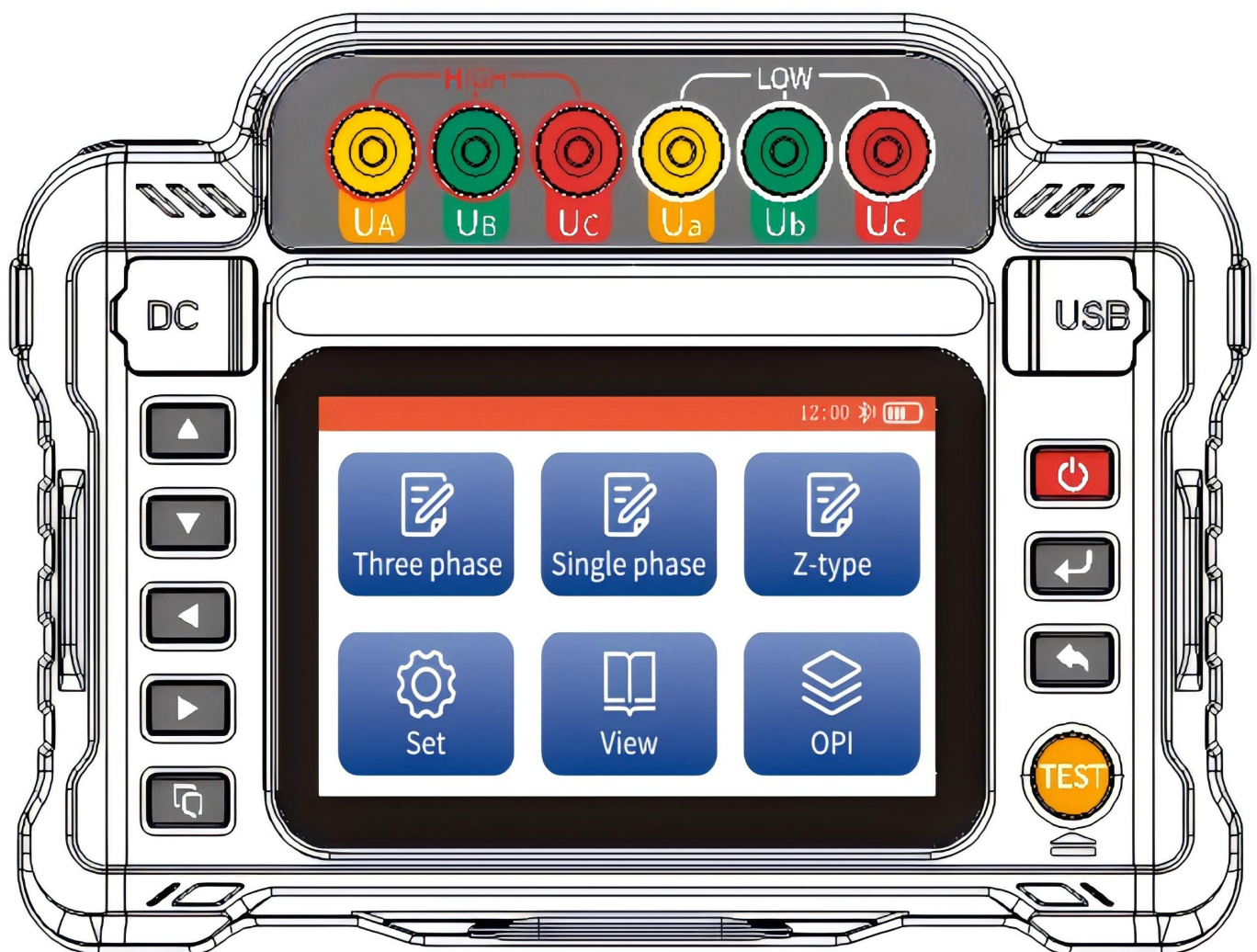


Transformer turns ratio tester



USER MANUAL

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Catalogue

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I. Safety rules and precautions

Thank you for purchasing our transformer turns ratio tester. Before you use the instrument for the first time, in order to avoid possible electric shock or personal injury, please be sure to: read in detail and strictly observe the safety rules and precautions listed in this manual.

In any case, special attention should be paid to safety when using this instrument.

- ✧ The instrument is designed, manufactured and tested in accordance with IEC61010 safety specifications.
- ✧ In any case, special attention should be paid to safety when using this instrument.
- ✧ Notice the labeled text and symbols on the body of this instrument.
- ✧ Before use, it should be confirmed that the instrument and accessories are intact, and the insulation of the instrument and test line is not broken exposed, No broken wires to use.
- ✧ During measurement, it is strictly prohibited to touch the exposed conductors and the circuit being measured
- ✧ Verify that the wire connection plugs are tightly inserted into the instrument connector.
- ✧ Do not measure in flammable locations, sparks may cause an explosion
- ✧ Discontinue use of the instrument if metal is exposed due to breakage of the housing or test cable during use.
- ✧ Do not place and store the instrument for a long time in a hot and humid place or under direct sunlight.
- ✧ Pay attention to the measurement range specified for this instrument and the environment in which it is used
- ✧ The use, disassembly, calibration, and maintenance of this instrument must be carried out by authorized and qualified personnel.
- ✧ If continued use poses a danger due to this instrument, stop using it and seal it immediately deposit, to be handled by an authorized and qualified body.
- ✧ The "  "safety warning symbols in the instrument and in the manual must be strictly followed by the user in this manual. Allow for safe operation.

II. Introduction

VK6030 transformer turns ratio tester adopts microprocessor technology for measurement calculation and automatic control, which can quickly and easily measure the actual transformer ratio and group. It is mainly used in the power industry to measure the transformer ratio and group, and at the same time, it is used by transformer manufacturers and distributors to measure the transformer parameters.

VK6030 transformer ratio tester consists of host, monitoring software, test line, communication line and so on. The host has a charging function without the need to find power on site, full-colour large-screen LCD display, the language can choose Chinese or English, at a glance, touch-screen operation is convenient and easy to use, the port anti-overload function, large-capacity storage of 500 groups of data. Upper computer software with historical data reading, access, save and other functions.

III.Range and accuracy

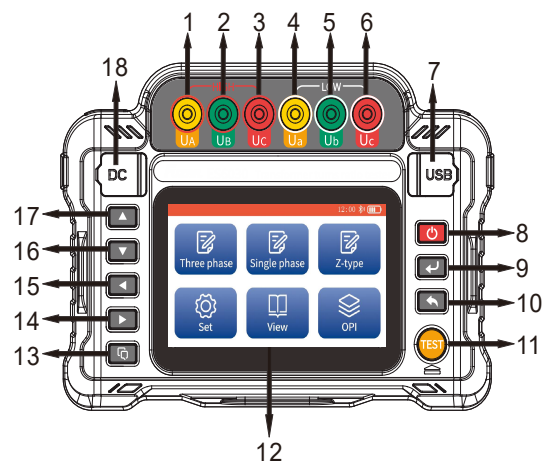
Measure the radio range	Resolution radio	Accuracy
$0.9 \leq TTR < 10$	0.0001	$\pm 0.2\% \pm 2\text{dgt}$
$10 \leq TTR < 100$	0.001	$\pm 0.2\% \pm 2\text{dgt}$
$100 \leq TTR < 1000$	0.01	$\pm 0.2\% \pm 2\text{dgt}$
$1000 \leq TTR < 2000$	0.1	$\pm 0.2\% \pm 2\text{dgt}$
$2000 \leq TTR < 10000$	0.1	$\pm 0.5\% \pm 2\text{dgt}$
$10000 \leq TTR$	1	--

IV.Technical specifications

Function	It is mainly used for ratio and group testing of the three phase transformers,and single-phase transformers, PT and CT. This product can be used for blind testing of three phase transformers, as well as ratio and group testing of Z-type transformers.
Specimen type	Single phase transformer,three phase transformers ,Z -type transformers,PT,CT
Radio range	0.9~10000
Overload protection	Yes
Power source	DC9.6V 3800mAh high capacity lithium battery
Charging function	Yes
Display mode	5 inch touch screen (854dots×480dots) Full color LCD display
Mode of the interaction	Touch screen/buttons
LCD size	Length and width:108 mmx65mm

Instrument size	Length, width and height:229mmx166mmx74mm
Mobil APP	Yes ,Bluetooth connection
Computer host	Yes, USB line connection
Data storage	500group
Data access	Data access function
Battery voltage	Real-time display of battery level, indicating the need for timely charging when the battery voltage is low
Automatic switch off	Auto power off could be set for 1~30 minutes.
Power consumption	Standby:approx.2w(100% brightness)
	Measurement:12 Max
Quality	Instrument :1.5kg (including battery)
	Test line: 1.7kg tester line:1.7kg
Working temperature and humidity	-10℃～40℃； 70%rh below
Storage temperature and humidity	-20℃～60℃； 70%rh below
Insulation resistance	10MΩ above(between circuit and housing)
Pressure resistance	AC 3700V/rms(between circuit and housing)
Electromagnetic property	IEC61010-4-3, radio frequency≤1V/m
Suitable for safety regulation	IEC61010-1、CAT III 600V、 pollution class2

V. Instrument in structure



1.HV side A phase

2.HV side B phase

3.HV side C phase

4.AV side A phase

5.AV side B phase

6.AV side C phase

7.USB PORT

8.power buttom

9.Confirmation key

10.Return key

11.Test key

12.Color screen

13.Multi-function key

14.Right bottom

15.Left bottom

16.Down bottom

17.Upper bottom

18.Charging port

VI. Method of operation

6.1. Switching on and off

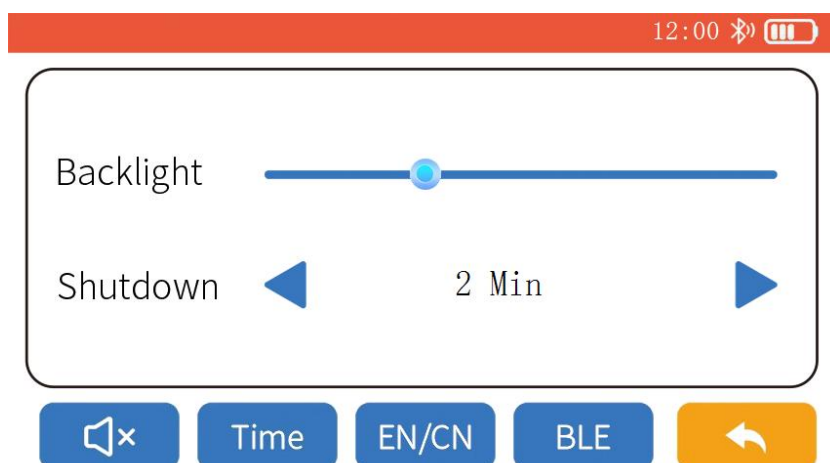
Pressing the red "power button" in the off state will turn the power on, and pressing the red "power button" in the on state will turn the power off.

6.2. Introduction of the interface

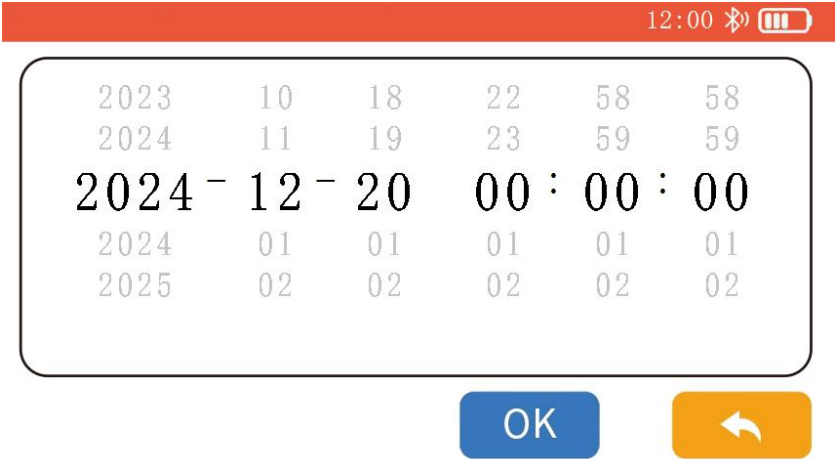
6.2.1. Main interface



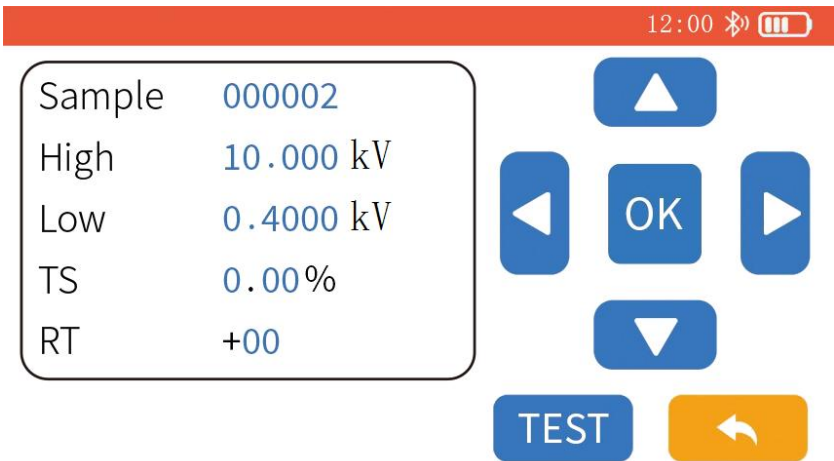
6.2.2. Setting up the interface



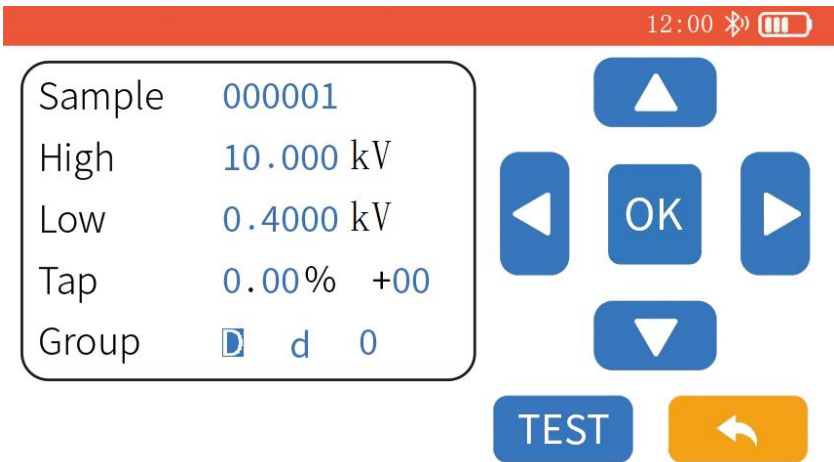
6.2.3.Time setting screen





6.2.4.Single-phase test set up interface



6.2.5.Three phase test ,three phase blind test,Z-type test set up interface



6.2.6.Test result interface for single test

12:00  

Sample: 00001

Polarity: +

Ratio: 25.000


Angle: 180°

Error : 0.00%



Tap : 0

Save

TEST




6.2.7.Three phase test ,three phase blind test,Z-type test test result interface

12:00  



	Ratio	Error
AB/ab	24.997	-0.01%
BC/bc	24.998	-0.01%
CA/ca	25.002	0.01%
Group	D-d-6	Tap 1



Save


TEST





6.2.8.Access screen


12:00  

No.	Sample	Detail			3/3
11	000001	Single	2024/09/06	11:23:17	 
12	000001	Three	2024/09/06	11:25:12	












6.3.Iconography






6.3.1.Silicone keypad

Icon	Name	Note
	Upper key	Select upwards
	Down key	Select downwards
	Left key	Select to the left
	Right key	Select to the right
	Multiplex key	It is equivalent to touching the button the bottom left of the screen, including deleting, saving,sound, etc.
	Power bottom	Switching power supply
	Confirm key	Conform or checked.
	Return key	Return to the previous screen
	Test key	Star testing


6.3.2.Touch buttom


Icon	Name	Note
	Confirm key	Conform or checked.
	Return key	Return to the previous screen
	Upper key	Select upwards
	Down key	Select downwards
	Left key	Select to the left
	Right key	Select to the right
	Delete key	Delete all the test record.
	Time key	Enter the set time interface
 	Sound key	Set the buzzer switch.
	Save key	Save the test record
	Bluetooth key	Set up Bluetooth on or off.
	Language switching	Switch between Chinese and English
	Test key	Star testing

6.3.3.Other iconography

Icon	Note
	Using for adjusting the brightness of the backlight。
	Battery level display
	Charging status display
	Bluetooth is displayed in the upper right corn of the large screen when it is switched on.
	View test record

6.4.Battery level check

1. After power on, if the upper right corner of the big screen shows the low battery voltage symbol “”, it means the battery power is insufficient, please charge it in time. The battery power is sufficient to ensure the accuracy of measurement.

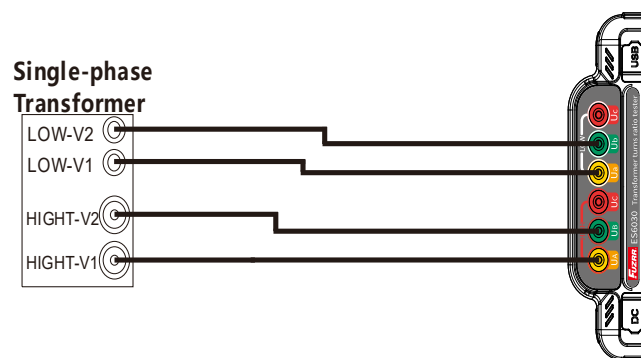
2. The power consumption during the test is higher than standby, if the LCD shows low battery voltage symbol “” during the test, it means that the battery power is about to be insufficient, please fill up the power in time.

In order to ensure the accuracy of the test.

3. The power is not enough to support the test will automatically shut down , please charge and then test .

6.5.Single - phase transformer test

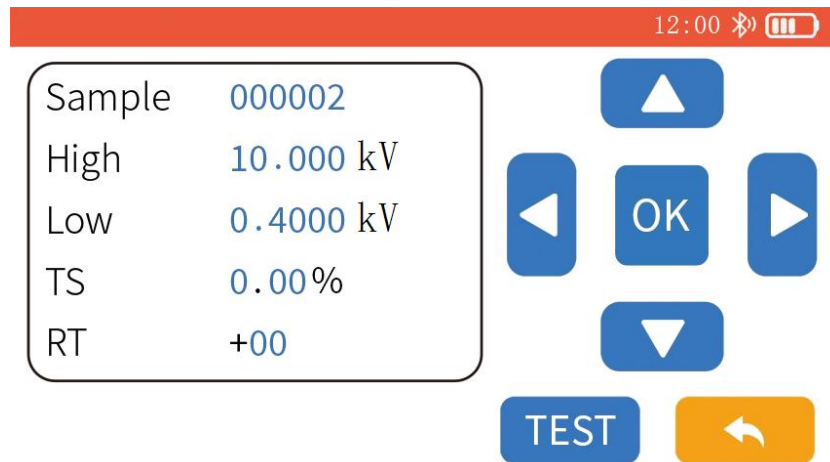
6.5.1.Wiring methods



Connect the two ports on the high-voltage side of the transformer to the tester's UA and UB terminals, and the two ports on the low-voltage side of the transformer to the tester's Ua and Ub terminals.

6.5.2.Test operate

In the main interface, click on the "Single phase test" icon to enter the resistance test setup interface. As shown in the figure below:



The interface shows a setup screen for a resistance test. It features a white box with five input fields: 'Sample' (000002), 'High' (10.000 kV), 'Low' (0.4000 kV), 'TS' (0.00 %), and 'RT' (+00). To the right of this box are five blue buttons: an up arrow, a left arrow, an 'OK' button, a right arrow, and a down arrow. Below these buttons are two more buttons: a blue 'TEST' button and an orange button with a white curved arrow pointing left. At the top right, there is a status bar with the time '12:00', a Bluetooth icon, and a battery level icon.


Specimen No.: In order to facilitate the customer to distinguish the tested transformer, the user can adjust the value and set the specimen number. This parameter does not affect the test results.

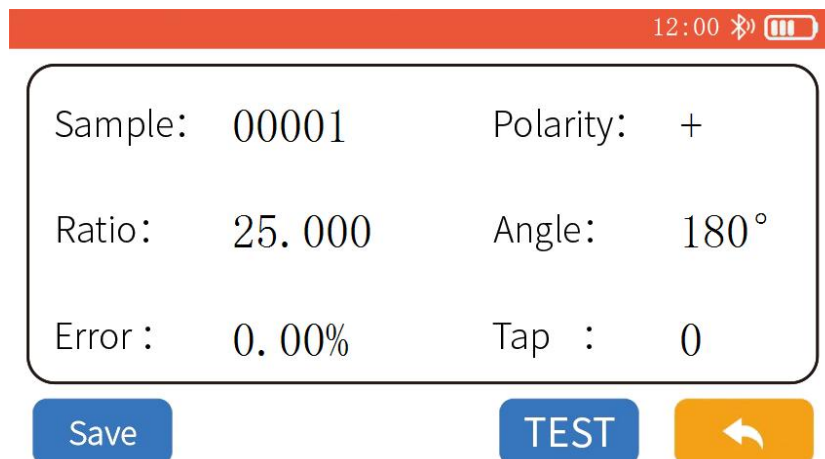
Rated HV: The rated voltage of the high voltage side, used to calculate the ratio error and deduce the tap position.

Rated low voltage: the rated voltage of the low voltage side, used to calculate the ratio error and deduce the tap position.

Tap spacing: Tap spacing of the transformer, if there is no tap, any value can be set for this position.

Rated Tap: The rated tap of the transformer, if there is no tap, please set 0 or 1.

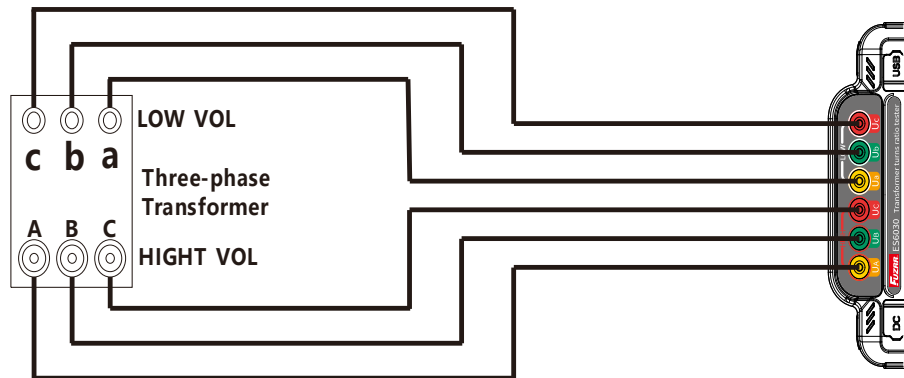
After setting the parameters, please click “” or press the silicone button “TEST” to test. The test result is shown in the figure below.



The interface shows the test results. It features a white box with four rows of data: 'Sample: 00001' and 'Polarity: +', 'Ratio: 25.000' and 'Angle: 180°', 'Error: 0.00%' and 'Tap: 0'. Below this box are three buttons: a blue 'Save' button, a blue 'TEST' button, and an orange button with a white curved arrow pointing left. At the top right, there is a status bar with the time '12:00', a Bluetooth icon, and a battery level icon.

6.6.Three phase transformer test

6.6.1.Wiring methods



Connect the three ports (A, B,C)on the high-voltage side of the transformer and the three terminals (UA, UB, UC)of the tester according to the same name, and the three ports (a, b, c)on the low-voltage side of the transformer and the three terminals (Ua, Ub, Uc) of the tester according to the same name.

6.6.2.Test operations

Conventional three phase transformer: if the transformer nameplate is recognizable, in the main interface, click on the "three phase test" icon.and then click on the "normal test" to enter the test setup interface: if the transformer nameplate is not recognizable, click on the "three- phase test" icon, and then click on the "three phase blind test" to enter the test setup interface.

Z-Type Transformer: If the transformer nameplate is recognisable, in the maininterface, click the "Z-Type Test" icon to enter the test setup interface

The test setup screen is shown below:

Sample	000001
High	10.000 kV
Low	0.4000 kV
Tap	0.00% +00
Group	D d 0

Specimen No.: In order to facilitate the customer to distinguish the tested transformer, the user can adjust the value and set the specimen number.This parameter does not affect the test results.

Rated HV: The rated voltage of the high voltage side, used to calculate the ratio error and deduce the tap position.Rated low voltage: the rated voltage of the low voltage side, used to calculate the ratio error and deduce the tap position.Tap: The parameter on the left is the tap spacing of the transformer,if there is no tap, this position can be set to any value.


The parameter on the right is the rated tap of the transformer,if there is no tap, please set it to 0 or 1.



LINK GROUP: The link group contains three parameters:

High-voltage side coupling methods: including D, Y, YN, ZN,and unknown can also be selected during three phase blind testing.

Low-voltage side linkage: including d, y, yn, and optionally unknown in the case of three phase blind measurements.

Group:Transformer group, including 0 11 and "Auto", only auto option is available in 3 phase blind test.


After setting the parameters, click “  ” or press the silicone button "TEST" to test. The test result is shown in the figure below:

12:00  


	Ratio	Error
AB/ab	24.997	-0.01%
BC/bc	24.998	-0.01%
CA/ca	25.002	0.01%
Group	D-d-6	Tap 1



Save


TEST






6.7.Settings

Settings: Click “  ” in the main interface, you can enter the system settings interface.The figure below:

12:00  

Backlight 


Shutdown  2 Min 




Time

EN/CN


BLE




Backlight setting: drag the icon “  ” to the left or right to adjust the brightness.


Shutdown time setting: press the left and right keys to select1~30 minutes auto shutdown. When there is no operation of the tester, the tester will turn off the power automatically after this length of time. As indicated in the following figure:

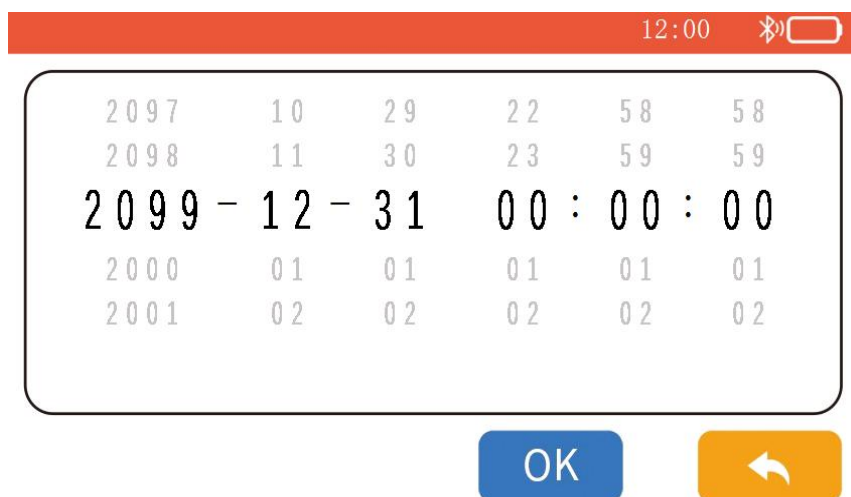
Sound settings: click “  ” “  ” to switch the sound on and off.


Language Switching:Click “  ” to switch between Simplified Chinese and English.

Bluetooth setting: click “  ” to switch Bluetooth on/off, when Bluetooth is on, Bluetooth icon is displayed

in the upper right corner of the big screen.

Time Setting: click “” you can enter the time setting interface. The figure below:



Slide the year, month, day, hour, and second up and down to adjust its data, and click “” to update it to the system.

6.8.Data storage

In the test result interface, click “” to save the test results.

The tester can save 500 sets of test results, if the storage is full, please clear the test records in the access screen before saving.

6.9.Data access/deletion

In the main interface, click the "Access" icon to enter the access interface for data access and deletion. If the instrument has not saved any data, the interface will prompt "No saved data!".

Press the left and right buttons to turn pages, press the up and down buttons to select the record you need to view, or you can directly click on the record you need to view on the large screen to view it.

6.10.Product information access

In the main interface, click the "Product Information" icon to enter the product information interface to view the technical specifications of the product and software version information.

6.11.Overload protection

Every time before switching on and testing the resistance, the instrument will carry out overload checking, if checking the overload, it will carry out overload protection and prompt, please switch off and ensure that the test body is not charged before switching on and testing.

After overload protection, please disconnect the cable and restart the instrument to turn on normally.

6.12.APP and PC upper computer operation

This instrument supports connecting to Android APP and PC upper computer.

PC Upper Connection Instructions:

(USB driver and host computer software from the CD ROM should be installed before connection)


After the instrument is switched on, use the instrument accessory USB cable, one end of which is connected to the USB port of the instrument and the other end is connected to the USB port of the computer, run the software of the upper

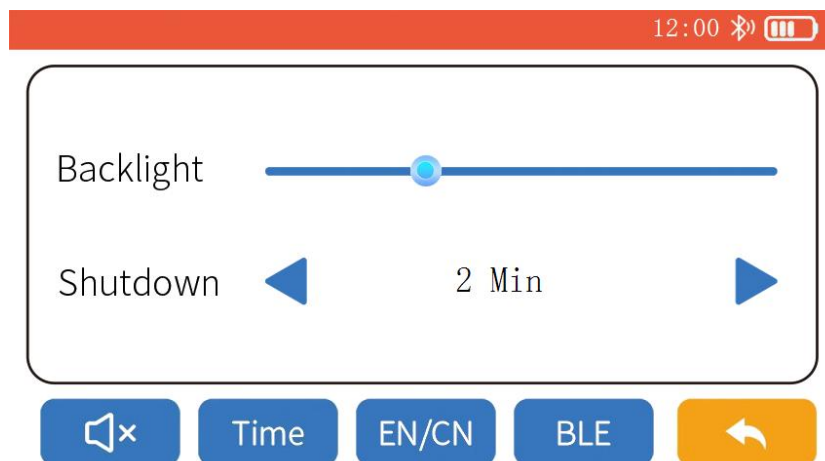
computer, the software will automatically search for the port and connect it, and after the connection is successfully made, you can check the historical data and generate excel reports and other operations through the software.

Android APP connection instructions:

1. Before using, you should make sure:

- 1) The system version of your mobile phone or tablet is Android 5.0 or above.
- 2) The TTR Tester APP is installed in the intelligent device.

2. In the "Settings" page, click “  ” the icon to turn on Bluetooth,as shown in the figure below:



3. turn on APP, search for the Bluetooth with the name "TTR Tester" and connect it, after successful connection, you can realize wireless control measurement and data browsing.

VII.packing list

instrument	1 pcs
test line	2 groups(red black each 10meters /group)
CD	1 pcs
Data cable	1 pcs(Type-C 1 meter)
charger	1 pcs(14.8V/1.5A)
introduction manual ,warranty certification	1 set
parcel	1 pcs

The contents of this user manual do not justify the use of the product for special purposes. We are not responsible for other damages caused by the use. The Company reserves the right to modify the contents of the user manual. In case of modification. No further notice will be given.