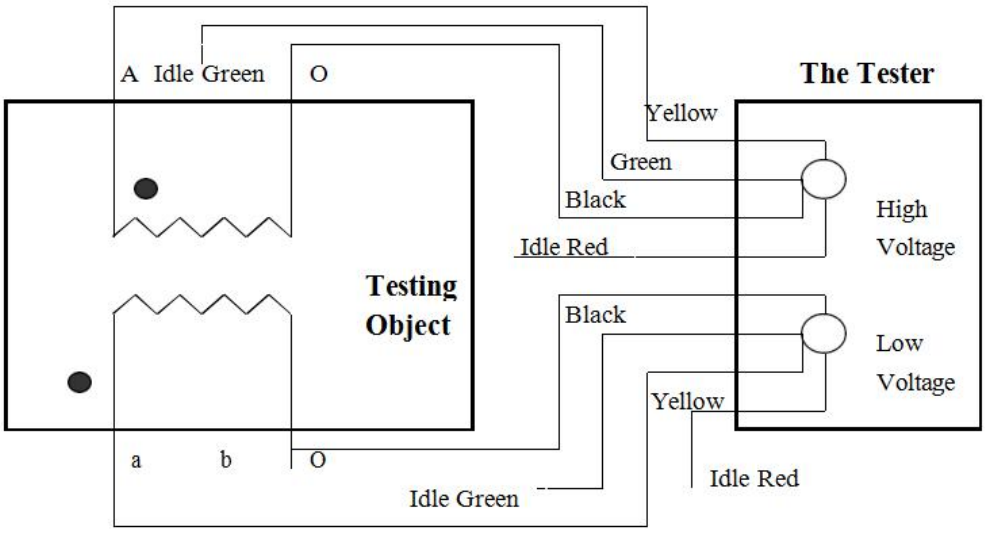


Figure 13

3、Z-type transformer, wiring according to Figure 14

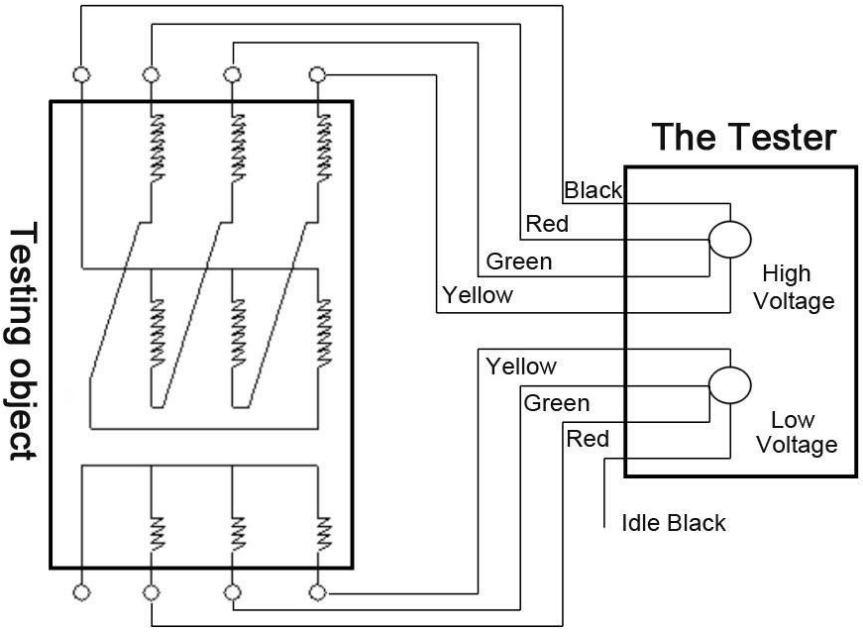


Figure 14

6、Rectifier transformer and phase-shifting angle transformer, wired according to Figure 15

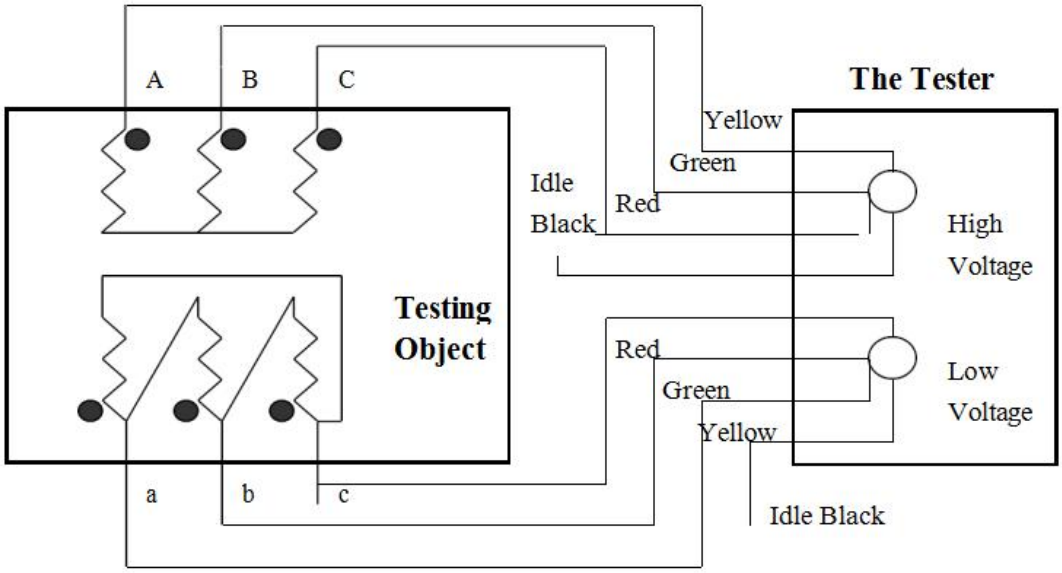


Figure 15

7、Autotransformer, wired according to Figure 16.

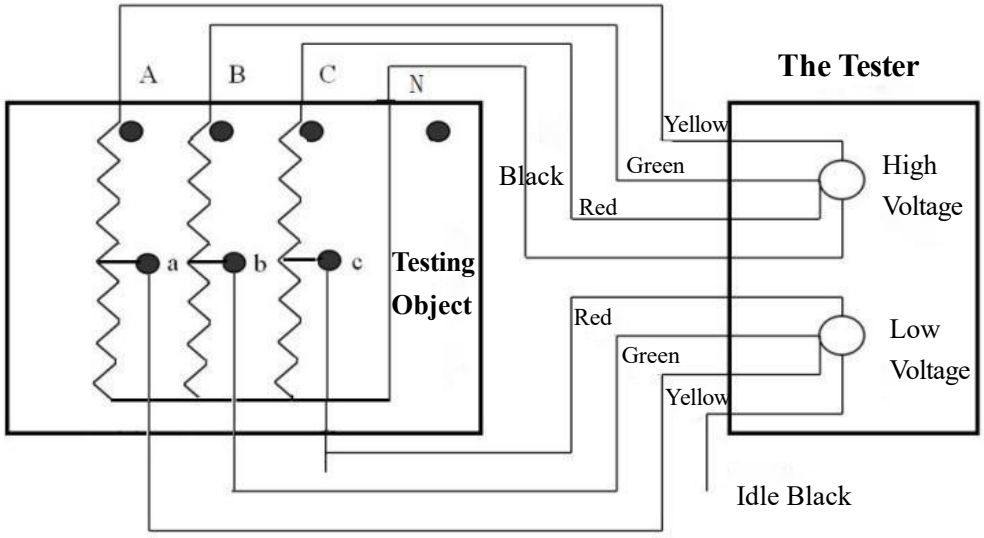


Figure 16

VII. Matters Needing Attention

1 For transformers with multiple tap points, equal tap level, tap type, rated high voltage, low voltage voltage value input, so that the test result can automatically calculate the error value, as well as the tap point of the tap changer, once the rated data is input, the test of each tap point can automatically calculate the error value of the point and which point is the tap point. You do not need to change the input parameters.

2 equal tap stage, there is also called tap distance, voltage combination 110±8×1.25%/10.0 transformer, 1.25% is equal tap stage.

3 Rated taping, voltage combination 110±8×1.25%/10.0 transformer, rated taping is 8+1, that is, 9, that is, the input rated connection can be, so that for the rated taping position is not in the middle point of the transformer, the taping position measurement will not be wrong.

4 Turns ratio, when three-phase electricity is applied to the test, the voltage ratio of the measured high voltage and low voltage, and the turn ratio is the ratio relationship between the number of coils wound by the high voltage and low voltage winding. For transformers where the high voltage is a star connection (with or without a neutral point) and the low voltage is a triangle connection, the variable ratio is √3 times the turns ratio. For transformers where the low voltage is a star connection (with or without a neutral point) and

the high voltage is a triangle connection, the turn ratio is √3 times the variable ratio.

5 For transformers with neutral points, such as YN-d-11 transformers, measure according to YN-d-11 and Y-d-11. If there is any deviation in the result, Y-d-11 is better for theoretical analysis.

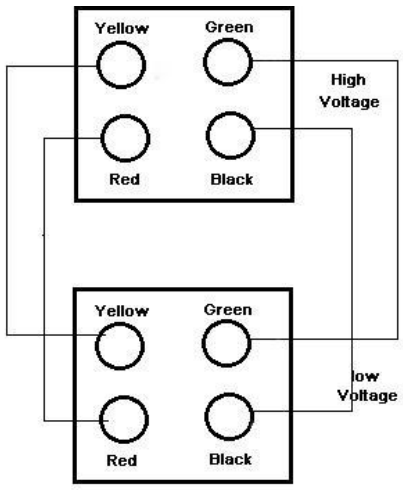
6 Transformer with load tap-changer 19, if 9, 10, 11 tap-changer is the same value, the instrument should enter 9 when entering the tap-changer type.

7 Tap-changer The transformer on the low voltage side shows that the tap-changer position is inverted from the actual tap-changer position.

8 Transformer with low voltage level, when the significant digit of the input voltage value is not enough, the high and low voltage can be input after multiplying 10 or 100 constants at the same time.

VIII. Instrument Common Problems And Inspection Methods

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



After connecting the wire, select Y-y-0 or D-d-0, and then press the confirm button to start the measurement, the measurement value is about 1.0000, the above display indicates that the instrument is normal, otherwise, the instrument has a problem.

If no short cable is available, short-connect the yellow, green, red, and black cable tongs on the high voltage side to the yellow, green, red, and black cable tongs on the low voltage side（**Pay attention to the position of the pliers lead when shorting, and the end of the**

cable should be reliably connected together).

IX. Storage And After-Sales Service

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

2 Instrument from the date of purchase within one year, belongs to the company's product quality problems free maintenance, lifetime warranty and technical services. If you find that the instrument is abnormal or faulty, please contact the company in time to arrange the most convenient solution for you and provide you with the fastest on-site service.

X. Packing List

No.	Item	Qty
1	Host machine	1
2	Test line	1
3	Power cable	1
4	Operation manual	1
5	Quality certificate	1
6	Fuse tube	2
7	Printing paper	1
8	Packing list	1
9	Ground line	1
10	Communication cable	1