Jinko金科

# User's Guide

## JK2683B

Digital Insulation Resistance Tester

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**Introduction**

Thank you for choosing "JK2683B Insulation Resistance Tester" manufactured by Jinke Instrument. To get the best performance from your instrument, please read this manual first and keep it for future reference.

**Trademark**

Windows and Excel are registered trademarks of Microsoft Corporation in the United States or other countries.

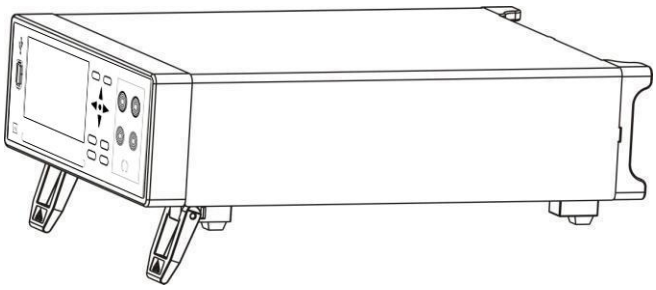
**Verify packaging**

When you receive the instrument, check it carefully to make sure that the instrument is not damaged during transportation. In addition, special inspections of accessories, panel switches and connectors are required. If it is found that the instrument is damaged or the instrument fails to operate as written, please contact the dealer or the Jin Ailian Electronic Technology Representative Office.

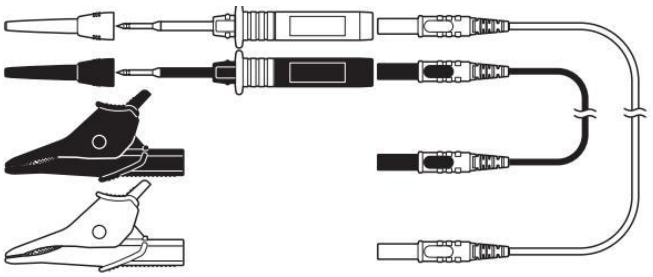
To transport the instrument, use the original packaging and a double carton. Damage in transit is not covered by the warranty.

Packaging items:

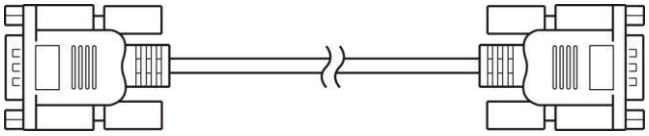
JK2683B insulation resistance tester 1
User manual 1
CD 1
1 RS232 cable
HP5521 test lead (optional) 1
Power cord 1



--- JK2683B insulation resistance tester ---



--- 9331 test cable (optional) --



--- 9800 RS232 communication cable ---

**Security Information**

The instrument is designed to meet IEC 61010 safety standards and has passed safety tests thoroughly before shipping. However, improper operation during use may cause injury or death and damage the instrument. Before use, make sure to read and understand this manual and the precautions specified in it. Our company does not assume any responsibility for accidents and injuries not caused by the defects of the instrument itself.

**Safety Signs**

This manual contains the necessary information and warnings for safe operation of the instrument, which are necessary to ensure that the instrument is in safe operation. Please read the following safety precautions carefully before use.

⚠ The numbers in this manual ⚠ show particularly important information, and users should read it carefully before using the machine. ⚠ on the instrument indicates that the user must compare the corresponding topics in the manual before using the corresponding functions.

⎓ Represents DC (direct current).

Indicates a fuse.

Ground terminal

**Accuracy**

We use f.s. (full scale), rdg. (Reading), and dgt. (Resolution) values to define measurement tolerances, which have the following meanings:

f.s. (maximum display value or measurement range)

Maximum display value or measurement range. This is usually the name of the currently selected range.

rdg. (read or display value)

The currently measured value and the value displayed on the measuring instrument.

dgt. (resolution)

The smallest displayable unit of a digital tester is to make the digital display display the input value of the smallest significant digit "1".

**Notes on operation**

Instrument settings

Operating temperature and humidity:
0 to 40 ° C, below 80% RH (non-condensing)

Temperature and humidity range to ensure accuracy:
23 ± 5 ° C, below 80% RH (non-condensing)

To avoid malfunction or damage to the instrument, do not place the tester in the following places

Places subject to direct sunlight and high temperatures

It will splash into places where liquid temperature is high and condensation occurs

Exposed to dusty places

Locations subject to corrosive or explosive gases

Places with strong electromagnetic fields and electromagnetic radiation

Places subject to frequent mechanical vibration

**Pre-check**

Before using the instrument for the first time, verify that it is operating normally and that it is not damaged during storage or transportation. If you find any damage, please contact your dealer or your representative.

| | |
|---|---|
|  | Before using the instrument, make sure the test leads are well insulated and the conductors are exposed. If a similar situation occurs, there is a danger of electric shock when using this instrument, please contact your dealer or Jinailian Electronic Technology Representative to replace the equipment. |

**Use of the instrument**

| | |
|---|---|
|  | To avoid electric shock, do not disassemble the instrument case. There are high voltage and high temperature parts inside the instrument during operation. |
|  | To avoid damaging the instrument, prevent physical impact when moving and operating the instrument. Extra care should be taken to prevent the instrument from falling. |
|  | The power should be turned off. while stop using the instrument. |

**Use of the test cable**

| | |
|---|---|
|  | To prevent electric shock, do not short-circuit the top of the test leads and the voltage-carrying lines. |

| | |
|---|---|
| ATTENTION | • When performing tests, use the instrument's own test lead option for safety reasons.<br>• To avoid damage to the test leads, do not bend or stretch the test leads.<br>• The probe at the front of the test lead is sharp. Be careful not to get scratched. Do not hold the cable. Hold the connector. |

**Measurement considerations:**

| | |
|---|---|
| DANGER | To avoid electric shock and short circuit, the following procedures must be followed:<br>• Do not get the instrument wet or measure with wet hands. Doing so may cause an electric shock.<br>• Do not modify, disassemble or repair. Failure to do so may cause fire, accident, or personal injury. |
| ATTENTION | • Do not place on an unstable stand or tilted place. Failure to do so may result in injury or malfunction of the unit due to falling or falling over.<br>• To prevent damage to the instrument, avoid vibration and collision during handling and use. Pay particular attention to collisions caused by falling.<br>• To avoid damage to the instrument, do not connect the measurement terminal to the EX.SW terminal, EX.I / O terminal, or communication terminal. |

# Chapter 1 Overview

### 1.1 Introduction

JK2683B insulation resistance tester is an instrument for testing the insulation resistance of components and equipment. Using constant voltage test method, the voltage output range is 25 ~ 1000 V, and the maximum output current is 1.8mA. It also has a contact anomaly detection function and a short circuit anomaly test function. The fastest test time is up to 50ms. As the standard output interface of the battery short-circuit tester is an external output interface (EX.I / O), RS-232C interface, Ethernet interface (LAN), analog output interface (ANALOG OUTPUT) and U disk interface.

Therefore JK2683B is suitable for use in the field with different connection requirements, including production and testing lines and laboratories.

### 1.2 Performance characteristics

□ Appearance

• 3.5-inch high-resolution TFT display for easy operation

• Compact and powerful body

□ Test voltage source

• Test high voltage source using switching power supply principle

• Maximum constant current 1.8mA output

• Voltage adjustment range 25 ~ 1000 V, step 1V

□ Quick test

• The minimum test cycle takes only 50ms

□ Four-end test

• The instrument can detect abnormal test leads

• The instrument can detect abnormal contact conditions of the measured object (to avoid misjudgment of open circuit)

□ Short circuit detection

• The instrument effectively detects short-circuit conditions to avoid direct application of high voltage to break through defective products and cause products

□ Rich interface configuration

• External I / O port

• RS-232C interface

• Ethernet interface

• Analog output interface

• U disk interface

□ Automatic discharge

• After the test, the instrument will automatically discharge

• Non-contact constant current discharge, fast, efficient and reliable

□ Power supply

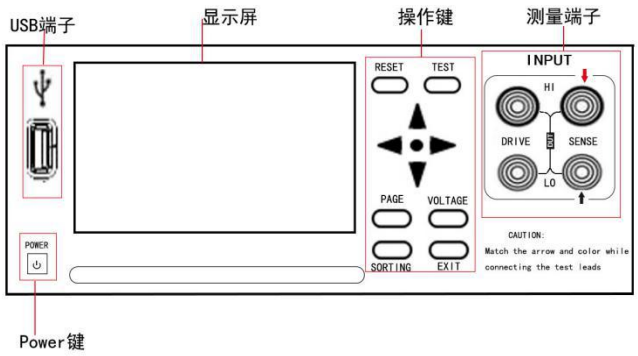
• 100 ~ 240 V wide power supply

• Automatic recognition of power frequency 50Hz / 60Hz

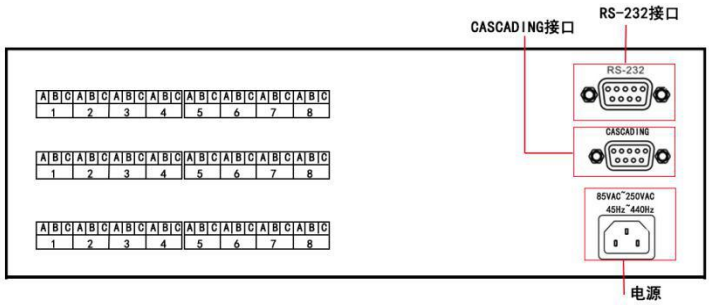
• Maximum power consumption 15W

### 1.3 Names and Operations of Each Part

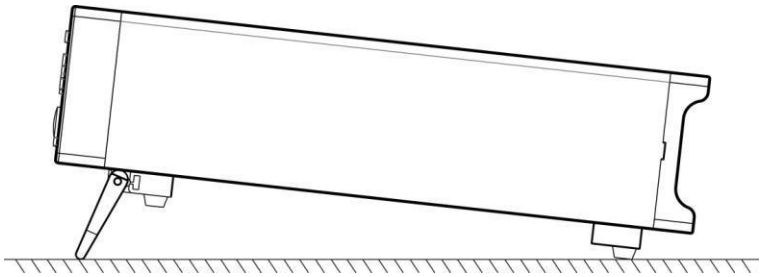
Front



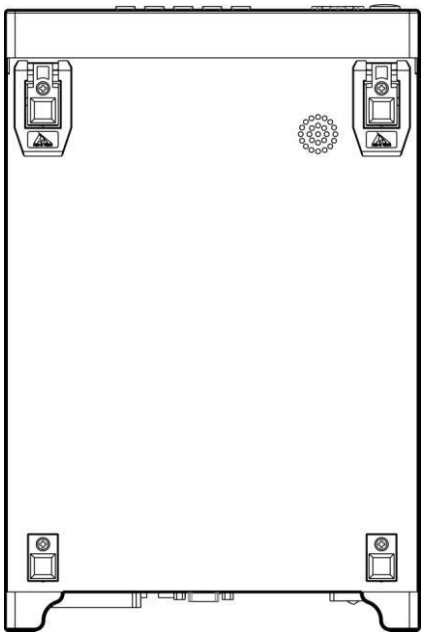

Back



Side



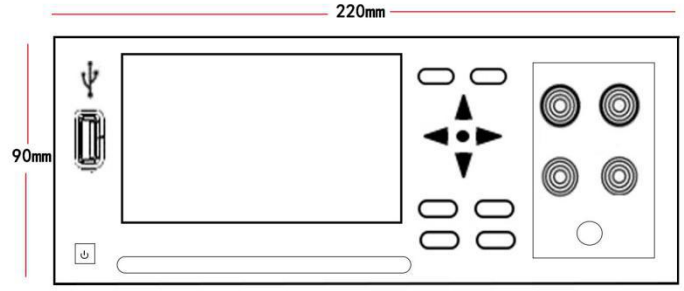
Bottom

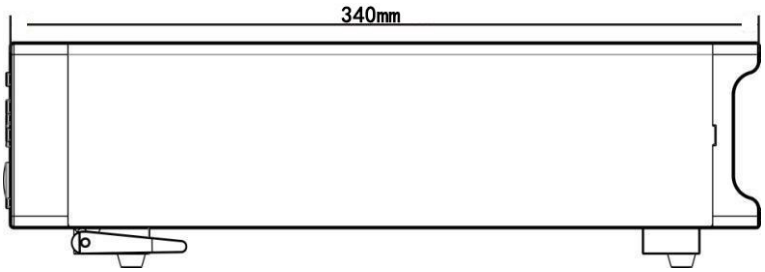


Key Description:

| | |
|---|---|
| POWER | instrument on / off key |
| RESET | |
| TEST | |
| PAGE | [Page switch key] Switch [Measurement display] <-> [Parameter Setting] <-> [System Setting] <-> [System Information] |
| VOLTAGE | |
| SORTING | |
| EXIT | |
| Arrow keys | [Arrow keys] for selecting menu items or setting values |

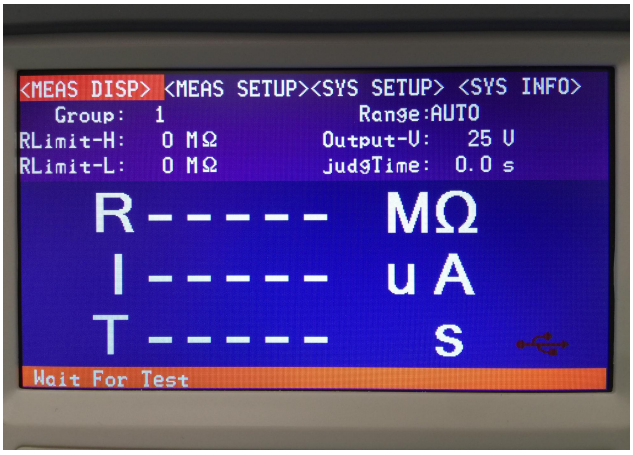
### 1.4 Dimensions




### 1.5 Page Composition

Measurement page




Parameter setting page

System settings interface

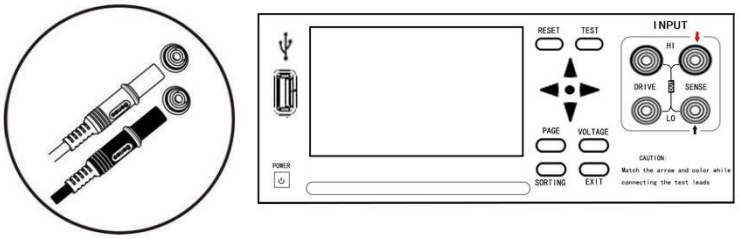

System Information Interface


# Chapter 2 Preparation before testing

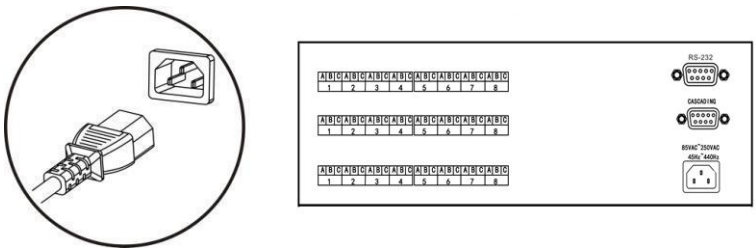
### 2.1 Preview of test process

With the instrument turned off, follow the steps below to prepare for the test.

1. Power off the instrument and connect the test leads




2. Plug in the power cord

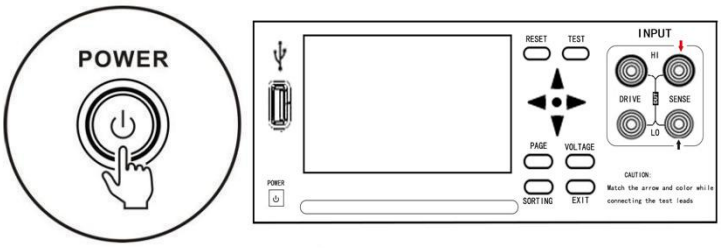



Ensure that the power cord is well grounded, which is conducive to the stability of the test.

3. Turn the power at the rear of the instrument to the "on" state

At this time, the internal power of the instrument has been turned on, and the instrument is in standby state.

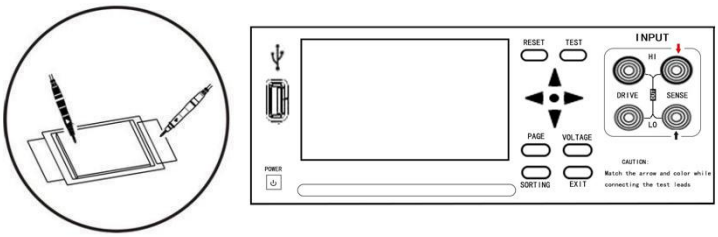
4. Long press the panel power button to turn on the power



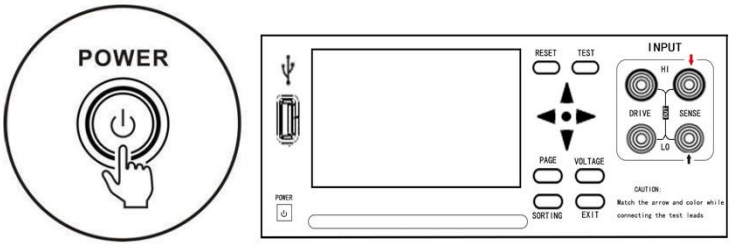

In the standby state, the panel power button light is red. Press the panel power button, the power is turned on, the screen is lit, and the panel button light is green.

5. Set the test parameters (see section 2.2 for details)

6. Test




7. After the test, turn off the power




**2.2 Basic parameter setting process**

Voltage setting, setting range 25 ~ 1000 V → resistance range setting, 2MΩ / 20 MΩ / 200MΩ / 2000MΩ / automatic range → measurement speed setting, fast and slow → measurement time

setting, set the test time (voltage output until the sorting output Time) → test mode setting, continuous mode / failure stop mode / pass stop mode / forced termination judgment mode → set the beep output mode

**2.3 Inspection before measurement**

Before use, please confirm that there is no failure caused by storage and transportation, and use it after checking and confirming operation. If it is confirmed that there is a fault, please contact our sales outlets.

Confirmation of the instrument and peripheral equipment

| Inspection item | Solutions |
|---|---|
| Is the instrument damaged or cracked?<br>Is the internal circuit exposed? | Do not use if damaged, please send it for repair. |
| Are there any debris such as metal pieces on the terminals? | When attaching, wipe with a cotton swab or the like. |
| Is the outer skin of the test lead broken or exposed? | Damage may result in unstable measurement values or errors.<br>It is recommended to replace the wire with no damage. |

Confirmation at power-on

| Inspection item | Solutions |
|---|---|
| After the power switch at the rear of the instrument is turned on, observe whether the power button light on the instrument panel is on.<br>When turning on the power, are all displayed in the order of → model name → measurement screen? | Please confirm whether the button light is on or not, otherwise, send it for repair.<br>If the display is different, there may be a malfunction in the instrument. Please send it in for repair. |

**2.4 Test lead connection method**

Warning!

• The test lead port is sharp, being careful not to get scratched.

• For safety, use the test leads supplied with the instrument.

• To avoid electric shock, make sure the test leads are connected properly

There are two ways of testing, one is two-terminal test, and the other is four-terminal test. The four-terminal test is used to identify test errors caused by abnormal test connection lines or abnormal test connection.

# Chapter 3 Basic Settings

For testing safety, read this chapter before testing.

Note:
During the test, all keys except the [STOP] key are valid. The user must wait for the test to end, or press the [STOP] key and send a test stop command to forcibly terminate the test. After the test process is terminated, the instrument can be set.

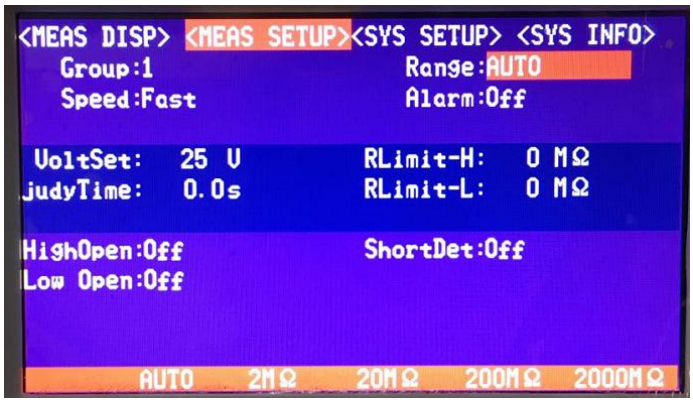
### 3.1 Setting the test voltage

The user can choose between automatic range and manual range.

Note:
When the auto range is set to 30 mΩ or less, a maximum current of 1 A will flow into the measurement target. Therefore, a maximum power of about 2 W may be applied. If you are concerned about the following problems due to current measurement, select a smaller measurement current range.
• The test object is blown (fuse, air pump)
• The measured object becomes hot and the resistance value changes
• The measured object is magnetized, and the inductance changes
If the power of the measured object is within the measurement range of each range, the power is the resistance value × (measured current). When the measurement range is exceeded, the maximum open circuit voltage × measured current may be reached.
After confirming the range, connect the object to be measured.
* When connected to the measured object, a maximum inrush current of 5 A will flow. (Settling time: about 1 ms with pure resistance)

### 3.2 Set the test range

There are two types of range settings: manual range and automatic range. The automatic range instrument will automatically select a suitable range for testing according to the value of the measured resistance.



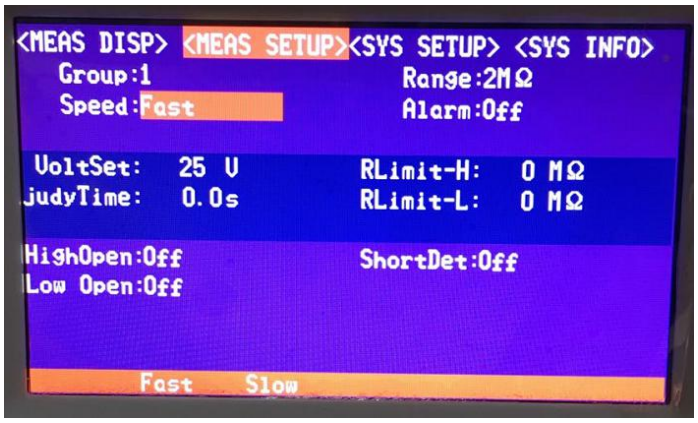
Manual range setting:
Enter the parameter setting interface, press the up and down keys to display the range, press the right key to switch the range, and press the enter key to complete the setting. Even when the auto range function is turned on, the manual range switching is effective (when the auto range is turned on and the range is switched manually, the auto range function is automatically turned off).
Range:
AUTO ↔ 2MΩ ↔ 20MΩ ↔ 200MΩ ↔ 2000MΩ

Automatic range setting:
In the measurement interface, press the right button to switch the auto range. When set to auto range, the [AUTO] mark lights up. When the auto range function is turned off, the [AUTO] mark is not displayed.

Note:
• If the range is changed while the auto range is ON, the auto range is automatically canceled and it becomes the manual range.
• If the comparator function is set to ON, the range is fixed and cannot be changed. To change the range, set the comparator function to OFF or change the range in the comparator setting.
• The auto range may become unstable due to the measured object. In this case, specify the range manually or increase the delay time. For the measurement accuracy of each range, refer to "Resistance Measurement Accuracy".

### 3.3 Setting the test speed

In the parameter setting interface, press the up and down keys to move the cursor to speed, you can switch the current test speed. The time is 500ms. In the test environment, the electric field interference is relatively large, or the test is difficult to stabilize, it is recommended to use the slow test.




Note:
• When the abnormality detection function is turned on, the fast sampling time is extended to 100ms, and the slow sampling time is unchanged at 500ms.
• If the sampling period is 500ms during slow test, if the setting of the test period is less than 500ms, the test result will not be displayed. This requires the test cycle time to be set longer than the sampling cycle.

### 3.4 Comparator function

#### 3.4.1 Sorting mode

There are three sorting modes: [Upper sorting] / [Lower sorting] / [Upper and lower sorting]

For example:

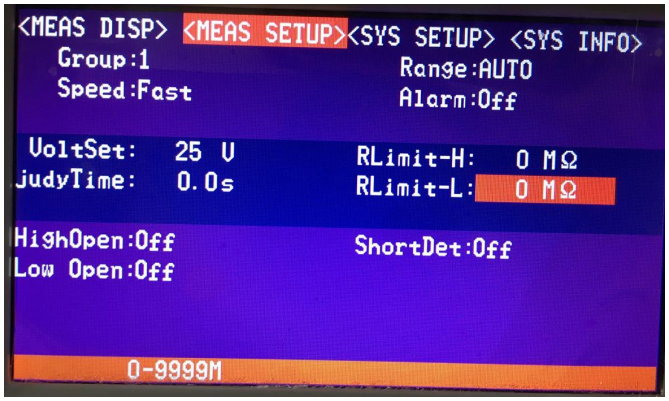
| Sorting mode | High limit | Low limit | Pass | Failure |
|---|---|---|---|---|
| Online sorting | 100M | ----- | <100M | ⩽100M |
| Low limit sorting | ----- | 10M | >10M | ⩾ 10M |
| High and low limit sorting | 100M | 10M | 10M<test value<100M | test value⩾100M<br>Or test value⩽10M |

Setting method:

| Sorting method | Setting method |
|---|---|
| [High limit sort] | The high limit input value is valid, the low limit is closed (----) |
| [Low limit sort] | The low limit open input value is valid, the high limit is closed (----) |
| [High and low limit sorting] | Both the high and low limit input values are valid |

Switch on high limit to be valid


Switch on low limit to be valid



### 3.4.2 Setting the high and low limits and sorting mode

When the upper limit comparison mode is turned on

1. High limit setting


2. Low limit setting


### 3.5 Sounding mode of sorting results

1. Press the "PAGE" key to select the parameter setting interface


2. Select the relevant menu item

Press the up and down keys to move the cursor to the beep, press the left and right keys to select "Close" and "Open" and press the enter key to complete the setting.

| Menu | Meaning |
|---|---|
| Off | Sorting Ringer Off |
| Pass | When the test passes |
| Fail | when the test fail |

Note:

• [L.FAIL] and [F.FAIL] light up at the same time when the test value and sorting value are out of the range and no valid judgment can be made.

### 3.6 Short-circuit detection function

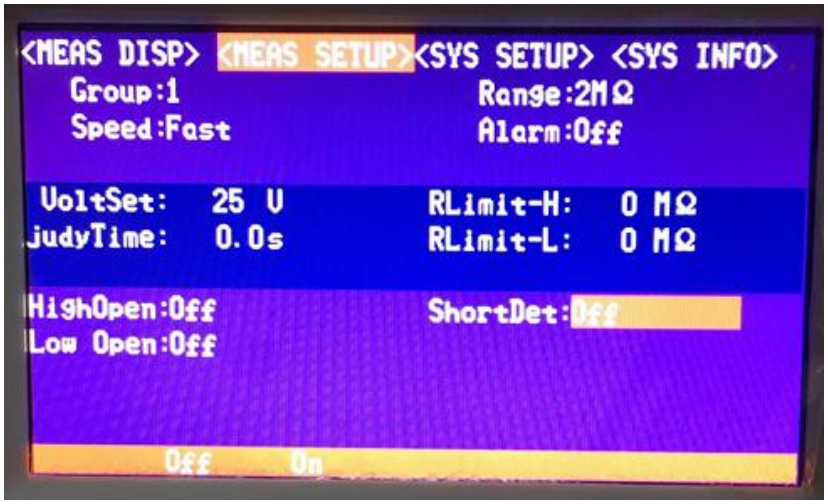
Short-circuit detection function is used to judge whether the DUT is short-circuited before the insulation test. The high voltage of the test output may burn out the metal defects that cause the short circuit. If you want to avoid this, you can use the short circuit detection function. The short-circuit detection voltage is about 2 ~ 4V. When the DUT is a capacitive load, there is also a charging time. There are also two modes for setting the charging time. One is the automatic mode. By monitoring both ends of the DUT The voltage changes to determine whether the charge is fully charged. The other is a fixed charging time。

1. Press the "PAGE" key to select the parameter setting interface


2. Select the relevant menu item

Press the up and down keys to move the cursor to short circuit detection. Press the left and right keys to select "Close" and "Open". Press OK.

Press the key to complete the setting.



| Menu | Meaning |
|---|---|
| Off | Turn off short-circuit detection |
| On | Turn on short-circuit detection |

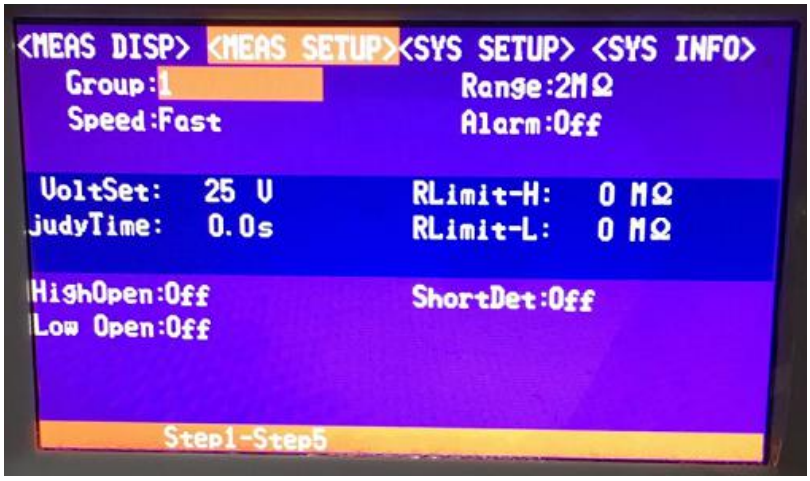
### 3.7 Group settings

1. Press the "PAGE" key to select the parameter setting interface


2. Select the relevant menu item

Press the up and down keys to move the cursor to the group. Press the left and right keys to select the set value. The up and down keys increase or decrease the value. Press OK.

Press the key to complete the setting.

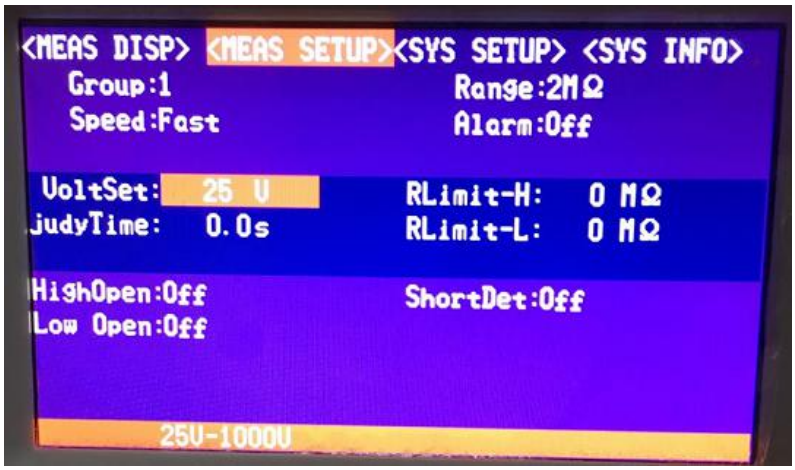



There are 5 groups, Group 1-Group 5.

Press the up and down keys to move the cursor to the group, use the left and right keys to set the number, and press the enter key to complete the setting.

### 3.8 Setting the voltage setting

1. Press the "PAGE" key to select the parameter setting interface




2 Select the relevant menu item

Press the up and down keys to move the cursor to the set voltage. Press the left and right keys to select the set value.

Press the key to complete the setting.

The voltage measurement range is 25V ~ 1000V. Press the up and down keys to select the setting voltage, and the left and right keys to select the position for setting the value. The number to be set blinks. Press the up and down keys to increase or decrease the value.

### 3.9 Test time setting

Press the "PAGE" key to select the parameter setting interface

1. Select the relevant menu item


Press the up and down keys to move the cursor to the test time. Press the left and right keys to select the set value. The up and down keys increase or decrease the value and press OK.

Press the key to complete the setting.


The test time range is 0S ~ 999.9S, press the up and down keys to select the setting voltage, and the left and right keys to select the position of the set value. The number to be set blinks. Press the up and down keys to increase or decrease the value, and press the confirmation key to complete the setting.

### 3.10 High-end open circuit setting

1. Press the "PAGE" key to select the parameter setting interface


2. Select the relevant menu item

Press the up and down keys to move the cursor to the high-end open circuit. Press the left and right keys to select "Close" "Open"

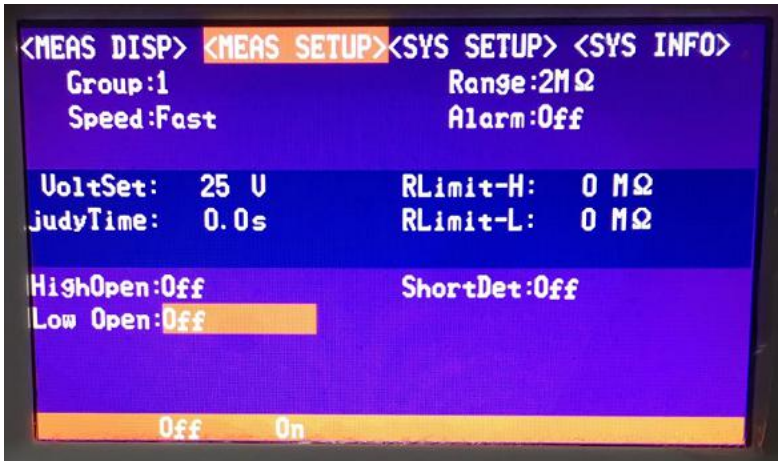

| Menu | meaning |
|---|---|
| Off | High-end open circuit closed |
| On | High-end open circuit open |

### 3.11 Low-end open circuit setting

1. Press the "PAGE" key to select the parameter setting interface


2. Select the relevant menu item

Press the up and down keys to move the cursor to the low-end open circuit. Press the left and right keys to select "Close" "Open"



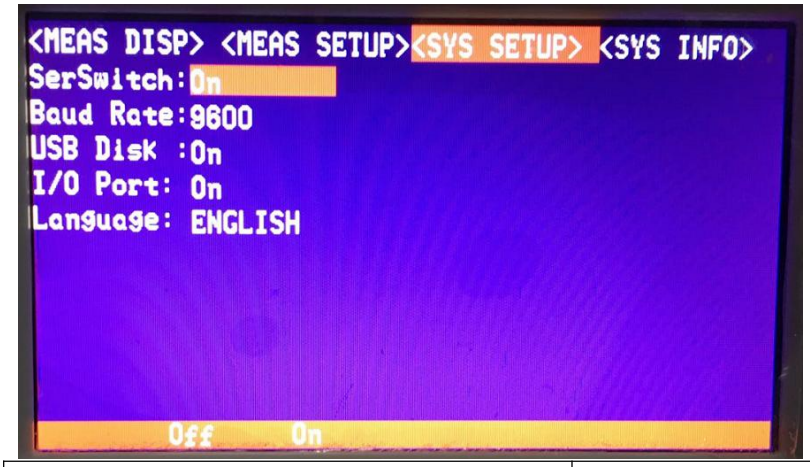
| Menu | Meaning |
|---|---|
| Off | Low-end open circuit switch off |
| On | Low-end open circuit switch on |

**3.12 Serial switch setting**

1. Press the "PAGE" key to select the system setting interface


2. Select the relevant menu item

Press the up and down keys to move the cursor to the serial port switch. Press the left and right keys to select "Off" "On"



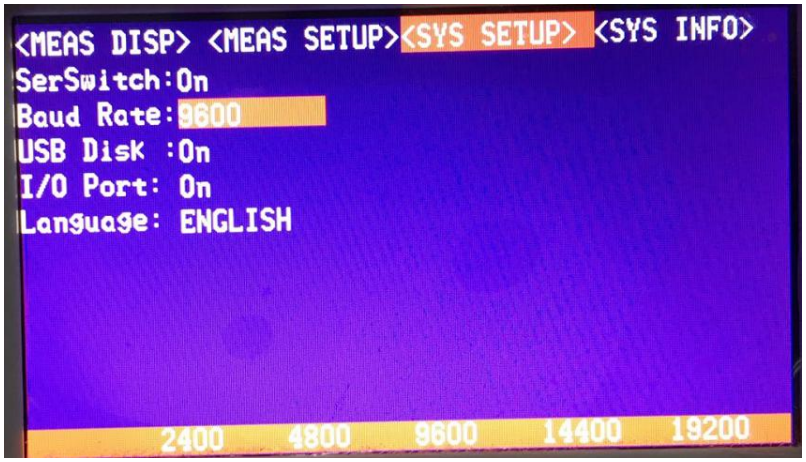

| Menu | Meaning |
|---|---|
| Off | Serial port switch off |
| On | Serial port switch on |

**3.13 baud rate setting**

1. Press the "PAGE" key to select the system setting interface


2. Select the relevant menu item

Press the up and down keys to move the cursor to the baud rate and press the left and right keys to select the set value



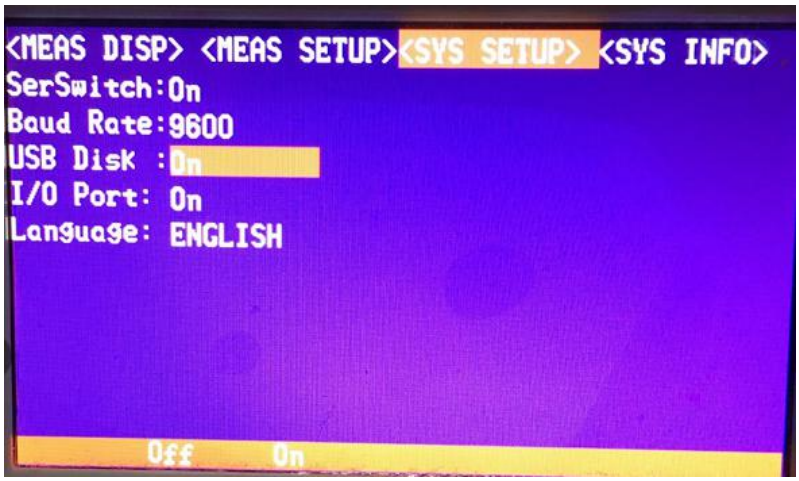

Baud rate selection 2400 ↔ 4800 ↔ 9600 ↔ 14400 ↔ 19200

### 3.14 U disk switch setting

1. Press the "PAGE" key to select the system setting interface


2. Select the relevant menu item

Press the up and down keys to move the cursor to the U disk switch. Press the left and right keys to select "Close" "Open"



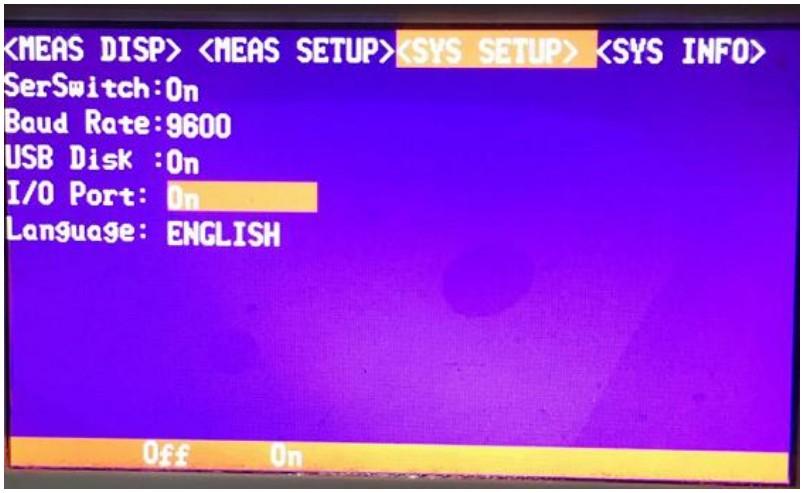

| Menu | Meaning |
|---|---|
| Off | U disk switch off |
| On | U disk switch on |

### 3.15 I / O port settings

1. Press the "PAGE" key to select the system setting interface


2. Select the relevant menu item

Press the up and down keys to move the cursor to the I / O port. Press the left and right keys to select "Off" "On"




| Menu | Meaning |
|---|---|
| Off | I / O port switch off |
| On | I / O port switch on |

**3.16 Display language setting**

1. Press the "PAGE" key to select the system setting interface


2. Select the relevant menu item

Press the up and down keys to move the cursor to the display language. Press the left and right keys to select "Chinese" "ENGLISH"


| Menu | Meaning |
|---|---|
| CHINESE | Chinese display |
| ENGLISH | English display |

# Chapter 4 Measurement

This chapter describes the functions for correct measurement in stages, including the start test phase, test phase, test display phase, test completion phase, and discharge phase.

### 4.1 Start the test

1. Set the relevant parameters
2. Press the [START] key to trigger the test
3. The test starts, the output voltage of the test terminal, the [STOP] button flashes.

Trigger mode meaning
Manual trigger Press [START] manually to trigger the test
External IO trigger Trigger test by external EXT.IO terminal START signal
Trigger by external command Trigger test by RS232, LAN port command
EXT.SW port trigger Test by external trigger switch on the panel

note:
• You cannot restart another test while the test is not over.
• When the STOP signal of the EX.I / O port is LOW, the test cannot be triggered
• When the InterLock signal of the EX.I / O port is LOW, the test cannot be triggered

### 4.2 Measured value display

The following is the test range. Once it exceeds the following range, OVER.F and UNDER.F are displayed.
Test voltage and range:

| Test voltage | Resistance range | Display range (Ω) | Resolution (Ω) |
|---|---|---|---|
| 25V≦ V＜100V | 2MΩ | 0.000~4.000M | 0.001M |
| | 20MΩ | 1.90M~40.00M | 0.01M |
| | 200MΩ | 19.0M~400.0M | 0.1M |
| 100V≦V＜500V | 2MΩ | 0.000~4.000M | 0.001M |
| | 20MΩ | 1.90M~40.00M | 0.01M |
| | 200MΩ | 19.0M~400.0M | 0.1M |
| | 2000MΩ | 190M~4000M | 1M |
| 500V≦V≦ 1000V | 2MΩ | 0.000~4.000M | 0.001M |
| | 20MΩ | 1.90M~40.00M | 0.01M |
| | 200MΩ | 19.0M~400.0M | 0.1M |
| | 4000MΩ | 190M~9990M | 1M |

### 4.3 Test termination

There are two ways to terminate the test, one is the forced termination method, and the other is the automatic termination method.
The forced mode can be terminated at any stage of the test when a forced termination test instruction or signal is encountered.

There are four modes classified by trigger mode:

| Trigger mode | Meaning |
|---|---|
| Terminate manually | Press [TEST] to terminate the test manually |
| Termination of external IO | Termination test via external EXT.IO signal port |
| Termination of external command | Termination test by RS232, LAN port command |
| EXT.SW port trigger | Terminate test by external trigger switch on the panel |

Automatic termination. After the test mode is selected, the test is terminated when the test and sorting meet the predetermined termination conditions during the test.
Classification by test mode is as follows:

| Auto Test Mode | Meaning |
|---|---|
| CONT mode | Continuous measurement until test timing |
| FAIL STOP mode | When the test reaches FAIL sorting judgment, the test stops |
| PASS STOP mode | When the test reaches the PASS sorting judgment, the test stop |
| SEQ mode | EXT.IO signal STOP signal is low test terminated |

Once the test is terminated, the high voltage at the test terminal stops outputting. The voltage at the test port may remain high due to the capacitive characteristics of the component under test, and the STOP light will continue to flash.

# Chapter 5 PLC Interface

The EXT.I / O terminal on the rear panel of the instrument supports external control, provides test and comparison judgment signal output, and accepts input START and STOP signals.
Start signal: the instrument will start the test when the 1-4 pins are shorted for more than 200ms;
Reset signal: the instrument will stop testing when the short circuit of pins 1-3 is greater than 200ms;
Pass signal: When the instrument judges the sorting result as pass, pins 6-7 will be short-circuited;
Unqualified signal: When the instrument judges the sorting result as unqualified, pins 8-9 will be short-circuited..

# Chapter 6 Parameters

### 6.1 General parameters

General functions:

| | |
|---|---|
| Measurement function | Insulation resistance |
| Test range: | 0Ω to 9000M Ω (5 ranges) |
| Test voltage | 25~1000V DC |
| Max.Output current | 1.8mA |
| Connection abnormal display | High-voltage open-circuit “ContHi”, low-voltage open-circuit “ContLo”, and output terminals are all open-circuit “ContHL” |
| Short circuit abnormal display | “SHORT” |
| Range over limit display | "UNDE.F" under range, "OVER.F" over range |
| Max. discharge current | 10mA |
| Maximum input voltage | 1100V DC |
| Maximum test capacitance | 1μF (test object capacity exceeding 1μ may cause unstable test) |
| Input terminal | Banana plug |
| Operation key | Rubber key |
| Display | 3.5 inch TFT |
| Accuracy guarantee period | 1 year |
| Operating temperature and humidity | 0 ° C to 40 ° C, below 80% RH (non-condensing) |
| Storage temperature and humidity | below 80% RH (non-condensing) -10 ℃ to 60 ℃ |
| Operating environment | Indoor, up to 2000 m |
| Power supply voltage | Voltage:100V ~ 240V AC frequency: 50Hz / 60Hz |
| Power consumption | 15VA |
| Dimension | About 325mm x 215mm x 96 mm |
| Weight | About 2000g |

Clock:

| | |
|---|---|
| Feature | 24-hour clock; leap year auto-adjustment |
| Accuracy | about +/- 4 minutes / month |

**6.2 Accuracy**

The following indicators test conditions:

Temperature: 20 ± 3 ℃

Humidity: <80% RH

Warm-up time of more than 15 minutes

Calibration time within 1 year

Voltage output:

| | |
|---|---|
| Voltage output range | 25V~1000V DC |
| Voltage output accuracy | 1%±2V |
| Voltage resolution | 1V |
| Voltage readback accuracy | 2%±1V |
| Maximum charging current | 1.8mA |
| Short-circuit test current | 2mA |

Range display range:

| Test voltage | Resistance range | Display range（Ω） | Resolutio（Ω ） |
|---|---|---|---|
| 25V≤ V＜100V | 2MΩ | 0.000~4.000M | 0.001M |
| | 20MΩ | 1.90M~40.00M | 0.01M |
| | 200MΩ | 19.0M~400.0M | 0.1M |
| 100V≤ V＜500V | 2MΩ | 0.000~4.000M | 0.001M |
| | 20MΩ | 1.90M~40.00M | 0.01M |
| | 200MΩ | 19.0M~400.0M | 0.1M |
| | 2000MΩ | 190M~4000M | 1M |
| 500V≤ V＜ 1000V | 2MΩ | 0.000~4.000M | 0.001M |
| | 20MΩ | 1.90M~40.00M | 0.01M |
| | 200MΩ | 19.0M~400.0M | 0.1M |
| | 4000MΩ | 190M~9990M | 1M |

Resistance measurement accuracy:

| Test voltage | Range | Basic accuracy |
|---|---|---|
| 25V≤ V＜100V | 0.000 MΩ to 2.000 MΩ | ±2% rdg. ±5 dgt. |
| | 1.90 MΩ to 20.00 MΩ | ±2% rdg. ±5 dgt. |
| | 19.0 MΩ to 200.0 MΩ | ±5% rdg. ±5 dgt. |
| 100V≤V＜500V | 0.000 MΩ to 2.000 MΩ | ±2% rdg. ±5 dgt. |
| | 1.90 MΩ to 20.00 MΩ | ±2% rdg. ±5 dgt. |
| | 19.0 MΩ to 200.0 MΩ | ±5% rdg. ±5 dgt. |
| 500V≤V≤1000V | 0.000 MΩ to 2.000 MΩ | ±2% rdg. ±5 dgt. |
| | 1.90 MΩ to 20.00 MΩ | ±2% rdg. ±5 dgt. |
| | 19.0 MΩ to 200.0 MΩ | ±2% rdg. ±5 dgt. |
| | 190 MΩ to 4000 MΩ | ±5% rdg. ±5 dgt. |
| | 4010 MΩ to 9990 MΩ | ±25% rdg. |