美瑞克仪器

MEIRUIKE INSTRUMENT

Manual 使 用 说 明 书

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| --- |
| RK 9974-20 AC-DC tester tester (custom version) |

Safety warning:

Instrument grounding

This instrument is a Class I safety instrument. When connecting the power supply, please confirm that the power socket has the grounding cable. If not grounded, the static electricity or induced electricity on the casing may cause personal injury!

Beware of electric shock during dangerous operation, testing and instrument maintenance of electric shock. Non-professional personnel do not open the case without authorization, if professional personnel need more

To replace the fuse or perform other maintenance, always unplug the power supply first and be accompanied by others.approach

If the power plug is unplugged, there may still be a dangerous voltage on the capacitor, which should be operated after discharge.

Any incorrect removal or test operation will cause abnormal damage to person, property or equipment

evil!!! Damdamage the instrument due to abnormal operation, the maintenance cost is borne by the customer.

Input power supply Please use the power supply according to the power supply parameters specified in the instrument. The power supply input that does not meet the specification may damage the instrument.

Away from the explosion

Sexual gas environment

Other safety

item

Electronic instruments may not be used in flammable and explosive gases or in environments containing corrosive gases or soot, because this may be dangerous.

Please do not apply any voltage source or current source to the test terminal of this instrument.

An important supplement or reminder to the content.

Instructions for use:

\* Carefully read and understand what described in the manual before operating the tester. After reading, put the instructions near the operator for reading if needed. When moving the tester from one workplace to another, carry the instructions with the instrument to avoid loss.

\* With the improvement of the instrument function and the upgrade of the software, the operation manual will be continuously improved and upgraded. Please note the software and instructions of the tester

edition.

Ensure fault-free use for a long time

Due to the volume, weight, and actual use of the instrument, the heat dissipation design of the voltage generating module of the instrument is too small. Therefore, the instrument is recommended to be used in the following areas.

Prenecessary isite for voltage resistance

|  |  |  |  |
| --- | --- | --- | --- |
| ambient temperature | maximum power output | Time out | Output time limit |
| t ≤40 ℃DC | >12KV | At least as long as the output time | Up to 5 min |
| <12KV  ＜1mA | At least as long as the charging waiting time (WAIT TIME) | It can be output continuously |
|  | ＞2mA | At least as long as the output time | Maximum length of 1 min |

Note: lose, give the time== (Voltage rise time + test time + voltage drop time)

The fan works continuously for 30 minutes, and the use of the instrument must be suspended, otherwise the power amplifier output module may be burned due to overheating.

catalogue

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Chapter 1: Installation and Use

This chapter describes some checks that you must conduct after receiving the instrument, and must be understood and met before installing the instrument.

This instrument meets the GB 4793.1-2007/IEC 61010-1:2001 standard.

1.1 Notes for use

Observe the following rules when using the instrument:

■ Do not use the instrument in combustible air

To prevent combustion or explosion, do not use the instrument near alcohol, thinners, and other combustible materials, or in the air with high concentrations of these gases.

■ Avoid the exposure of the instrument to high temperature and direct sunlight exposure

Do not place the instrument in a place where the heat rises or the temperature changes violently.

Instrument use temperature range: 5℃ to + 35℃

Instrument storage temperature range; -20℃ to + 60℃

■ Avoid a wet environment

Do not place the instrument in a boiler, wetter, or high humidity with water.

Instrument use humidity range: 20% to 80% RH (no dew condensation allowed)

Instrument storage humidity range; less than 90% RH (no dew condensation is allowed)

Condensation may cause the circuit to fail fail. You must wait until the environment is completely dry.

■ Do not place the instrument in an environment with corrosive gases

Do not use instruments in an environment with corrosive gases like sulfuric acid, fog, or something similar. This may corrode wires and connectors, creating hidden dangers or connection defects, leading to failure, failure or even fires.

■ Do not use the instrument in a dusty environment

Soil and dust can cause electronic devices to short circuit or fire.

■ Do not use the instrument in poorly ventilated areas

The instrument has a forced air-cooling cooling system. To provide enough space for the side and the back tuyere to ensure air circulation.■ Do not use the instrument on a tilted surface or in a shaking area

If the instrument is placed on an uneven surface or in a shaking place, the instrument may slide down and damage the instrument.

■ Do not use the instrument where there are strong magnetic field or electric field effects

Using the instrument where there is a strong magnetic field or electric field, the electromagnetic pulse will cause the instrument failure to cause a fire.

■ Do not use the instrument near the sensitive testing equipment and the receiving equipment

If these devices are used near the instrument, the noise from the failure breakdown may affect them. With a test voltage exceeding 3kV, the electric field between the test lines will ionize the air to produce the corona, generating a large amount of RF (RF) bandwidth interference between the test lines. To minimize this effect, ensure that the test lines are sufficiently distant.

In addition, keep the test line away from the conductive surface (especially the sharp metal ends).

1.2 Points of attention when moving

When moving the instrument or transporting it, take the following precautions:

■ Turn off the power switch before moving

Moving with the power switch on can cause electric shock and damage.

■ Before moving, disconnect all connecting lines

Not disconnecting the cable to move the instrument may cause damage to the connection line, or drop the instrument during moving.



1.3, connect the AC power cable

The power cord is provided by the company along with the instrument. Do not use AC power cables that are not standard on this instrument.

order of connection

1. Determine that the power supply is within the wire power range of the instrument.

2. Determine the nominal value of the instrument fuse, and install the fuse box correctly (power supply).

3. Make sure that the power switch of the instrument is turned off.

4. Connect the AC power cord to the AC LINE (AC power line) end of the rear panel.

5. Please use the accompanying AC power cord, or the AC power cord selected by sufficient qualified professionals.

6. Plug in an AC power outlet.

1.4 To the ground

|  |  |
| --- | --- |
| △ warn: | Ensure that the instrument is connected to electrical (safe, earth). |

If the output is connected to the peripheral equipment or the nearby commercial wire output transit earth, which is not directly connected to the earth, the shell of the instrument may have a very high voltage and become very dangerous.

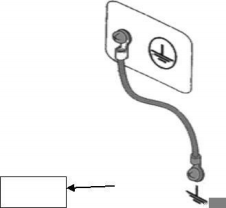
The instrument is Class I equipment (the equipment is protected from electric shock except for basic insulation). However, there is still a possibility of an electric shock if there is no correct grounding.

To ensure safety, please ensure that the instrument is grounded.

Select one of the following two available methods to deground:

1. The power cord is connected to a single-phase three-wire power outlet.(Make sure that the socket ground wire is acceptable

By connecting to the earth)

2. Put the protective terminal of the rear panel through the grounding row (the production line is equipped with reliable connection to the earth

Copper wire or copper row) is connected to the earth. Ask specialized engineers to select, make, and install the connection

Ground connecting line. To ensure that the ground connection is correct and reliable.

in security

1.5 Operation inspection

△ Warning: When using the instrument normally, make the function interlocking (INTERLOCK) as much as possible to ensure the safety of use. Workspace situations: Make a box-like structure for the piece under test;

In the test situation of large test parts with complex structure: use fences around the test area and other protective structures to prevent electric shock. When the electric shock protection structure is opened, disconnect the (INTERLOCK) signal circuit to ensure the safety of the workplace.

When the power switch is on, the instrument lights all lights on the front panel and starts a self-test, confirming that all indicator lights are on to ensure safety. It is particularly dangerous to damage the DANGER (high pressure hazard at test) lamp.

△ Careful: After cutting off the power switch, it will take a few seconds to power it on again. Repeating the on / off power supply without sufficient time interval is harmful to the instrument.

Check the order

1. Determine that the allowable range of the power supply voltage is consistent with the input voltage range set by the fuse box.

2. Determine that the AC power cord is connected to the AC LINE (AC power line) end of the rear panel.

3. Plug the power plug into the AC power socket.

4. Turn on the power switch, determine that the indicator of the front panel is fully on, and the panel shows the boot screen.

5. The next screen displays the AC voltage resistance test (AC) parameters interface in the setting (SETUP) interface.

6. Turn off the power switch.

Note the boot screen (example):

|  |
| --- |
| Shenzhen Meiruike Electronic Technology co.,ltd  RK 9974-20  Programmable Auto Safety Tester  VERSION ：0.0.0 Copyright (c ) 2019-2020  http ://www .chinarek .com |

The model, version, date display shall be subject to the actual model display

Chapter 2. Operating Specifications and Measures

This chapter describes the specifications and measures to be followed during the use of this instrument. When using this instrument, special attention should be paid to ensure safety.

△ Warning: This instrument produces a test high pressure of 5kV that can cause personal injury or even death. Instrument must be very careful and followed

Attention, warnings, and other instructions given in this chapter.

2.1 Prohibited operations

■ Do not continuously switch on and off the power supply

After switching off the power switch, ensure a one-minute or more interval before switching on the power switch again. Ensure that the circuit drops the power normally and then start again. If the on / off power supply of the instrument is repeated frequently, the control circuit of the instrument may cause disorder due to incomplete power loss. At this point, the protection facility may not fully perform the protection function.

Unless in special or urgent circumstances. Do not turn off the power switch when the instrument is generating the test voltage.

■ Do not short-circuit the output end to the ground

If the high voltage test line of the instrument is connected to the AC LINE (AC power line); or other nearby equipment (such as delivery equipment) is connected to the conductor of the earth. When the grounding end of the instrument is not reliable, the high voltage low end (that is, the shell of the instrument) after the grounding end will be filled with dangerous high voltage.

Determine the protective ground end and ground line connection of the instrument. Do this even if the HIGH VOLTAGE (high voltage power) end and ground end short circuit, the instrument housing

It will not be charged with high voltage.

Ensure correct and reliability when grounding the protective ground. See "1.4 grounding".

△ pay attention to:

The term "AC LINE" refers here to the power cord used by the instrument. It is the power supply of power and instrument generated by commercial AC power or power generation

Connected wire.

■ Do not connect the external voltage to the test end

Do not connect any external voltage to the output end of the instrument. In the non-discharge state, the instrument does not have the external discharge function, and the output end connected to the external voltage may damage the instrument.

2.2 Handling of emergencies

In an emergency (such as electric shock and combustion under test) and when the instrument does not disconnect the high pressure output, perform the following operations. You can do it, either (a) or (b), first, but both operations must be done.

(A) turn off the power switch of the instrument;

(B) Unplug the power cord of the instrument from the power cord plug head.

2.3 Preventive measures in the test

■ Wear insulating gloves

When using instruments and wearing insulating gloves, you can protect yourself from touching the high voltage. Even if you have high voltage gloves, it is forbidden to touch the live conductor by hand during the high voltage test.

■ Discontinue and (suspend) the test precautions

If you need to touch the test conductor or change the test connection, please press the STOP switch once first to ensure that the instrument exits the test preparation state.

If you need to take a break, or will leave the test site, turn off the power switch to prevent a safety hazard caused by accidentally touching the start switch.

■ Live items during the high-voltage test

At the time of testing, the high voltage output ends, the high voltage test lines, the high voltage probes, the tested parts and the exposed conductors around them all have dangerous high voltage electricity. Do not approach or touch these conductors at will, even if there are reliable insulation measures.

△ Warning: The sheath on the test line provided by the instrument is not adequately insulated for the test high voltage. Do not touch these parts during testing.

|  |
| --- |
|  |

■ Note after turning off the high-voltage output

If you have to touch the subject, test line, probe, or surrounding area for reconnection or other reasons, make sure the following two are:

(A) confirm that the working state displayed by the instrument is not the test state.

(b )HV light goes out.

■ Remote control warning

Because the start and stop of high pressure is remotely controlled, the operator cannot know the actual operating state of the instrument through the interface, and should be particularly careful when using the instrument in remote control mode. Pay special attention to check the remote control reliable connection.

(C) " STOP button, must be reliably connected. Press the STOP button button before replacing the subject unit.

(D) When working in a crowded working environment, the remote control switch must have a "INTLOCK" interlocking switch and a high-voltage indicator light. Disconnect the "INTLOCK" interlock switch before replacing the test piece.

2.4 High-pressure test warning

△ Warning: In the high pressure test, the test line, the test probe, and the measured part are all filled with high pressure. The instrument has a discharge circuit, and sometimes they still need to discharge after the output is cut off. There is still a risk of electric shock during the discharge process. To avoid electric shock, ensure that the test piece, the test line, the probe, and the output with high pressure do not contact anything other than the test element. If possible, make sure the DANGER light goes off and remove the hidden danger.

|  |
| --- |
|  |

Once the test is finished, the discharge circuit of the instrument begins to force discharge. Do not remove the test parts during the test and until the discharge ends.

Generally, it can be guaranteed that the test loop voltage will be within the safe voltage range at the end of the discharge. When the capacitance of the measured part is too large or the special structure of the measured part will cause incomplete discharge, the technician must change the test method to ensure that the discharge is complete.

■ discharge time:

Calformula of discharge time: t= -ln (30 / U) RC

t: discharge time

30: Discharge the residual safe voltage30V

U: Test the set voltage

R: the discharge impedance of the measured piece, the instrument discharge impedance is about 10k

C: Capacity of the measured piece

Generally, only the DC high voltage test needs to discharge, and the length of the discharge time depends on the nature of the tested parts.

During the test, if the normal ends, the voltage will drop to zero according to the voltage drop time. If the test fails, the tested component discharges isThrough the transformer secondary side (approx10kResistance) achieved, the belt6000V high voltage 1 uF capacitor discharges toA 30V time of approx0.05S 。appearanceThe fixed discharge time of 0.2S can ensure the complete discharge of the device.



2.5 Hazardous state handling of the faulty instrument

One of the most dangerous is the "high pressure in the output and the instrument out of control" situation. When this situation occurs, 1, immediately turn off the power switch, unplug the AC power cord on the AC power socket.

2. Please stay away from the instrument immediately, and ask relevant technicians to confirm the test circuit detection; or stand the instrument for more than one hour to confirm that there is no output voltage at the test end.

3. Remove the relevant connecting lines and send the instrument back to us for maintenance.

|  |  |
| --- | --- |
| △ warn: | After turning off the power supply, immediately stay away from the instrument, and prevent other personnel from approaching, do not immediately remove the test circuit. |

Contact our seller or agent immediately. There may be high voltage inside the instrument, and non-professionals trying to repair the instrument is very dangerous.

2.6 Conditions to ensure fault-free use for a long time

Due to the volume, weight, and actual use of the instrument, the heat dissipation design of the voltage generating module of the instrument is too small. Therefore, the instrument is recommended to be used in the following areas.

Prenecessary isite for voltage resistance

|  |  |  |  |
| --- | --- | --- | --- |
| ambient temperature | maximum power output | Time out | Output time limit |
| t ≤40 ℃DC | >12KV | At least as long as the output time | Up to 5 min |
| <12KV  ＜1mA | At least as long as the charging waiting time (WAIT TIME) | It can be output continuously |
|  | ＞2mA | At least as long as the output time | Maximum length of 1 min |

Note: lose, give the time== (Voltage rise time + test time + voltage drop time)

The fan works continuously for 30 minutes, and the use of the instrument must be suspended, otherwise the power amplifier output module may be burned due to overheating.

2.7 Daily inspection

To avoid accidents, ensure at least the following before use:

1. The input power supply of the instrument meets the specification, and the instrument power supply is configured correctly.

2. Reliable connection between the instrument and the earth.

3. The test line material is intact, without fracture, crack and damage.

4. The instrument is not connected to the test line, but the test is started under the default conditions, and the test can be successfully completed.

5. When connecting the test line to start the test, the low voltage end of the test line contacts the high voltage end of the test line, and the instrument can be generatedFAIL(Failed) signal.

Chapter 3: Overview of the instrument panels

This chapter describes the basic operational characteristics of the RK 9974-20 custom version instrument. Before using the instrument, read this chapter in detail so you can quickly learn the custom version of RK 9974-20.

.13 Front panel description

A brief version of the front panel of RK9974-20 is illustrated in Figure 3-1.

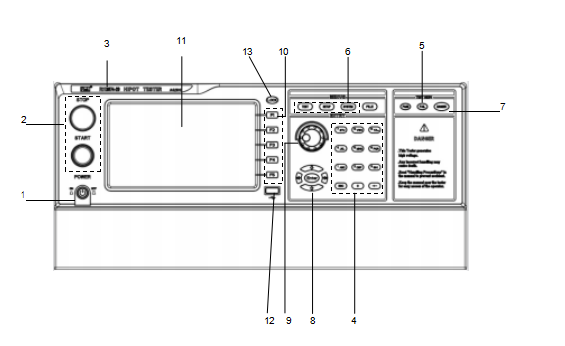


Figure 3-1 The front panel is used for the illustration

1. Power supply switch (POWER)

mains switch. Check the power supply type and the test line connection before first startup.

2.START key, and STO P key

START Key (green circle): to start the test, the HV indicator is on.

STOP key (red circle): Stop the key to abort the test or to cancel PASS, FAIL, etc.

3. Trademark and model number

Instrument trademark and model number

4. Digital button area

Used to enter the numerical values

5. Indicator light area

● FAIL

During the test, if the test data exceeds the setting, the instrument determines that the test is unqualified, and the FAIL judgment light is on.

● PASS

After the test, no test data beyond the initial setting is found, the instrument determines that the test is qualified, and the PASS judgment light is on. In the case of the test timing function turned off (TIM E OFF), the test can only be concluded with 'STOP' without PASS judgment

6. Functional area (FUNCTLON)

Select the test mode setting, system setting, and file operation interface.

● TEST

Press the key to light up and the instrument enters the readiness for test. Only in this state will the instrument be allowed to start the high pressure test

● SETUP

Press this key to light up, and the instrument enters the parameter setting interface; only in this state, the instrument changes the test parameters

● SYSTEM

The key is lit, and the display system setting interface (SYSTEM) is used to configure the parameters related to the test and the test system, such as display, communication and so on

● FILE

This key is illuminated to display the file operation interface (FILE)

7.DANGER

！！As long as the test is on, the light is on, indicating that the test is ongoing.

8. Move the key

For the movement of the cursor on the screen and the selection of parameter items.

9. Rotate the encoded potentiometer

For the adjustment and confirmation of the parameters.

10. Quick function key

F 1-F 5 corresponds to the functional operation area on the right side of the LCD to realize the quick operation.

11.800 \* 480 TFT dot-matrix LCD display screen, display and setting interface, measurement interface, etc.

12.USB Interface

Implement the parameter setting for copy storage.

13.LOC K Lock the key

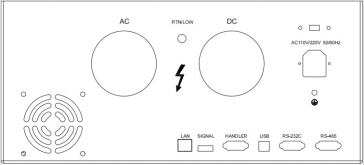
Press this key to lock all keys on the operation panel except STARTT and STOP to prevent misoperation.

3.2 Back panel description

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Figure 3-2 Rear panels

1.AC voltage output end: the instrument test voltage output end

2.DC voltage output end: the instrument test voltage output end

Insulation leads out from the DC end.

When AC voltage output, DC voltage output end also has high voltage output, need to screw the insulation cap, the insulation cap can not be charged to prevent electric shock.

When DC voltage output, AC voltage output end also has high voltage output, it is necessary to screw the insulation cap, the insulation cap can not be charged to prevent electric shock.

3. Test the low-end and test the current return end

4. Power socket

For input AC power, use the voltage within the specified input voltage range of the instrument and use the power cord provided with the instrument.

5. Protection ground terminal

When the three-legged power socket connected to the instrument power cannot guarantee reliable connection to the earth, it must be connected to a reliable grounding row.

Note: This instrument should not be used without connecting the earth, otherwise the instrument shell may be charged and there is a danger of electric shock.

6. The LAN interface

LAN communication interface to realize communication with computer.

7.S INGLE interface

An interface used to output dedicated signals and used to connect multiple scan controllers。

The 8.HANDLER interface

Control and output connection for connecting the instrument to the external control equipment.

9. The USB serial communication interface

Upgrade the instrument by connecting to the computer.

10.USB RS 232C Serial interface

Serial communication, the interface implementation with the computer communication

11.RS 485, Serial interface

Serial communication interface to realize the communication with the computer.

Chapter 4. Operating instructions

4.1 Boot on description and boot screen

Before the power cord plug is connected to the mains, please close the input "power switch", check whether the insurance specification is correct, and connect the safety grounding wire to the "grounding terminal" on the rear panel of the tester.

|  |
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| Shenzhen Meiruike Electronic Technology co.,ltd  RK 9974-20  Programmable Auto Saf ety Tester  VERSION ：0.0.0 Copyright (c ) 2019-2020  http ://www.chinarek .com |

The basic operations are described as follows:

■ Use the menu buttons ([TEST] [SETUP] [SYSTEM] [FILE]) and the soft keys to select the page you want to display.

■ Use the cursor ([] [] [] []) to move the cursor to the domain you want to set up. When the cursor moves to a domain, the domain turns on in blue. A domain is an area where you can set the cursor.

■ The current cursor can set the parameter value by the encoding potentiometer or numeric key. When the data is entered, use the [ENTER] key or tap the encoded potentiometer.

4.2 Operation steps

4.2.1 Set the tester parameters

Please refer to the "Parameter Setting" section to set each parameters.

4.2.2 Connect the tester with the measured object and plug in the three-line power supply plug.

Note: The supply voltage shall be maintained at 90-121V AC (60Hz) or 198-242V AC (50Hz).

The power supply input phase line L, zero line N and ground line E shall be the same as the phase line and zero line on the power supply plug of this instrument.

Turn on the power supply, press the power switch on the lower left corner of the front panel, turn the instrument on, and display the boot screen. As shown above.

Please press the "reset" key once, and determine that the test indicator is not on, the display is working normally and no output, connect the test line, and check whether all wiring is reliable.

4.2.3 Press the Start Up key to start the test

press down"firing"After the key, the tester output, the test indicator on the front panel will be on, the display will display" in test ", display the test value, the timer will start to work, and the data will be constantly updated.

4.2.4 Judgment of qualified products

After the test is completed, the tester will automatically turn off the output, and the qualified indicator light on the front panel will light on and sound at the same time. The display will display "PASS" and test data, indicating that the tester determines the measured object as qualified.

If you want to continue the test, press Start again and the tester will restart the test.

If you want to abort the test, press the reset key, the tester immediately stops the test, and the monitor retains the current test value.

4.2.5 Judgment of nonconforming products

If the test fails, the tester will immediately turn off the output, and the front panel will make a warning sound, and the display will display the test

Test failure prompt and test data, indicating that the tester determines the tested object as an unqualified product. Test failure prompt is: upper limit failure, overcurrent protection. To turn off the alarm sound, you can press the "reset" button.

4.2.6 START, STOP operation instructions

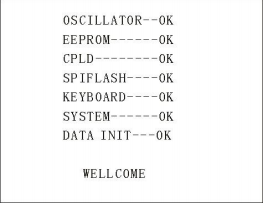
START Key is the start test key, press the instrument to enter the test state; STOP key is the reset stop key, in the test state, press STOP key to interrupt the test, running light DANGER out, LOCK light; press STOP secondary instrument to enter the reset state, DANGER and LOCK light out.

Panel functional interface and parameter description

4.3 Instrument startup and self-test

4.3.1 Instrument start-up self-inspection items

The screen displays as follows when the tester runs the self-test



The self-inspection items are as follows:

1. Working state detection of internal crystal vibration: display OK if normal; if abnormal, issue alarm sound and cannot enter the self-inspection of the next project.

2. Input and output memory status detection: if OK, if OK, the alarm sound will not enter the self-test of the next item.

3. Complex programmable logic state detection: if normal, display OK, if abnormal, the alarm sound can not enter the self-inspection of the next project.

4. Serial peripheral interface status detection: if OK, display OK, if abnormal, issue an alarm sound and can not enter the self-test of the next project.

5. Keypad status detection: if OK, display OK, sound an alarm and cannot enter the self-test of the next project.

6. System status detection: if OK, OK will be displayed, and the alarm sound will not enter the self-inspection of the next project.

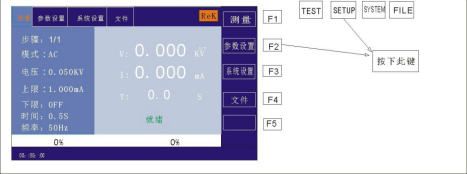
7. Data initialization status detection: if OK, the alarm sound will not enter the self-test of the next project.

If there is no error in the above self-test, the instrument self-test is successful. Enter the test interface, as shown below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| measure | parameter setting | System Settings | document |  | measure |
| S TEP  Step: 1 / 1  V :0.000KV  I :0.000mA  T : 0.0 S   |  | | --- | | parameter setting |   pattern:DC  Voltage: 0.500KV   |  | | --- | | System Settings |   Upper limit: 9.999mA  lower limit:OFF  Time: 0.5s   |  | | --- | | document |   judge:OFF   |  | | --- | | 0% 0% | | | | | | |

4.4 Parameter setting mode

Press the "SETUP" or "F2" keys on the instrument panel to enter the parameter setting page



D

.50 00

9.999

judge:OFF

The parameter settings interface is as follows:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | measure  parameter setting | System Settings | document |   S TEP  pattern DC  1 | | D C | |  | | --- | | new-built |  |  | | --- | | delete |   The last item |
| Voltage: 0.500KV  Upper limit: 9.999mA | Time: 000.5 S  Up: 000.5 S | |
| lower limit:OFF  arc:OFF  10:20:15 | Decline: 000 S.5  judge:OFF | | |  | | --- | | The next item |  |  | | --- | | Save as a file | |

Note: The specific difference varies according to the test mode of the test step.

4.4.1, Description of the parameter setting

Test Mode: One parameter in the step detail panel is always the test mode parameter. Eiting this parameter can change the test mode of the test step. Range: Test mode supported by the instrument. Press on this parameter“After Enter " key, modify the test mode control value according to the selection box control modification method and press again“Enter " Key to save the modification. If the test mode of the test step changes, automatically update to the parameter panel corresponding to the new test mode. During the modification process, press"ESC"Key cancels all current actions.

4.4.2 Description of the test mode supported in the step

The test mode supported by the test step is determined by the following factors: the test mode and file working mode supported by the tester.

4.4.3 Setting of ACW AC pressure withstand parameters

Select "AC" withstand voltage test mode under the parameter panel setting, and the test parameters are set into "AC" withstand voltage mode, as shown below

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | measure  parameter setting | System Settings | document |   S TEP  pattern AC  1 | | AC DC IR | |  | | --- | | new-built |  |  | | --- | | delete |   The last item |
| Voltage: 0.500K V  Upper limit: 1.000 mA | Time: 000.5 S  Up: 000.5 S | |
| lower limit:OFF  arc:OFF  10:20:15 | Decline: 000.5 S  Frequency: 50Hz | | |  | | --- | | The next item |  |  | | --- | | Save as a file | |

Figure 4.3.3 AC setting interface schematic diagram

Set the parameters are as follows:

Test mode: After the cursor is moved to test mode, press "ENTER" to enter test mode editing, press "" or "" to change the test mode, set AC AC voltage tester to select AC, and then press"ENTER"Keys save. In this way, the following parameters are changed to AC voltage parameters.

Description of the AC withstand voltage (AC) test parameters:

|  |  |  |  |
| --- | --- | --- | --- |
| VOLT ： | voltage | 0.500~20.00kV | AC high voltage test voltage value |
| UPPER ： | superior limit | 0.001~20.00mA | AC voltage resistance and current upper limit |
| LOW R ： | lower limit | 0.001~20.00mA | AC lower limit current value, must be less than the UPPE R value. |
| ARC ： | arc | 0.1~ 20.0 m A | Allowed AC arc current maximum |
| O FF | The arc has no requirements |
| TI M E ： | time | 0.1~ 999.9S | AC voltage resistance test time, time to end test RISE = OFF |
| O FF | The test time is not limited |
| RIS E ： | rise | 0.1~999.9S | AC high voltage test voltage rise time |
| O FF | Default =0.1S, and test time> 0.2S. |
| FALL ： | descend | 0.1~999.9S | AC high voltage test voltage drop time |
| O FF | Cut off the voltage output directly at the end of the test. (The test unit may be charged) |
| FREQ ： | frequency | 50/60 Hz | Communication and working frequency |

Output voltage: press“↓”The key or coding pull disk moves the cursor to the value after the output voltage as shown in the figure below:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | measure  parameter setting | System Settings | document |   STE P  pattern AC  1 | | AC DC IR | |  | | --- | | new-built |  |  | | --- | | delete |  |  | | --- | | The last item |  |  | | --- | | The next item | | |
| Voltage: 0  .500KV  Upper limit: 1.000 mA  lower limit:OFF  arc:OFF | Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S  Frequency: 50Hz | |
| 10:20:15 | | | | Save as a file |
|  |

In this interface, press the "ENTER" key to edit the output voltage value, and the output voltage range is (0.100-20.00) KV. To change the output voltage value, just enter the number key. For example, to input a voltage of 2.000KV, just press the number key“2"And" ENTER " can be only used. To enter the 4.750KV, press the 4,7,5,0, and ENTER keys.

Current upper limit: press“↓”The key or coding pull disk moves the cursor to the upper current limit, as shown in the figure below:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| AC DC IR   |  | | --- | | new-built |   Voltage: 0.500K V upper limit: 1.000 mA lower limit: OFF  arc:OFF   |  | | --- | | The last item |  |  | | --- | | The next item |  |  |  |  |  | | --- | --- | --- | --- | | measure | parameter setting | System Settings | document |   STE P  pattern AC  1   |  | | --- | | delete |   Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S  Frequency: 50Hz   |  | | --- | | Save as a file |   10:20:15 |

In this interface, press the "EN TER" key to edit the upper current limit, ranging from (0.001-20.00) mA. To change the current limit,

Just enter the number key. For example, to enter0.515mA, Press "0", "5", "1", "5" and“ENTER " Key can be used.

Current lower limit: Press the "" key or code pull disk to move the cursor to the value after the current lower limit, as shown in the figure below:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| AC DC IR   |  | | --- | | new-built |   Voltage: 0.500K V upper limit: 1.000 mA Lower limit: 1.000 mA Arc: OFF   |  | | --- | | The last item |  |  | | --- | | The next item |  |  |  |  |  | | --- | --- | --- | --- | | measure | parameter setting | System Settings | document |   STE P  pattern AC  1   |  | | --- | | delete |   Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S  Frequency: 50Hz   |  | | --- | | Save as a file |   10:20:15 |

Note: Use the "ENTER" key to open or close the lower limit function, the lower limit range: (0.001-20)mA 。

After opening the lower limit function, gently press the lower limit of the encoded potentiometer. To change the lower limit of current, just enter the number key. For example, to enter 0.515 mA, press the "0", "5", "1", "5", and "ENTER" keys.

Arc function: press“↓”The key or coding pull moves the cursor to the arc function item as shown in the figure below:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | | measure | parameter setting | System Settings | document |   STEP   |  | | --- | | delete |     AC DC IR   |  | | --- | | new-built |   pattern AC  Up: 000.5 S  Decline: 000.5 S  Frequency: 50Hz  1  Time: 000.5 S  Voltage: 0.500KV  Upper: 1.000 mA Lower:  arc:     |  | | --- | | The last item |  |  | | --- | | The next item |  |  | | --- | | Save as a file |   10:20:15 |

Note: Use"ENTER"Key on or off the arc function, arc range: (0.1-20) mA

After turning on the arc function, operate the arc setting function by tapping the coding potentiometer. To change the arc value, just enter the number key. Like to enter 0.515mA, Press the 0,5,1,5, and ENTER keys.

The smaller the arc value is set, in the test process, the measured object ignition or flashover phenomenon, the tester can not detect.

Test time: Press "" key or code pull disk to move the cursor to the time function item, as shown in the figure below:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | measure | parameter setting | System Settings | document   |  | | --- | | new-built | |   STEP    AC DC IR   |  | | --- | | delete |   pattern AC  1   |  | | --- | | The last item |   Voltage: 0.500K V  Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S  Frequency: 50Hz   |  | | --- | | 01.000mA |   Upper limit: 1.000 mA  lower limit:OFF   |  | | --- | | The next item |   arc:OFF   |  | | --- | | 01.000mA |  |  | | --- | | Save as a file |   10:20:15 |

On this interface, press the"ENTER"Key to edit the time, the range is (0.1-999.9) S. To change the time value, simply enter the number key. For example, to enter 101.2, press“1”、“0” 、“1"," 2 "and" ENTER " keys are only.

Up Time: Press "'key or code disk to move the cursor to the up time function, as shown in the figure below:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | | measure | parameter setting | System Settings | document |   STEP    AC DC IR   |  | | --- | | new-built |   pattern AC  1   |  | | --- | | delete |   Voltage: 0.500K V  Time: 000.5S  Up: 000  Decline: 000.5 S  Frequency: 50Hz   |  | | --- | | Thelast item |  |  | | --- | | 01.000mA |  |  | | --- | | The next item |   Upper limit: 1.000 mA  lower limit:OFF  arc:OFF   |  | | --- | | 01.000mA |  |  | | --- | | Save as a file |   10:20:15 |

In this interface, press the ENTER key to edit the time, and the range is (0.1-999.9) S. To change the time value, simply enter the number key. For example, to enter 101.2, press“1”、The 0,1,2, and ENTER keys will work.

Drop time: press“↓”The key or coding pull moves the cursor to the descent time function, as shown in the figure below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | measure  parameter setting | System Settings | document |   STE P  pattern AC  1 | | AC DC IR | |  | | --- | | new-built |  |  | | --- | | delete |   The last item |
| Voltage: 0.500KV  Upper limit: 1.000 mA | Time: 000.5 S  Up: 000.5 S | |
| lower limit:OFF  arc:OFF  10:20:15 | Down: 000  .5S  Frequency: 50Hz | | |  | | --- | | The next item |  |  | | --- | | Save as a file | |

In this boundary, press ENTER to edit the time in the range of (0.1-999.9) S. To change the time value, simply enter the number key. For example, to enter 101.2, press"1The "," 0,1,2, and ENTE R keys work well.

Frequency: Press "" key or code pull disk to move the cursor to the frequency function item, as shown in the figure below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | measure  parameter setting | System Settings | document |   S TEP  pattern AC  1 | | AC DC IR | |  | | --- | | new-built |  |  | | --- | | delete |   The last item |
| Voltage: 0.500KV  Upper limit: 1.000 mA | Time: 000.5 S  Up: 000.5 S | |
| lower limit:OFF  arc:OFF  10:20:15 | Decline: 000.5 S  Frequency: 50Hz | | |  | | --- | | The next item |  |  | | --- | | Save as a file | |

Under this interface, press the ""ENTER"Key to edit the frequency to (50 / 60) Hz. Press, or rotate the encoded potentiometer to change the frequency value.

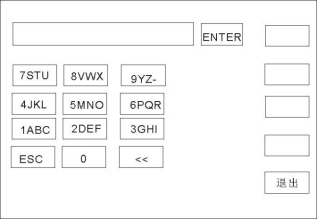
New Step: In the test interface, press the "F 1" key "New" to create a new test step. A total of 20 test steps can be built. A new test step is established later in the current step with the default test mode-AC voltage.

Delete step: In the test interface, press the "F 2" key "Delete" to delete the test step, the tester removes the current step, and the next step moves to the current step.

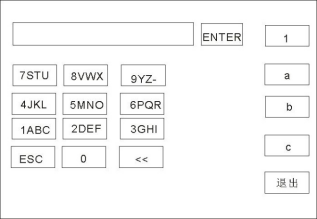
Previous page: (Step forward) In the test interface, press the panel "F 3" key "last page", the current step can be moved forward, that is, the current test step and the content of the previous test step exchange, can easily realize the test step sorting function, but in the current step is the first test step, the forward operation is invalid.

Next page: (Step back) In the test interface, press the "F 4" key "next page" on the panel, the current step can be moved back, that is, the current test step and the latter test step content swap, can easily implement the test step sorting function, but in the current step is the last test step, the back operation is invalid.

Save as a file: press the "F 5" key on the panel to "save as a file" in the test interface, and the current test steps can be stored in the form of a file for easy retrieval and use. Press Save as File, and pop up the storage interface, as shown below:



After entering the above interface, press the number key on the panel, and the screen displays as follows:



Type the relevant characters on the screen, press the "ENTER" key, and the file is stored inside the tester memory.

4.4.4 DCW DC voltage withstand parameter setting

Select "DC" withstand test mode under parameter panel setting, and test parameter set to enter "DC" withstand mode:

The test parameters of DC resistant voltage (DC) are described as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| voltage | VOLT ： | 0.500~20.00kV | DC high voltage test voltage value |
| superior limit | UPPER ： | 0.1uA ~9.999mA | DC voltage resistance and current upper limit |
| lower limit | L OW ： | .10uA~9.999mA | DC voltage resistance current lower limit, less than UPPER value. |
| OFF | There is no requirement for the lower limit |
| time | TIM E： | 0.1~999.9S | DC voltage resistance test time, time to the end of the test, RISE = OFF |
| OFF | The test time is not limited |
| rise | RISE ： | 0.1~999.9S | DC high voltage test voltage rise time |
| OFF | Default =0.1S, and the test time is> 0.2s |
| descend | FALL： | 0.1~999.9S | DC high voltage test voltage drop time |
| OFF | At the end of the test, directly cut off the voltage output and enter the 0.2S quick discharge. |
| arc | ARC： | 0.1~20.0 m A | DC arc current maximum value |
| OFF | The arc has no requirements |
| Boost pressure determination | RAM P： | ON | Voltage rise time, the current upper limit is allowed. |
| OFF | Voltage rise time, do not detect the current upper limit, but the current limit judgment is still judged. |

Set the parameters are as follows:

Test Mode: After the cursor has been moved to the test mode, press"ENTER"Key Enter test mode edit, press" "or" "key to change test mode, set DC DC withstand pressure tester to select DC, and then press"EN TER"Keys save. In this way, the following parameters are changed to DC voltage parameters.

Output voltage: press“↓”The key or coding pull disk moves the cursor to the value after the output voltage as shown in the figure below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | measure  parameter setting | System Settings | document |   S TEP  pattern DC  1 | | D C | |  | | --- | | new-built |  |  | | --- | | delete |   The last item |
| Voltage: 0.500KV  Upper limit: 1.000 mA | Time: 000.5 S  Up: 000.5 S | |
| lower limit:OFF  arc:OFF  10:20:15 | Decline: 000 S.5  judge:OFF | | |  | | --- | | The next item |  |  | | --- | | Save as a file | |

At this interface, press“The ENTER " key can edit the output voltage value, and the output voltage range is (0.500-20.00) KV. To change the output voltage value, just enter the number key. For example, to input a voltage of 2.000KV, just press the number keys "2" and "ENTER". To enter 4.750KV, press 4,7,5,0, and 0ENTER"The key can be.

Current limit: press“↓”The key or coding pull disk moves the cursor to the upper current limit, as shown in the figure below:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | new-built |  |  |  |  |  | | --- | --- | --- | --- | | measure | parameter setting | System Settings | document |   S TEP  D C  pattern DC  1   |  | | --- | | delete |   Voltage: 0.500KV  Time: 000.5 S  Up: 000.5 S  Decline: 000 S.5  judge:OFF   |  | | --- | | The last item |  |  | | --- | | The next item |   Upper limit: 1.000 mA  lower limit:OFF  arc:OFF   |  | | --- | | Save as a file |   10:20:15 |

In this interface, press the "ENTER" key to edit the upper current limit, ranging from (0.001-9.999) mA. To change the upper current limit, just enter the number key. For example, want to enter 0.515mA, press“0 ”、“5”、“1”、“5”And the ENTER key.

Current lower limit: press“↓”The key or code pull disk moves the cursor to the value after the lower current limit, as shown in the figure below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | measure  parameter setting | System Settings | document |   STEP  pattern DC  1 | | D C | |  | | --- | | new-built |  |  | | --- | | delete |   The last item |
| Voltage: 0.500KV  Upper limit: 1.000 mA | Time: 000.5 S  Up: 000.5 S | |
| lower limit:OFF  arc:OFF  10:20:15 | Decline: 000.5 S  Rising judgment: OFF | | |  | | --- | | The next item |  |  | | --- | | Save as a file | |

Note: On or off with ENTER key, lower range: (0.001-9.999mA)。

After opening the lower limit function, gently press the lower limit of the encoded potentiometer. To change the lower limit of current, just enter the number key.for example

To enter the 0.515mA, press“ 0”、“5”、“1"," 5 "and"ENTER"The key can be.

Arc function: Press "" key or code pull disk to move the cursor to the arc function item, as shown in the figure below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | measure  parameter setting | System Settings | document |   STEP  pattern DC  1 | | D C | |  | | --- | | new-built |  |  | | --- | | delete |   The last item |
| Voltage: 0.500KV  Upper limit: 1.000 mA | Time: 000.5 S  Up: 000.5 S | |
| lower limit:OFF  Arc: 01.000mA  10:20:15 | Decline: 000.5 S  Rising judgment: OFF | | |  | | --- | | The next item |  |  | | --- | | Save as a file | |

Note: Use the "ENTER" key to open or close the arc function, the arc range: (0.1-20) mA

After turning on the arc function, operate the arc setting function by tapping the coding potentiometer. To change the arc value, just enter the number key. For example, want to enter 0.515mAPress " 0”、“5 ”、“1”、“5"And" ENTE R " keys can be used.

The smaller the arc value is set, in the test process, the measured object ignition or flashover phenomenon, the tester can not detect.

Test time: Press "" key or code pull disk to move the cursor to the time function item, as shown in the figure below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| measure | parameter setting | | System Settings | | document |  |  |
| new-built |
| STE P  1  10:20:15 | | pattern  Voltage: 0.500KV  Upper limit: 1.000 mA  lower limit:OFF  Arc: 01.000mA | | D C  DC  Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S  Rising judgment: OFF | | |
|  |
| delete |
|  |
| The last item |
|  |
| The next item |
|  |
| Save as a file |
|  |

In this interface, press the "ENTER" key to edit the time in the range of (0.1-999.9) S. To change the time value, simply enter the number key. For example, to enter 101.2, press“ 1The "," 0,1,2, and ENTER keys will work.

Up Time: Press "'key or code disk to move the cursor to the up time function, as shown in the figure below:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | new-built |  |  |  |  |  | | --- | --- | --- | --- | | measure | parameter setting | System Settings | document |   STE P  D C  pattern DC  1   |  | | --- | | delete |   Voltage: 0.500KV  Time: 000.5S rise: 000.5S  Decline: 000.5 S rise judgment: OFF   |  | | --- | | The last item |  |  | | --- | | The next item |   Upper limit: 1.000 mA  lower limit:OFF  Arc: 01.000mA   |  | | --- | | Save as a file |   10:20:15 |

In this interface, press the ENTER key to edit the time, and the range is (0.1-999.9) S. To change the time value, simply enter the number key. For example, to enter 101.2, press"1"," 0,1,2, andENTER"The key can be.

Drop time: press“↓”The key or coding pull moves the cursor to the descent time function, as shown in the figure below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| measure | parameter setting | | System Settings | | document |  |  |
| new-built |
| STE P  1  10:20:15 | | pattern  Voltage: 0.500KV  Upper limit: 1.000 mA  lower limit:OFF  Arc: 01.000mA | | DC  DC  Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S  Rising judgment: OFF | | |
|  |
| delete |
|  |
| The last item |
|  |
| The next item |
|  |
| Save as a file |
|  |

In this boundary, the face, press the"ENTER"Key to edit the time, the range is (0.1-999.9) S. To change the time value, simply enter the number key. For example, to enter 101.2, press "1", "0", "1", “2”And the ENTER key.

Rising judgment: press the "" key or code to move the cursor to the rise determination function item, as shown in the figure below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| measure | parameter setting | | System Settings | | document |  |  |
| new-built |
| STE P  1  10:20:15 | | pattern  Voltage: 0.500KV  Upper limit: 1.000 mA  lower limit:OFF  Arc: 01.000mA | | DC  DC  Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S  Rising judgment: OFF | | |
|  |
| delete |
|  |
| The last item |
|  |
| The next item |
|  |
| Save as a file |
|  |

Under this interface, press the ""ENTER"Key to edit the rise determination, the range of (ON / OFF). Press '' '' or rotate the code

potential device.

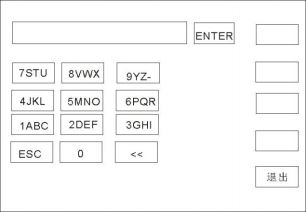
New Step: In the test interface, press the "F1" key "New" to create a new test step for a total of 20 test steps. A new test step is established later in the current step with the default test mode-AC voltage.

Delete step: on the panel on the test interface"F2" key“delete", Can delete the test step, the tester to delete the current step, the next step moves to the current step below.

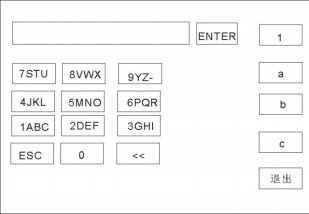
Previous page: (Step forward) In the test interface, press the panel "F3" key "last page", the current step can be moved forward, that is, the current test step and the content of the previous test step exchange, can easily realize the test step sorting function, but in the current step is the first test step, the forward operation is invalid.

Next page: (Step back) on the panel on the test interface“F4”The key "next page" can move back the current step, that is, the current test step and the latter test step content exchange, can easily implement the test step sorting function, but in the current step is the last test step, the backward move operation is invalid.

Save as a file: press the "F 5" key on the panel to "save as a file" in the test interface, and the current test steps can be stored in the form of a file for easy retrieval and use. Press Save as File, and pop up the storage interface, as shown below:



After entering the above interface, press the number key on the panel, and the screen displays as follows:



Type the relevant characters on the screen, press the "ENTER" key, and the file is stored inside the tester memory.

.4.54 IR insulation resistance parameter setting

Select "IR" insulation test mode under the parameter panel setting, and the test parameter is set into "IR" withstand voltage mode, as shown below: The setting parameters are as follows:

Test Mode: After the cursor has been moved to the test mode, press"ENTERKey Enter test mode edit, press "" or "" key to change test mode, set IR insulation test, then pressENTER"Keys save. So the following parameters are changed to the parameters of insulation resistance.

Output voltage: press“↓”The key or coding disk moves the cursor to the value after the output voltage as shown in the figure below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | | measure | parameter setting | System Settings | document |   S TEP  pattern IR  1 | | AC DC IR |  |
| new-built |
|  |
| delete |
| Voltage: 2.000K V  Upper limit: 99999.9 Μ Ω Lower limit: 10.0M Ω  range:AUTO  10:20:15 | Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S | |
|  |
| The last item |
|  |
| The next item |
|  |
| Save as a file |
|  |

On this interface, press the“ENTER"The Key can edit the output voltage value, and the output voltage range is (0.050-5.000) KV. To change the output voltage value, just enter the number key. For example, to enter 2.000KV, press 1,0,0,0,0, and 0ENTER"The key can be.

Upper resistance limit: press "" key or code undisk to move the cursor to the value after the upper resistance, as shown in the figure below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | | measure | parameter setting | System Settings | document |   S TEP  pattern IR  1 | | AC DC IR |  |
| new-built |
|  |
| delete |
| Voltage: 2.000K V  Upper limit: 99999.9 Μ Ω Lower limit: 10.0M Ω  range:AUTO  10:20:15 | Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S | |
|  |
| The last item |
|  |
| The next item |
|  |
| Save as a file |
|  |

In this interface, press "ENTER" to edit the current limit (0.1-99999.9) M Ω。To change the upper current limit, just enter the number key. For example, to enter 0.515mA, press 0,5,1,5, and 5ENTER"The key can be.

Lower resistance: Press "" key or remove the disk to move the cursor to the lower current limit value, as shown in the figure below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | | measure | parameter setting | System Settings | document |   S TEP  pattern IR  1 | | AC DC IR |  |
| new-built |
|  |
| delete |
| Voltage: 2.000K V  Upper limit: 99999.9 Μ Ω Lower limit: 10.0M Ω  range:AUTO  10:20:15 | Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S | |
|  |
| The last item |
|  |
| The next item |
|  |
| Save as a file |
|  |

Note: Use the "ENTER" key to open or close the lower limit function, the lower limit range: (0.1-99999.9) M Ω.

After opening the lower limit function, gently press the lower limit of the encoded potentiometer. To change the lower limit of current, just enter the number key. For example, to enter a 1000M Ω, press“ 1The "," 0,0,0, and ENTER keys are the only ones.

Range function: Press the key or code the disk to move the cursor to the range function item, as shown in the figure below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| measure | parameter setting | | System Settings | | document |  |  |
| new-built |
| STE P  1  10:20:15 | | Mode voltage: 2.000KV  Upper limit: 99999.9 Μ Ω Lower limit: 10.0M Ω  range:AUTO | | AC DC IR  IR  Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S | | |
|  |
| delete |
|  |
| The last item |
|  |
| The next item |
|  |
| Save as a file |
|  |

The measuring range is divided into: AUTO, 1 MΩ, 10 MΩ, 100M Ω 1G Ω 100G Ω.

Test time: Press "" key or code pull disk to move the cursor to the time function item, as shown in the figure below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| measure | parameter setting | | System Settings | | document |  |  |
| new-built |
| STE P  1  10:20:15 | | Mode voltage: 2.000KV  Upper limit: 99999.9 Μ Ω Lower limit: 10.0M Ω  range:AUTO | | AC DC IR  I R  Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S | | |
|  |
| delete |
|  |
| The last item |
|  |
| The next item |
|  |
| Save as a file |
|  |

On this interface, press the"ENTER"Key to edit the time, the range is (0.1-999.9) S. To change the time value, simply enter the number key. For example, to enter 101.2, press the "1", "0", "1", "2", and "ENT E R" keys.

Rise time: press“↓”The key or coding pull disk moves the cursor over the rise time function, as shown in the figure below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| measure | parameter setting | | System Settings | | document |  |  |
| new-built |
| STE P  1  10:20:15 | | Mode voltage: 2.000KV  Upper limit: 99999.9 Μ Ω Lower limit: 10.0M Ω  range:AUTO | | AC DC IR  I R  Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S | | |
|  |
| delete |
|  |
| The last item |
|  |
| The next item |
|  |
| Save as a file |
|  |

On this interface, press the"ENTER"Key to edit the time, the range is (0.1-999.9) S. To change the time value, simply enter the number key

Can. For example, to enter 101.2, press "1", "0", "1","2”And"ENTER"The key can be.

Drop time: press“↓”The key or coding pull moves the cursor to the descent time function, as shown in the figure below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| measure | parameter setting | | System Settings | | document |  |  |
| new-built |
| STEP  1  10:20:15 | | Mode voltage: 2.000KV  Upper limit: 99999.9 Μ Ω Lower limit: 10.0M Ω  range:AUTO | | AC DC IR  I R  Time: 000.5 S  Up: 000.5 S  Decline: 000.5 S | | |
|  |
| delete |
|  |
| The last item |
|  |
| The next item |
|  |
| Save as a file |
|  |

In this interface, press the ENTER key to edit the time, and the range is (0.1-999.9) S. To change the time value, simply enter the number key. For example, to enter 101.2, press "1", "0",“ 1"," 2 "and" ENTER " keys are only.

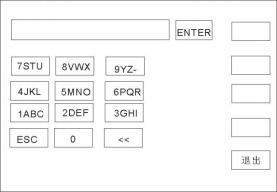
New Step: Press " on the panel in the test interfaceF1"Key" New " to create a new test step, for a total of 20 test steps. A new test step is established later in the current step with the default test mode-AC voltage.

Delete step: Press the "F2" key on the panel in the test interface"delete", Can delete the test step, the tester to delete the current step, the next step moves to the current step.

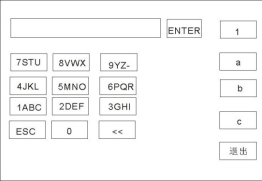
Previous page: (Step forward) Press the " panel on the test interfaceF3"Key" last page ", can move the current step forward, that is, the current test step and the previous test step content swap, can easily implement the test step sorting function, but in the current step is the first test step, the forward operation is invalid.

Next page: (Step back) In the test interface, press the "F4" key "next page" on the panel, the current step can be moved back, that is, the current test step and the latter test step content swap, can easily implement the test step sorting function, but in the current step is the last test step, the back operation is invalid.

Save as a file: press the "F 5" key on the panel to "save as a file" in the test interface, and the current test steps can be stored in the form of a file for easy retrieval and use. Press Save as File, and pop up the storage interface, as shown below:



After entering the above interface, press the number key on the panel, and the screen displays as follows:



Type the relevant characters on the screen, press the "ENTER" key, and the file is stored inside the tester memory.

4.5 System setting mode

4.5.1 Description of the system setting parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| measure | parameter setting | System Settings | document |  |  |
|  |
| Failure Mode: STOP Qualified Sound: ON  keying chirps:ON  Screen brightness: Language Settings: Ch inese Baud rate: 115200 system date  10:20:15 | | Electric shock protection: OFF  Failure voice: ON  Short-circuit protection: HIGH  Key brightness:  Bus mode: RS 485  System time  Restore the default | | |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

1 Failure mode

This option has two functions: CONTINUE, STOP, RESTART, NEXT, select the [] [] [] [] cursor, and adjust the coding potentiometer to select the function item to set.

2 Qualified sound

This option has 2 functions, ON and OFF.[] [] [] [] Cursor Select the setting item and adjust the encoding potentiometer to select the function item to set.

3 Keys sound

This option has 2 functions, ON and OFF.[] [] [] [] Cursor Select the setting item and adjust the encoding potentiometer to select the function item to set.

4 Screen brightness

[] [] [] [] Select the setting item and adjust the encoding potentiometer to select the value to set.

5. System language

There are 2 languages, Chinese and English.[] [] [] [] The cursor can select the setting item and adjust the encoded potentiometer to select the item to set.

6 Porter rate

This item has four port rates: 9600,38400,19200, and 115200. [] [] [] [] The cursor can select the setting item and adjust the encoded potentiometer to select the item to set.

7. System date

This can set the current time of the instrument, once the system time is set, regardless of the machine state time function, unless the internal battery

lose efficacy.[] [] [] [] Select the setting item and adjust the coding potentiometer to set

8 Electric shock protection

This option has 2 functions, ON and OFF.[] [] [] [] Select the setting item and adjust the coding potentiometer to select the function item to set.

9 Failure

This option has 2 functions, ON and OFF.[] [] [] [] Select the setting item and adjust the coding potentiometer to select the function item to set.

10 Short-circuit protection

This option has 2 functions, HIGH and LOW.[] [] [] [] Select the setting item and adjust the coding potentiometer to select the function item to set.

11. Key the brightness

[] [] [] [] Select the setting item and adjust the coding potentiometer to select the value to set.

12-bus mode

This item has two bus modes, RS 232 and RS 485.[] [] [] [] The cursor can select the setting item and adjust the encoded potentiometer to select the item to set.

13. System time

This item can set the current time of the instrument. Once the system time is set, no matter whether the machine state time function is open, unless the internal battery is invalid.[] [] [] [] Select the setting item and adjust the coding potentiometer to select the value to set.

14 Restore the default

This function is to restore system Settings, parameter Settings and restore factory Settings, all Settings will be cleared.[] [] [] [], press [ENTER] key to pop up [OK] [Cancel] interface, press [OK] key to determine. Press the [Cancel] key to cancel.

4.5.2 Functional description of the contact inspection

Contact inspection Through a 1kV high pressure test to determine whether the equipment to be tested, which is usually used for testing the equipment to be tested below 100G.

Contact checks is use using high pressure rod output tests.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | | measure | parameter setting | System Settings | document |   VERSION :0.0.221226 LCO 0.0.  Contact inspection: OFF  Step mode: Normal  Communication protocol: Scpi  Address: 001 |  |  |
| previous page |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
| 10:20:15 | |  |

4.6 Description of the document parameters

multitermeyetest





Any unqualified occurrence will be triggered

The following nonconformity judgment





DCThe pattern inWAITtime

Do not limit the limit

|  |
| --- |
| 7、 GFI  A RC  SHOR T |

|  |
| --- |
| 8、HI 、LOW |

|  |
| --- |
| 9. Unqualified treatment |

|  |
| --- |
| 11、STOP |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| measure | parameter setting | System Settings | | document |  | |  | |
| confirm |  |
| store-in | | | No U disk | | |  |
|  | | |
| NameAttrbute NameAttrbute  10:20:15 | | | | | | | cancel |  |
|  | |
|  | |
|  | |
|  | |
|  | |
|  | |
|  | |

4.7 Test function principle and use instructions

This section introduces the principle and use of grounding connection, ground current detection, arc detection and other tests. Test flow block diagram of the instrument

|  |
| --- |
| 1. Start the test |



|  |
| --- |
| 2. Test delay |



|  |
| --- |
| 3. Voltage rises  Charging current detection |



|  |
| --- |
| 5. High pressure test |



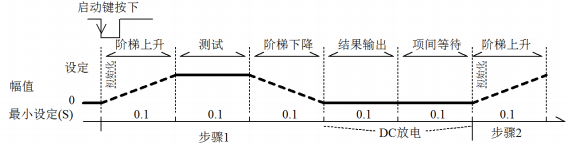
|  |
| --- |
| 6. Voltage drops |



|  |
| --- |
| 10. Processing of the test results |



|  |
| --- |
| 12. The test is over |



Schematic diagram of the instrument test time sequence

4.7.1 Start-up test

In the test mode, after checking the test conditions, press the START button to start the test

4.7.2 Voltage rise

Some of the tested properties are sensitive to voltage mutations and need to use this function. When the output voltage of the instrument starts to output, the output voltage is zero. When the voltage output starts, the instrument will step up the output voltage in 0.1S. The step boost value is determined according to the test voltage and voltage rise time (Δ V = V / (10 \* S)). If you turn off the voltage rise time (RISE OFF) default voltage rise time 0.1 seconds, automatically add the test time, so that the minimum test time is 0.2S. This small value may cause an error in ARC or DC boost determination, please note.

.7.34 DC boost pressure judgment

Whether to start the current upper limit determination function switch or not during the voltage rise is mainly used to avoid test misdetection.

When the test capacitance distribution is small, the charging current of the capacitor is relatively small, which will not cause a significant change in the current, opening the boost judgment can find the bad performance of the measured component as early as possible, and reduce the chance of overcurrent damage of the component.

When the step capacitor is large, the capacitor will have a charging process in the process of voltage rise. At this time, the current may be far greater than the set upper limit of the measured current. If the boost judgment is opened, it will cause the misjudgment of the super upper limit. If necessary, the short circuit threshold can be opened to reduce the short circuit sensitivity and improve the charging current

4.7.4 High-pressure test

Conduct a high-pressure test on the tested unit. At this time, it should be able to ensure that the test circuit is correct, the test results will not be affected by some special incidental parameters, and the display content is the actual voltage resistance and current required by the test.

4.7.5 Test voltage drop

The same test voltage rise, is determined by the characteristics of the tested parts. When the voltage drops at the end of the high voltage test, the instrument will control the output voltage drop in 0.1S (the DC voltage will not drop with the control voltage), and the step step down value is determined according to the test voltage and voltage rise time (Δ V = -V / (10 \* S)). If the off voltage drop time (FAIL OFF) the default voltage drop time is 0.1 seconds. At this time, the instrument is not determined for test comparison, and the data is for reference only. At the end of the voltage drop, the instrument will connect the test circuit to the AC-voltage resistance mode, and if the measured device has a DC voltage drop, it will discharge through the AC circuit of the instrument.

.64.7 Ground wire current detection function

Ground current detection is to detect the current flowing through the instrument housing to prevent electric shock. When the high voltage output, there is current from the voltage output through the body to the instrument shell, which may cause very serious consequences.

Description of ground current detection circuit response of instrument:

 Local line current detection is enabled, and the ground current is greater than 0.45mA as the ground current exceeds the limit.

 When judging the electric shock, the instrument will end the high pressure output in 0.3S and exit the test state. And shown (GFI FAIL).

Note: The instantaneous output current of the instrument may be greater than 30mA, and if it is indeed an electric shock, it may cause the coma or death of the operator. Therefore, it is recommended to open the ground wire current detection and use it if the product allows.

4.7.7 Current overlimit and arc detection function

Classification of current overlimit: current lower limit, current upper limit, current overlimit, electric arc detection.

 Current lower limit judgment (LOW): generally used as a test low-end disconnection judgment. When the instrument tests the equipment, the equipment will certainly have it

For a certain leakage current, when the leakage current of the instrument test is less than the lower limit set current value (the equipment is not connected), if the leakage current of the tested element itself is very small, this function must be closed. Limit judgment display (LOW FAIL), only the test mode is valid, timing sampling, the rate is 100 mS each time.

Current upper limit judgment (HIGH): the most commonly used test current overlimit judgment. When the instrument tests the equipment, the equipment will certainly have a certain amount

Leakage current, when the leakage current of the instrument test is greater than the upper limit set current value, the equipment resistance voltage impedance is considered insufficient test failure.exceed

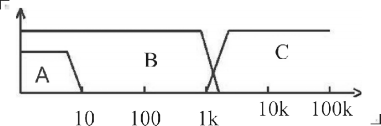
Time limit judgment display (HI FAIL), timing sampling, the rate of 100 mS each time.

Current limit determination: current sampling judgment is slow, the current changes quickly when the sampling circuit can not reflect in time

If the peak current exceeds the allowable output range of the instrument, such overlimit judgment will be triggered, and the judgment display (SHORT FAIL). Since the data cannot be collected beyond the limit, the output result of the system at this time is 100 mS before the current exceeds the limit. The current limit value is twice the output current allowed by the instrument (the relative AC is 1.5 times the peak). The drawdown time is invalid,

 This determination is not mable.

Arc detection (ARC): it is a very practical function for the measurement of coil components. It tests the local current shock caused by the instantaneous discharge of the local circuit in the high voltage test circuit. Because the superposition is on the normal test current and the mutation time is short, the above ordinary current detection circuit cannot make appropriate judgment in response to the current change. The arc detection circuit filters out the normal current value and only handles the high-speed current pulse changes. Because low-pass filtering and the size of the arc are random, this function can only estimate the extent of local firing. Because the data cannot be collected after the current exceeds the limit, the output result at this time is the last test result when qualified, and the judgment display when exceeding the limit is shown (ARC FAIL). ARC current is test for qualitative analysis, the size of quantity and test environment, test line distribution and so on influence great randomness, pay attention when using.



Comparison of frequency response between current overlimit determination and arc detection: (see figure above)

 Area A: Display circuit frequency sound for current sampling. Because to filter out the power supply frequency ripple AD sampling to calculate the test results

Analyze whether the current exceeds the set limit. Test current range, pulse width greater than 100 mS.

 Area B: Current fast response circuit. It only filters out the signal voltage peak of high frequency interference comparing overcurrent peak signal locking,

Just make extreme judgments. Greater than the allowable output current of the instrument, pulse wider than 1 mS.

 Area C in the figure: the arc detection circuit. The arc detection circuit only samples the amplitude of the mutation in the current, and the signal high-pass filters out the low frequency

Voltage peak value to compare pulse locking. Near the set point, the pulse width is about 1 uS-1 mS.

4.7.8 Judgment of nonconformity

1. During the test, the current exceeds the maximum output current that the instrument can bear, or if the instrument finds the state of hidden safety risks, the instrument will immediately cut off the voltage of the test loop, and wait for the instrument software to determine the cause of the error.

2. If the test result exceeds the limit set by the test item, the instrument will judge that the tested piece is unqualified. And immediately stop the current test, cut off the voltage output, enter the test of unqualified results.

3, when the multi-step test. There is one step, FAIL, and the total test result is FAIL.

4.7.9 Processing of test results

If the test exceeds, judge (FAIL). If FAIL occurs in the multistep test, the final result isFAIL。

With multiple test items, the FAIL judgment processing mode is controlled by the failure mode of the system. Otherwise, the instrument will display FAIL judgment and category (see HI below for example) for the user.

After the test, there is no unqualified mark, and the test result is judged as (PASS).

The PASS judgment processing mode is controlled by the PASS HOLD of SYSTEM and then ready to start the next measurement or return to the test waiting state.

HANDLER Signal output is controlled by the control mode.selectFILEMode, then the test results are output only after the entire file test ends. STEPThe mode controls the interface to output the corresponding signal at each step.

From this state to the next step, the customer can query the test data and results with the software

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| measure | parameter setting | System Settings | document |  | measure |
| STE P  Step: 1 / 1  V :0.000KV  I :0.000mA  T : 0.0 S   |  | | --- | | parameter setting |   pattern:DC  Voltage: 0.500KV   |  | | --- | | System Settings |   Upper limit: 9.999mA  lower limit:OFF  Time: 0.5s   |  | | --- | | document |   judge:OFF   |  | | --- | | 0% 0% | | | | | | |

4.7.10STOP (Stop Measurement)

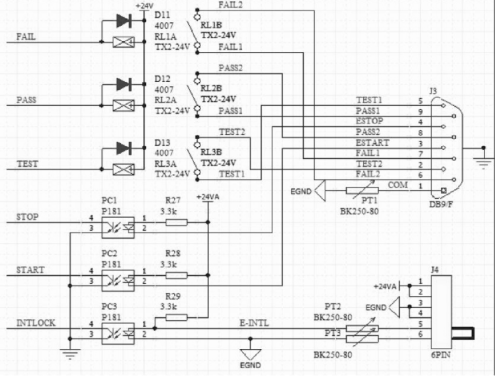
Press the STOP key in any state during the whole test process, and the instrument automatically ends the test and enters the test end state. Press it againSTOPKey, the instrument will return to the test waiting state. No test result judgment output is given when the test is stopped.

At the end of the test state, the customer can query with the softwareSTOPThe last test data obtained before.

4.8And HANDLER and SIGNALInterface circuit structure and use

4.8.1, the principle of the control interface

Internal principle of HANDLER and SIGNAL interface instruments, as follows:



HANDLER, SIGNAL, interface structure and timing

explain:

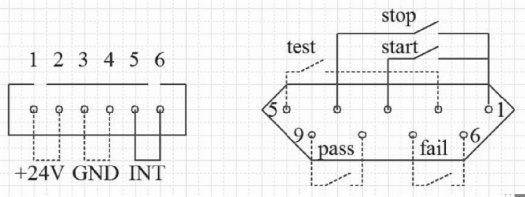
1. HANDLER interface: START, STOP and COM signals constitute the remote input control, and the switch input is closed effectively.

2. HANDLER interface: TEST, PASS and FAIL signals constitute remote output control. The switch output closure is valid. TEST can be used as a high voltage start signal, or a pulse signal where the instrument works normally.

3. The SIGNAL interface mainly provides the instrument selection signal (INTLOCK) during multi-instrument online test. The single signal is short circuit by default, and the instrument cannot start the high voltage output during open circuit.

4. The SIGNAL interface also provides a power supply with an approximate output voltage of + 24V, and the output current is less than 0.5A. With the HANDLER interface control signal, it can be used to drive the indicator light, photoelectric switch, low-power solenoid valve and so on.

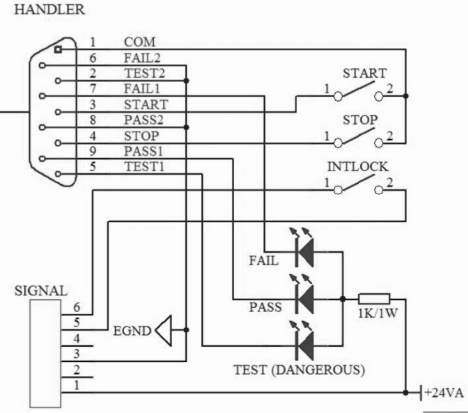
(See below)



HANDLER SIGNAL Interface rear panel view (schematic)

4.8.2 Use of the control interface

Control interfaces are generally used for remote control and test synchronization or indication. The interface external connections are as follows:



A Schematic diagram of the external circuit connections

explain:

1. The switch can be replaced by isolated switch elements such as optical coupling auxiliary side, and the current direction is shown according to the principle of the figure above. (the end of the COM end is the low end).

2, the indicator light can be replaced with other drive control components, the current direction according to the power supply.

3. Internal power supply performance of the instrument

A) The AC power supply is output by rectified filter, and the voltage output is about 24V. Please confirm before use.

B) The maximum current moment shall not be greater than 0.5A, and the working current for a long time shall be less than 0.2A. If more current is needed, please bring your own power supply.

C) The external control signal needs to be greater than 220V voltage or 2A current, the internal relay of the instrument will not bear, please the customer transfer by himself.

4.9 Other interfaces and functions of the instrument

1. The front panel USB HOST is used to connect the superior disk for the export and import of customer setting files.

2, the back panel USB DEV map the internal FLASH, to the computer as a U disk.

3. RS 232 is used to connect with the computer, the port rate is shown in the system setting item, and the data format is 8.n. Compatible software format IEE 485..1

Chapter 5 Serial port instruction set description

Brief description of the instruction format:

1. The instrument instruction set describes only the actual characters accepted or sent by the instrument.

2, the instruction characters are all ASCII characters.

3. The data of the instruction " <????????????> " Are all ASCII strings. The system default format is integer or floating point number, the unit of data is the default value does not appear in the instruction.

4, the end of the instruction must have the instruction end mark: an identifier of the end of the instruction, without which the instrument does not resolve the instruction.

A) The default end marks are: return (NL), print control (\ n), decimal (10), hexadecimal (0x 0A)。

B) End mark of the IEEE-488 bus: keyword (^ END), signal (EOI).

5.1 S C P I instruction set RK 9974-20 custom version of the instrument subsystem commands

● DISPlay ● FUNCtion

●SYSTem●MMEM ●FETC

.2 The 5 DISPLAY subsystem command set

DISPlay The subsystem command set is mainly used to set the display page of the instrument, the character? Can query the current page.

DISPlay ：PAGE

Command syntax: DISPlay: PAGE space <pagename >Note: page nameRepresented by numbers<page name> Details are as follows:

1----TEST

2----TESTSET

3----SYSSET

4----FILE

Set the display page to: Measure display page

Set the display page to: Measurement Settings page

Set the display page to: System Settings page

Set the display page to: (internal) file list

character? Can query the current page.

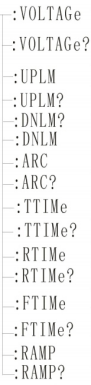
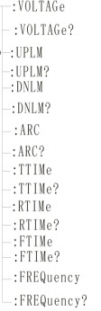
--example:

Set the display page to: Measure display page.

Set up instruction: DISP: PAGE 1

Query instruction: DISPlay: P AGE?

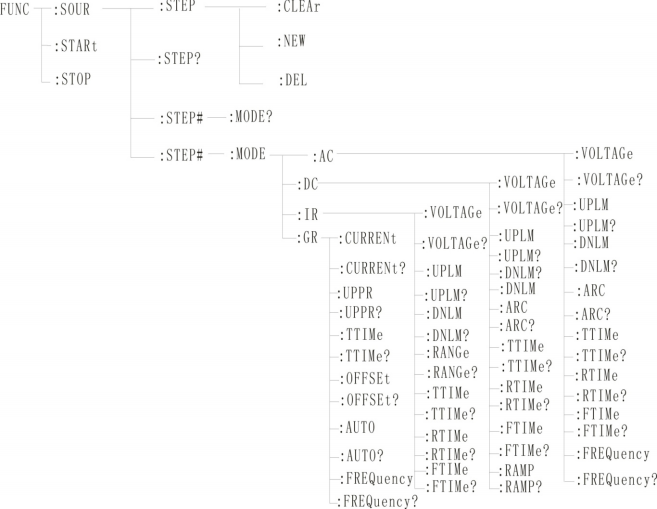
returned value:1



The 5.3 FUNC tion subsystem command set

5.3.1FUN C tion The subsystem command set is mainly used to set the test parameters of the instrument test function.

Command tree:



|  |
| --- |
|  |

5.3.2 The PROG functional command set

FUNC: STARt At the test interface, start the test.

FUNC: The STOP instrument stops the test at the test interface.

FUNC: STEP: <num>: The INS adds a new test item to the existing test protocol (STEP)

FUNC ：STEP :<num >:DEL Within the existing test scheme (STEP), delete the current test item.

FUNC ：STEP :<num >:NEWCreate a new empty test scheme to is used to write a completely new test scheme.

FUNC: STEP: <num>: Edit the <num> steps of the current test protocol, <num> = 1 to 50.

5.3.3 AC Setup, and the functional command set

FUNC: SOURce: STEP #: MODE: AC: VOLTage Set / query the voltage of the AC

--form

Format: FUNC:SOURce :STEP #: MODE: AC: VOLTage <Voltage Value>

Query Format: FUNC:SOURce :STEP #:MODE :AC :VOLTage？

- -Data <voltage value>:

Data type: Floating-point numberFormat: FUNC: STEP: <num>: AC: VOLT <Voltage Value>

Data range: 0.500-20.00

Data accuracy: 0.001

Data unit: KV

Example: Set the voltage value of AC in STEP 1 to 1000V

Set up command: FUNC:SOURce :STEP 1:MODE :AC :VOLTage1.000

Query command: FUNC:SOURce :STEP 1:MODE :AC :VOLTage？

FUNC: SOURce: STEP #: MODE: AC: UPLM, set / query the upper limit current of the AC

--form

Format: FUNC:SOURce :STEP #: MODE: AC: UPLM <Current Value>

Query Format: FUNC: SOURce: STEP #: MODE: AC: UPLM?

- -Data <current value>

Data type: Floating-point number

Data range: 0.001-20.00mA

Data accuracy: 0.001

Data unit: mA

Example: Set the current value of AC in STEP1 to 1 mA

Set command: FUNC: SOURce: STEP 1: MODE: AC: UPLM 1.000

Query command: FUNC: SOURce: STEP 1: MODE: AC: UPLM?

Return value: 1

FUNC :SOURce: STEP #: MODE: AC: DNLM, set / query the lower limit current of the AC

--form

Format: FUNC:SOURce :STEP #:MODE :AC :DNLM <current value>

Query Format: FUNC: SOURce: STEP #: MODE: AC: DNLM?

- -Data <current value>

Data type: Floating-point number

Data range: 0.001-20.00mA

Data accuracy: 0.001

data unit:mA

Example: Set the current value of AC in STEP1 to 1mA

Set up command: FUNC:SOURce :STEP 1:MODE :AC :UPLM 1.000

Query command: FUNC:SOURce :STEP 1:MODE :AC :UPLM ？

returned value:[1](#_bookmark35)

FUNC :SOURce: STEP #: MODE: AC: ARC set / query arc value

--form

Format: FUNC:SOURce :STEP #: MODE: AC: ARC <Arc Value>

Query Format: FUNC:SOURce :STEP #:MODE :AC :ARC ？

- -Data <arc value>:

Data type: Floating-point number

Data range: 0.001-20.00mA

Data accuracy: 0.001

data unit:mA

Example: Set the current value of AC in STEP1 to 1mA

Set up command: FUNC:SOURce :STEP 1:MODE :AC :ARC

1.000

？

Query command: FUNC:SOURce :STEP 1:MODE :AC :ARC

Return value: 1

FUNC: SOURce: STEP #: MODE: AC: TTIMe Set / query AC test time

--form

Format: FUNC:SOURce :STEP #: MODE: AC: TTIMe <Time>

Query Format: FUNC:SOURce :STEP #:MODE :AC :TTIMe ？

- -Data <Time Value>

Data type: the whole type

Data range: 0-999.9

Data accuracy: 0.1

data unit:S

Example: Set the time value of AC in STEP1 to 1S

Set up command: FUNC:SOURce :STEP 1：MODE :AC :TTIMe[1](#_bookmark36)

Query command: FUNC: SOURce: STEP 1: MODE: AC: TTIMe?

returned value:[1](#_bookmark37)

FUNC :SOURce: STEP #: MODE: AC: RTIMe settings / queryACThe rise of time

--form

Format: FUNC: SOURce:

Query Format: FUNC: SOURce:

STEP #: MODE: AC: RTIMe <Time>

STEP #:MODE :AC :RTIMe ？

- -Data <Time Value>

Data type: the whole type

Data range: 0-999.9

Data accuracy: 0.1

data unit:S

Example: Set the time value of AC in STEP 1 to 1S

Set command: FUNC: SOURce: STEP 1: MODE: AC: RTIMe

1

？

Query command: FUNC: SOURce: STEP 1: MODE: AC: RTIMe

Return value: 1

FUNC :SOURce：STEP #:MODE :AC :FTIMeSet / query the drop time of the AC

--form

Format: FUNC: SOURce: STEP #: MODE: AC: FTIMe <Time>

Query Format: FUNC: SOURce: STEP #: MODE: AC: FTIMe?

- -Data <Time Value>

Data type: the whole type

Data range: 0-999.9

Data accuracy: 0.1

data unit:S

Example: Set the time value of AC in STEP 1 to 1S

Set up command: FUNC: SOURce: STEP 1: MODE: AC: FTIMe 1

Query command: FUNC:SOURce :STEP 1:MODE :AC :FTIMe ？

Return value: 1

FUNC: SOURce: STEP #: MODE: AC: FREQuency Set up / query the test frequency of the AC

--form

Format: FUNC: SOURce: STEP #: MODE: AC: FREQuency <Frequency>

Query format: FUNC: SOURce: STEP #: MODE: AC: FREQuency？

- -Data <frequency value>

Data type: the whole type

Data range: 50 / 60

Data accuracy: 0.1

Data unit: Hz

Example: Set the frequency value of AC in STEP1 to 50Hz Set command: FUNC: SOURce: STEP1: MODE: AC: Query command: FUNC: SOURce: STEP 1: MODE: AC:

Return value: 50

F R EQuency

F R EQuency

38

FUNCtion :SOURce :STEP #:MODE :AC :HRTIMe

Set / read the AC mode high rise time

--form

Format: FUNCtion: SOURce: STEP #: MODE: AC: HRTIMe <Time Value>

Data <Time Value>

Data type, float

.1 Data range: 0-999.9s 0: OFF

Query command: FUNCtion: SOURce: STEP #: MODE: AC: HRTIMe?

FUNCtion :SOURce :STEP #:MODE :AC :HFTIMe

Set / read the high drop time of the AC mode

- -Format: FUNCtion: SOURce: STEP #: MODE: AC: HFTIMe <Time Value>

Data <Time Value>

Data type, float

Data range: 0-999.9s 0: OFF.1

Query command: FUNCtion: SOURce: STEP #: MODE: AC: HFTIMe?

.3.45DC Setup, and the functional command set

FUNC :SOURce: STEP #: MODE: DC: VOLTage Set / query the voltage of the DC

--form

Format: FUNC:SOURce:

Query Format: FUNC:SOURce:

STEP #: MODE: DC: VOLTage <Voltage Value>

STEP #:MODE :DC :VOLTage？

- -Data <voltage value>:

Data type: Floating-point number

Data range: 0.500-20.00

Data accuracy: 0.001

Data unit: KV

Example: Set the voltage value of DC in STEP 1 to 1000V

Set up command: FUNC:SOURce :STEP 1:MODE :DC :VOLTage

1.000

？

Query command: FUNC: SOURce: STEP 1: MODE: DC: VOLTage

FUNC: SOURce: STEP #: MODE: DC: UPLM, set / query the upper limit current of the DC

--form

Format: FUNC: SOURce: STEP #: MODE: DC: UPLM <Current Value>

Query Format: FUNC:SOURce :STEP #:MODE :DC :UPLM？

- -Data <current value>

Data type: Floating-point number

Data range: 0.0001 mA-9.999

Data accuracy: 0.001

Data unit: mA

Example: Set the current value of DC in STEP1 to 1mA

Set up command: FUNC:SOURce :STEP 1:MODE :DC:UPLM

1.000

？

Query command: FUNC:SOURce :STEP 1:MODE :DC :UPLM

Return value: 1

FUNC :SOURce ：STEP #:MODE :DC :DNLMSet up / query the DCThe lower limit of current

--form

Format: FUNC: SOURce:

Query Format: FUNC: SOURce:

- -Data <current value>

STEP #: MODE: DC: DNLM <Current Value>

STEP #:MODE :DC :DNLM？

Data type: Floating-point number

data area:0.0001-9.999mA

Data accuracy: 0.001

Data unit: mA

Example: Set the current value of DC in STEP 1 to 1mA

Set the command: FUNC：SOURce :STEP 1:MODE :DC :UPLM

Query command: FUNC: SOURce: STEP 1: MODE: DC: UPLM

Return value: 1

1.000

？

FUNC :SOURce ：STEP #:MODE :DC :ARCSet / query the arc value

--form

Format: FUNC:SOURce :STEP #: MODE: DC: ARC <Arc Value>

Query Format: FUNC:SOURce :STEP #:MODE :DC :ARC？

- -Data <arc value>:

Data type: Floating-point number

data area:0.0001-9.999

Data accuracy: 0.001

Data unit: mA

Example: Set the current value of DC in STEP 1 to 1mA

1.000

？

Set up command: FUNC:SOURce :STEP 1:MODE :DC :ARC

Query command: FUNC:SOURce :STEP 1:MODE :DC :ARC

Return value: 1

FUNC :SOURce: STEP #: MODE: DC: TTIMe Set / query DCThe test time

--form

Format: FUNC: SOURce:STEP #:MODE :DC :TTIMe <time>

Query Format: FUNC:SOURce :STEP #:MODE :DC :TTIMe ？

- -Data <Time Value>

Data type: the whole type

Data range: 0-999.9

Data accuracy: 0.1

data unit:S

Example: Set the time value of DC in STEP 1 to 1S

Set up command: FUNC:SOURce :STEP 1:MODE :DC :TTIMe[1](#_bookmark36)

Query command: FUNC: SOURce: STEP 1: MODE: DC: TTIMe?

returned value:[1](#_bookmark37)

FUNC: SOURce: STEP #: MODE: DC: RTIMe Setup / Query DCThe rise of time

--form

Format: FUNC:SOURce :STEP #: MODE: DC: RTIMe <Time>

Query format: FUNC: SOURce: STEP #: MODE: DC: RTIMe？

- -Data <Time Value>

Data type: the whole type

Data range: 0-999.9

Data accuracy: 0.1

data unit:S

Example: Set the time value of DC in STEP 1 to 1S

Set up command: FUNC: SOURce: STEP 1: MODE: DC: RTIMe

1

？

Query command: FUNC:SOURce:STEP1:MODE:DC:RTIMe

Return value: 1

FUNC: SOURce: STEP #: MODE: DC: FTIMe Set / drop time of query DC

--form

Format: FUNC:SOURce :STEP #: MODE: DC: FTIMe <Time>

Query Format: FUNC: SOURce: STEP #: MODE: DC: FTIMe?

- -Data <Time Value>

Data type: the whole type

Data range: 0-999.9

Data accuracy: 0.1

data unit:S

Example: Set the time value of DC in STEP 1 to 1S

Set the command: FUNC：SOURce :STEP 1:MODE :DC :FTIMe

1

？

Query command: FUNC: SOURce: STEP 1: MODE: DC: FTIMe

Return value: 1

FUNC :SOURce: STEP #: MODE: DC: RAMP, set / query the boost status of the DC

--form

Set Format: FUNC: SOURce: STEP #: MODE: DC:RAMP<Boost judgment>

Query Format: FUNC: SOURce: STEP #: MODE: DC: RAMP?

- -Data <boost judgment>

Data type: the whole type

Data range: 0 / 1 (OFF / ON)

Data accuracy: None

Data unit: None

Example: Set the frequency value of DC in STEP1 to 0 (OFF)

Set up command: FUNC: SOURce: STEP 1: MODE: DC: RAMP0

Query command: FUNC:SOURce :STEP 1:MODE :DC:RAMP ？

Return value: 0 (OFF)

5.3.5 IR SETUP Functional command set

FUNC:SOU Rce ：STEP #:MODE :IR :VOLTageSet / query the voltage of the IR

--form

Format: FUNC:SOURce :STEP #: MODE: IR: VOLTage <Voltage Value>

Query Format: FUNC:SOURce :STEP#:MODE:IR:VOLTage ？

- -Data <voltage value>:

Data type: Floating-point number

Data range: 0.050-5.000

Data accuracy: 0.001

Data unit: KV

Example: Set the voltage value of IR in STEP1 to 1000V

Set the command: FUNC：SOURce:STEP1:MODE:IR:VOLTag e

1.000

？

Query command: FUNC：SOURce:STEP1:MODE:IR:VOLTage

Return value: 1

FUNC: SOU Rce: STEP #: MODE: IR: UPLM, set / query the upper limit of IR

--form

Format: FUNC:SOURce:STEP #: MODE: IR: UPL M <Resistance value>

Query Format: FUNC: SOURce: STEP #: MODE: IR: UPLM?

- -Data <current value>

Data type: Floating-point number

Data range: 0.1M-100G Ω (0 is OFF)

Data accuracy: 0.1M Ω

Data unit: M Ω

Example: Set the upper resistance limit of IR in STEP1 to 100M Ω

Set up command: FUNC: SOURce: STEP 1: MODE: IR: UPLM 100

Query command: FUNC: SOURce: STEP 1: MODE: IR: UPLM?

Return value: 100

FUNC: S OURce: STEP #: MODE: IR: DNLM, set / query the lower limit of IR

--form

Format: FUNC: SOURc e:

Query Format: FUNC: SOURce:

- -Data <current value>

STEP #: MODE: IR: DNLM <Resistance value>

STEP#:M ODE :IR :DNLM ？

Data type: Floating-point number

Data range: 0.1M-100G Ω

Data accuracy: 0.1M Ω

Data unit: 0.1M Ω

Example: Set the resistance value of IR in STEP1 to 10M Ω

10

？

Set up command: FUNC:SOURce:STEP1:MODE:IR:UPLM

Query command: FUNC: SOURce: STEP 1: MODE: IR: UPLM

Return value: 10

FUNC :SOURce：STEP #:MODE :IR :RANGeSet / query the resistance range

--form

Format: FUNC: SOURce: STEP #: MODE: IR: RANGe <Range Value>

Query Format: FUNC: SOURce: STEP #: MODE: IR: RANGe?

- -Data <A range value>:

Data type: Integer

Data range: 1M, 10M, 100M, 1G, and 100G

Data accuracy: None

Data unit: M Ω

Example: Set the resistance range of IR in STEP1 to 100M Ω

100

？

Set up command: FUNC:SOURce:STEP1:MODE:IR: RANGe

Query command: FUNC: SOURce: STEP 1: MODE: IR: RANGe

Return value: 100

FUNC: SOURce: STEP #: MO DE: IR: TTIMe Set / query the IR test time

--form

Format: FUNC: SOURce: STEP #: MODE: IR: TTI M e <Time>

Query format: FUNC：SOURce : STEP #:MODE :IR :TTIMe ？

- -Data <Time Value>

Data type: the whole type

Data range: 0-999.9

Data accuracy: 0.1

data unit:S

Example: Set the time value of IR in STEP1 to 1S

Set the command: FUNC：SOURce :STEP 1:MODE :IR :TTIMe 1

Query command: FUNC：SOURce :STEP 1:MODE :IR :TTIMe？

Return value: 1

FUNC: SOURce: STEP #: MODE: IR: RTIMe Set / query the IR rise time

--form

Format: FUNC: SOURce: STEP #: MODE: IR: RTIMe <Time>

Query format: FUNC: SOURce: STEP #: MODE: IR: RTIMe？

- -Data <Time Value>

Data type: the whole type

Data range: 0-999.9

Data accuracy: 0.1

data unit:S

Example: Set the time value of IR in STEP1 to 1S

Set the command: FUNC：SOURce : STEP 1:MODE :IR :RTIMe 1

Query command: FUNC：SOURce: STEP1:MODE:IR:RTIMe？

Return value: 1

FUNC: SOURce: STEP #: MODE: IR: FTIMe Set / query the IR drop time

--form

Format: FUNC: SOURce: STEP #: MODE: IR: FTIMe <Time>

Query Format: FUNC:SOURce :STEP #:MODE :IR :FTIMe ？

- -Data <Time Value>

Data type: the whole type

Data range: 0-999.9

Data accuracy: 0.1

data unit:S

Example: Set the time value of IR in STEP1 to 1S

Set up command: FUNC: SOURce:

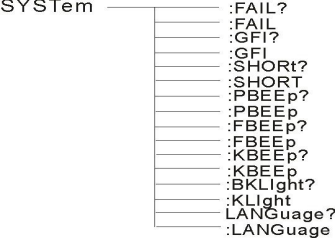
Query command: FUNC: SOURce:

Return value: 1

STEP #:MODE :IR :FTIMe

STEP #:MODE :IR :FTIMe

5.4 SYSTEMSubsystem command set

Command tree

SYSTem ：PBEE /FBEE /KBEE

Set / query test pass / fail / key buzzer status

--form

Set format: SYST: PBEE <ON / OFF> OR <1 / 0>

Query format: SYST: PBE E?

- -Data: <ON / OFF>

Data type: character

Data range: 0 (OFF),1 (ON )

example:

Set the BEE P to 1

Set up the command: SYST: BEEP 1

--return information

Query command: SYST: BEEP?, Return value: Buzzer status, such as 1

SYSTem: REset restores all default states

--form:

Set the format: SYST: RES

5.5The MMEM subsystem command set

MMEM: SAVE saves the current file to the file number

--form:

Format: MMEM: SAVE <File Name>

- -Data <filename>

Data type: String

MMEM LOAD Export the file specified by the file number to the current one

--form:

Set the format:MMEM: LOAD <File Name>

- -Data <filename>

Data type: String

5.6The FETCH subsystem command set

FETCH Used to obtain the measurements of the instrument

--form:

Set the format: FETCh: AUTO

Query Format: FFETCh: AUTO?

- -Data <ON / OFF> or <1 / 0>

Data type: character

Data range: 0 (OFF), 1 (ON)

--example:

Return the test data to ON automatically

Command: FETCh: AUTO ON or: FETCh: AUTO 1

--return information

Query command: FETCh?, Returns the current measurement of the instrument.

Command syntax: FETCh?

5.7 Other control command sets

\*IDN

Query return: Here:

Query the instrument model and version information

<manufacturer >,<model >,<firmware ><NL ^END >

<manufacturer> Name name (i. e. REK)

<model> Machine machine model (as as RK 9974-20)

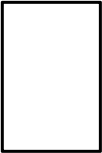
<firmware> Software version number is given (e. g. Version 1.0)

For example: WrtCmd (“ \*IDN?”);

Chapter VI Technical Parameters

6.1 Parameter Table

|  |  |  |
| --- | --- | --- |
| parameter | type | The RK 9974-20 custom version |
| AC | Output voltage range | (0.50~20.00)kV |
| maximumoutput | 400VA (20.0kV 20mA ) |
| Maximum rated current | 20mA |
| discharge waveform | Sine-wave DDS + power amplifier |
| DC | Output voltage range | (0.50~20.00)kV |
| maximumoutput | 200VA (20.0kV 10mA ) |
| Maximum rated current | 10mA |
| I R | Output voltage range | .5DC 0kV-5.0kV ± (1% + 5 words) |
| Voltage resolution | 1V |
| Voltage test accuracy | ± (2.0% reading + 2V) |
| maximum output current | 10mA |
| maximumoutput | 10VA (1000V /10mA ) |
| Resistance measurement range | 0.1M Ω100.0GΩ |
| Resistance to test the accuracy | ≥500V 0.10MΩ - 1.0GΩ ±5%  1.0G -50.0G Ω ±10%  50.0G Ω100.0G Ω ±15%  ﹤ 500V 0.20MΩ -1.0GΩ ± 10%  .01G Ω-10.0G Ω  No precision requirements |
| Discharge function | Auto-discharge after the testing has ended |
| voltmeter | scope | AC (0.50~20.00)kV DC (0.50~20.0)kV |
| accuracy | ± (1.5% + 3 words) |
| specification error | ±(1.5% + 3 words) |
| ammeter | measuring range | AC 0~20mA DC 0~10mA |
| certainty of measurement | ± (1.5% + 3 words) |
| calculagraph | scope | 0.0-999.9S OFF = continuous |
| minimum resolution | 0.1S |
| testing time | | 0.0S-999 SOFF =, continuous testing |
| Arc detection | | 020mA |
| output frequency | | 50Hz /60Hz |
| working temperature | | 0 - 40℃ ≥ 75%RH |
| power requirement | | 110/220 ±10% 50Hz /60Hz ±3Hz |
| joggle | | Standard with RS 232, USB, PLC, wireless remote control, optional LAN, RS 485 |
| screen | | 7-inch TFT, LCD screen |
| Profile volume (DHW) | | 605mm × 215mm × 440mm |
| weight | | 43.25KG |
| Random standard accessories | | Power cord RK 00004, RS 232 communication cable RK 00002,  RS 232 Turn to USB line RK 00003,16 GU disk (instructions),  USB turn square port connection line RK 00006, test line RK 00048  Wire interface transfer drive disc, high voltage test line RK 00015 |
| Choose accessories | | RK 00031 USB Turn RS 485 female serial line industrial grade connection line 1.5 meters long, upper machine |



6.2 Packing list

Shenzhen Meireike Electronic Technology Co., LTD

packing list

Machine model: The RK9974-20 custom version

The following is the packing list. Please check and check carefully after unpacking the packing. If there is any defect or damage, please contact our dealer or our company.

|  |  |  |  |
| --- | --- | --- | --- |
| name | specifications and models | unit | quantity |
| Programmed AC / DC, withstand voltage tester | The R K 9974-20 custom version | short for Taizhou | 1 |
| instructions | U tray | individual | 1 |
| Calibration report | / | portion | 1 |
| power line | RK 00004 | root | 1 |
| certificate | / | portion | 1 |
| High pressure test line | RK 00015 | twig | 1 |
| P-wire | RK 00048 | twig | 1 |
| RS232 Cable | RK 00002 | twig | 1 |
| RS 232 Turn to the USB cable | RK 00003 | twig | 1 |
| USB transfer line | RK 00006 | twig | 1 |
| RS 232 Turn to USB and drive the disc | compact disk | fix | 1 |