

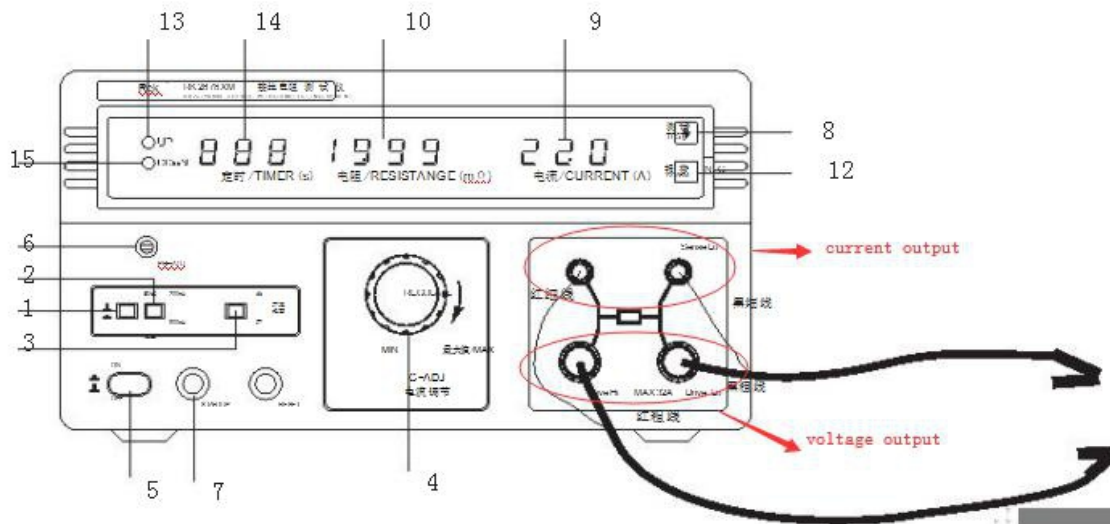


Meiruike Instruction Manual

RK2678XM Series
Grounding Resistance
Tester Manual

Shenzhen Meiruike Electronic Technology Co., Ltd

Simple operation guide for grounding resistance tester



1. before turning on the power supply, instrument panel: test/preset Ω 1,200 m / 600 m Ω 2, alarm 3, three buttons keep up, The "current" adjusting knob 4 is set counterclockwise to 0.

2. Press power switch 5, Press the preset key 1, Choose your range 2, Adjustment panel presets adjustment (RPE-ADJ) 6, Make the resistance display the alarm resistance 10 you need, after seted let "test/preset" button 1 to pop up.

3. The test wire clip is connected to the four terminals of the instrument panel by color size, At the other end, the red and black clamps are respectively connected to the test points of the measured objects, which are usually the grid electric earth and metal parts of the shell of the measured objects.

4. after connect the test line, press the start button 7 to start the instrument, the upper right corner of the panel "test" light 8 on. Clockwise adjustment The "current debugging" knob enables the current display window 9 to display the required current value for your test. After the current is stabilized, Read the resistance value of resistance display window 10, that is, the test value.

5. After the test, press reset key 11 to finish the test. The current control knob is set counterclockwise to 0.

6. If the test is unqualified, the alarm light 12 is on, the buzzer is on, press the reset key to reset.

7. Test time adjustment

*Adjust up key 13, adjust time display window 14 is the required time (maximum 999 seconds), that is, the test time is controlled by the machine.

*Adjust down key 15, the adjustment time is displayed as "000", that is, the test time is controlled by human.

Attention:

1. The following two abnormal operation will alarm

* If any key is switched during the test, the instrument will give an alarm.

*Test/preset 1 under pressed state to start the instrument

2. Open circuit alarm button is pressed to start the instrument, which will alarm in the following three situations

*No load (subject)

*Load (subject) open circuit

*The current knob is set to zero

Operating Instruction RK2678XM Series Grounding Resistance Tester(Upgraded version)

- *Any incorrect operation may cause death.
- *Please read the second chapter"the use of precautions"before using the tester.
- *The operating instruction should be placed next to the operator so that you can read it when you need it.

Instructions for use:

*Please read and understand the content described in the instructions carefully before operating tester.

After reading, please put the manual near to operator for reading when needed.

When the tester was carried from a workplace to another place.

Please carry the instructions with the instrument to prevent loss.

*If it is found that the page is missing or the Instructions is contaminated.

Please contact the dealer of the Meiruike for purchase immediately.

*With the improvement of the function of the instrument, upgrade of the software.

The instructions will also continue to be improved, upgraded.

Please note that the software of test equipment and manual version.

The instructions of RK2678XM series grounding resistance tester
(upgraded version)

Ver: 1.0-----2016.06.18

1.1-----Change parameters

1.2-----Modify the cover

In order to ensure safety, please note.

* In order to prevent the accident of electric shock, please follow the steps below.

(1) Grounding connect safely and reliably: There is a grounding terminal on the rear faceplate of this series of tester, please connect this terminal to the ground. If there is no reliable grounding connection, when the power supply and casing are short circuit will have high pressure, this is very dangerous. As long as any human contact the shell, are likely to cause the electric shock, so it must connect this grounding Terminal to earth reliably.

(2) When replacing the fuse, must be sure to unplug the power plug.

(3) When moving the tester, please unplug the power cord, so as to avoid electric shock.

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1

Unpacking and Installation of Tester

This chapter describes the basic condition of the test and installation of the tester after user received it.

1.1 Receiving instrument examination

After you receive the test instrument of the Meiruike instrument, according to the following steps to check:

- 1.1.1 Whether the packing box of instrument is intact;if damaged,we recommend that you do not carry out of the box, and connect with the Meiruike company or the distributor of Meiruike.
 - 1.1.2 If the packing box of instrument is well, please check whether the type of the instrument you ordered and the type on the packing box is consistent;if no,please connect with Meiruike company or the distributor of Meiruike.
- If after 1.1.1 and 1.1.2 examination,there are no problem,you can check out of the box of the instrument.

1.2 Unpacking inspection of instrument

Please check whether the attachment and the following list in the package you ordered is consistent,
Attachment as follows: RK-12 test line a pair (red, black)

1.3 Packing box and packing material

Please keep the original packing material in order to use it in the transportation.

1.4 Safety rules for the use of instruments

When using the instrument,please follow the safety rules:

- 1.4.1 Don't use test equipment in flammable air.

In order to prevent the explosion or burning accident occur,do not use the tester in the presence of alcohol, thinner or other combustible materials,and do not use the instrument in the air containing flammable gases.

- 1.4.2 Don't use the test instrument in the area of high temperature or direct sunlight.

The components used in the instrument are precision parts,which should be avoided used in the high temperature or direct sunlight place,it will accelerate the aging of the instrument,shorten the life of the tester,it is also possible to damage the tester.

Using temperature range of instrument: $0^{\circ}\text{C} \sim +40^{\circ}\text{C}$;

Storage temperature range of instrument: $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$;

- 1.4.3 Don't use tester in a high humidity environment.

Don't put the instrument on the boiler,kettle,humidifier or water in high humidity environment.Congeaed droplet may cause internal short circuit and damage the tester, seriously may cause fire.If the environment humidity of storage instrument exceeds specified below,the test must be dry completely before use.

Using humidity range: 20%~80%RH

Storage humidity range: less than 90%

- 1.4.4 Don't use the tester in a dusty environment.

A dusty environment may cause a short circuit in the instrument to cause a fire.

- 1.4.5 Don't put the tester on the inclined surface or use the tester in the shaking of the place.

Instruments placed on a sloping or shaking surface will make the tester fall off easily.

- 1.4.6 Don't use the tester in the sensitive test equipment or beside the receiving equipment.

If used the tester beside these devices,these devices may be interfered by the tester;in order to reduce the interference of these devices,so that these devices should be away from the tester.

- 1.4.7 The input power of the tester must have a separate switch control

The input power of the tester must have a separate switch control,once the emergency situation occurred should be cut off the power switch to deal with the accident immediately.

1.5 Operator requirements

The output voltage of the tester is sufficient to cause death, so it is necessary to be qualified personnel to operate the test instrument;

- 1.5.1 Personnel qualification

It must be operated by a skilled person to understand the basic concepts of voltage, current and resistance;

- 1.5.2 Safety specification

Operators must undergo special training,and understand all kinds of safety rules and safety regulations,read the instructions carefully before operating the tester.

1.6 Check voltage of power supply

- 1.6.1 Switching input supply voltage of instrument

This instrument use the $220\text{V AC} \pm 10\%$ (47~63)Hz single-phase power supply,before opening the power switch on front faceplate of instrument,please ensure that the power supply voltage and fuse is consistent with the voltage of the instrument faceplate which selected by switch.

Warning: in order to prevent failure or damage to the tester, please use the test instrument in the specified voltage range.

1.7 Check and replace the fuse

Warning:

- * In order to avoid the accident of electric shock, before the replacement of the fuse, please turn off the power switch and unplug the power plug.
- * Make sure that the fuse used is in accordance with the shape, size and characteristics specified in the specification of the tester. Otherwise it may damage the tester.

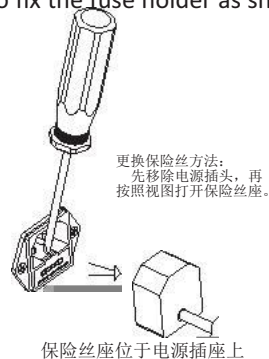
1.7.1 Fuse specifications

Type	Input voltage range	Frequency range	Fuse specifications
RK2678XM (32A)	200V ~240V	47Hz ~63Hz	5A
RK2678XM (70A)	200V ~240V	47Hz ~63Hz	10A

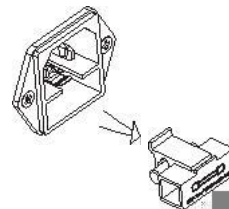
1.7.2 Fuse replacement

When replacing the fuse, please follow these steps:

- (1) Turn off the power switch on the front faceplate and pull out the power cord;
- (2) Use a screwdriver to fix the fuse holder as shown below:



更换好相同型号规格的保险丝后,重新将保险丝座安装回。



- (3) Check fuse specifications and replace the fuse to the same specifications as the fuse listed in 1.7.1;
- (4) Put the supporting frame back to the original position.

1.8 Grounding connection

Warning:

- * There may be an accident of electrical breakdown grounding connection in the wrong place or not connecting.

In order to ensure the safety, we must ensure that the instrument is grounding connection reliably; There are two ways to ensure reliable grounding connection of the instrument, please select one to connect the instruments with ground the reliably.

- (1) Connect the power cord to a power socket of three-phase grounding.
- (2) If the three-phase power supply socket is not grounded, there is a protective grounding terminal on the rear faceplate of the instrument, and connected it to the safety ground.

2

Operating considerations

This chapter describes the norms, measures and precautions must be followed by the operating instruments;please read the contents of this chapter in detail before using the instruments;

2.1 Forbidden operation

Turn off the power switch on the front panel, if you want to re open the power switch, please ensure that turn off the power switch in time a few seconds or longer. Don't switch the power switch repeat and frequently, if so, protection apparatus may not be appropriate to implement the protection function; Please do not turn off the power switch when the tester is testing the output voltage, unless it can be executed in an emergency.

2.2 Emergency handling

In case of emergency (the occurrence of an electric shock or the test object combustion), you must take the following actions: can complete (1) or (2) first, but both must be completed.

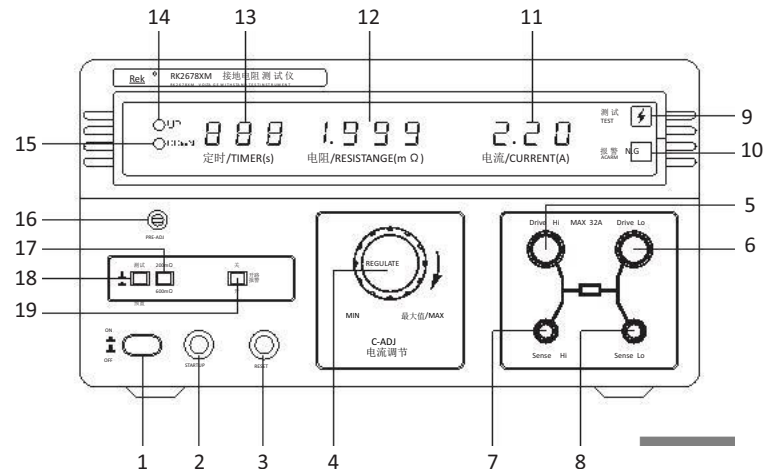
- (1) Closing the power switch of instrument;
- (2) Unplug the power cable from the power socket.

3

Description of faceplate

This chapter describes components of the front faceplate and rear faceplate of the tester, please know all the functions on the instrument faceplate before operating the instrument.

3.1 Description of front faceplate



1、Power switch

The power switch is pressed down to switch on (on)the instrument power supply,and is ejected to switch off(off)the instrument;

2、START button

Start the test key, press this button to start the test.

3、RESET button

The reset button,when testing,as the switch for stop test into the tested state;in the testing process,it also can be used as a switch to interrupt the test;when the analyte test fails,the buzzer alarm,press this button can stop the alarm tester,and enter the state to be measured.

4、Current adjustment knob

Adjust this knob to change the output current value.

5、Current output port

Composed the current output terminal of the machine with figure "6" in the current output port.

6、Current output port

Composed the current output terminal of the machine with figure "5" in the current output port.

7、Voltage sampling port

Composed the voltage sampling terminal of the machine with figure "8" in the voltage sampling port.

8、Voltage sampling port

Composed the voltage sampling terminal of the machine with figure "7" in the voltage sampling port.

9、Test indicator lamp

When testing,this lamp is light.

10、Alarm indicator lamp

When the test fails,the lamp is light.

11、Current test value display window

When testing,this window displays the value of the test current.

12、Resistance value display window

The display window shows the value of setting resistance when setting, and the test value is displayed in the testing.

13、Time display window

This window shows the setting time value and the test time value.

14、UP button

When setting the time,press this button,the time setting value will increase;

15、DOWN button

When setting the time,press this button,the time setting value will decreases;

16、Preset alarm resistance potentiometer

When the "test/preset"(18)button is pressed to the resistance of the preset state;at this time,the resistance display window shows the preset resistance value,Clockwise adjustment of the preset resistance will increases;counter clockwise adjustment of the preset resistance will decreases.

17、200mΩ/600mΩ Shift button

This button is pressed for 600mΩ files,ejected for 200mΩ files.

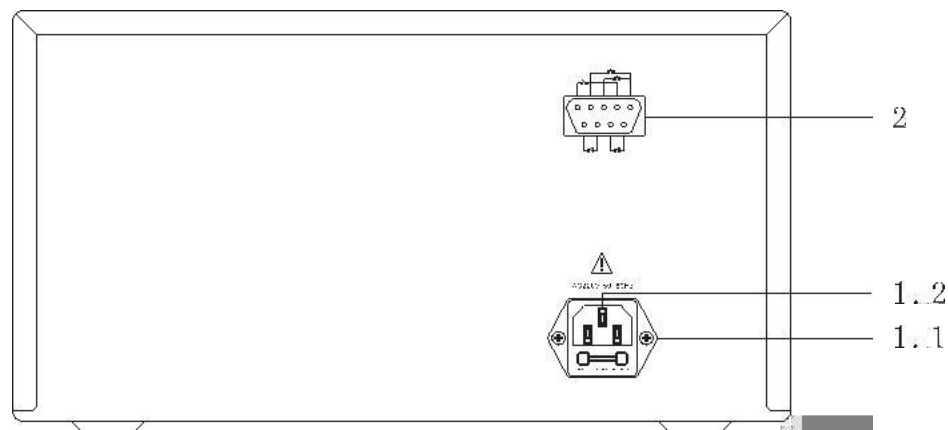
18、Test/preset button

This button is pressed to the state of the preset resistance value,ejected for the test status.

19、Open circuit alarm switch

Press for open circuit alarm;ejected for open circuit alarm off.

3.2 Description of rear faceplate



3.2.1、Input power outlet

1.1、 Three-core two-phase power supply socket.The power socket is equipped with a fuse;please refer to 1.7. about the selection of the input voltage and the replacement of the fuse.

1.2、 Power supply ground wire protecting ground port,this protecting grounding port must be connected to the protective ground reliably.Otherwise,the shell of the tester may be filled with high pressure,causing the occurrence of electric shock.

3.2.2、 PLC interface

2.1、 About the detailed description of the PLC interface,please refer to the sixth chapter.

4

Summary of instrument function

In this chapter, the function of the tester is described in detail. Please read the contents of this chapter before operating the tester.

4.1、Summary

The grounding resistance tester is used to measure the grounding resistance of the electrical equipment. It is reflected the (contact) resistance in the each exposed conductive part of electrical equipment and the total grounding terminals of the electrical equipment. Grounding resistance tester used the four end measurement to eliminate the influence of contact resistance on test, that is to plus current between the exposed conductive part of electrical equipment to be tested and the total grounding terminals (about 25A generally), and then measure the voltage at both ends, and calculate the value of the resistance. RK2678X series grounding resistance tester is designed according to the international and domestic safety standards requirements of mGB, IEC, ISO, BS, UL, JIS and so on. The grounding resistance index is one of the important indexes to measure the safety performance of all kinds of electrical equipment. Grounding circuit resistance is measured in a high current (25A or 10A) case, it is also the test of sustain the high current index of the ground circuit. In order to avoid damage to the human body in the insulation decline (or damage). The tester is developed and produced to meet the above requirements for the production workshop and the experimental department to provide high performance testing equipment. The instrument has the advantages of low power supply voltage, high measuring precision, high speed and convenient for using, and is especially suitable for the laboratory and automatic detection line. And add the alarm function (that is open circuit alarm) can be very convenient to know whether the instrument is working in the normal test condition. Users can choose whether need this function or not according to the actual needs. This instrument uses 3 1/2 digit display, the reading is convenient, using the optimized design, the whole machine has the reliability and the stability extremely. The tester is suitable for different national standards: Such as the provisions of the relevant provisions of safety standards in the general requirements of GB4706.1-1998 home application and similar electrical appliances. RK2678YM meets the medical standard requirements of GB9106.1.

4.2、Introduction of instrument function

1、Open circuit alarm

The instrument can detect the open circuit or the test clamp of the tested object and the instrument isn't connected well or the test clip and the measured object isn't clamped, and it can select if send out the audible and visual alarm according to the actual needs.

2、Over current protection

The instrument has the overcurrent protection function, when the loop current is more than 32A, the instrument give overcurrent audible and visual alarm, over current lamp stay on, buzzer sound continued, and cut off the loop current automatically, press the "reset" button to cancel the alarm state, and the "current adjustment" knob to spin smaller anticlockwise to prepare for the next measurement.

3、The resistance alarm value can adjust between 0 ~ 600m Ω .

When press the preset button, 200m Ω / 600m Ω file pop-up, the preset value can be set in 0 ~ 210.0m Ω ; when 200m Ω / 600m Ω is pressed, the preset value can be set in 0 ~ 610m Ω .

4、The test time is setted in 0 ~ 999S.

The user can set the test time according to their own needs.

5、Continuous test function

In the case of setting the time to zero, the tester can test continuity.

6、There is no need to set the alarm value in the case of the current output.

The instrument does not need to be in the case of the current output, and then reset the alarm value. It can be setting arbitrary in the case of open circuit.

7、External control

The machine is equipped with "PLC" interface, and PLC can be composed of assembly line test system (optional).

5

Technical Specifications

In this chapter, the technical specifications of the tester are described in detail.

- 5.1 Comparison table of type function
- 5.2 Technical parameter

5.1 Comparison table of type function

RK2678XM(32A)	The maximum output current of grounding resistance tester is 32A
RK2678XM(70A)	The maximum output current of grounding resistance tester is 70A

5.2 Technical parameter

5.2.1 Technical parameter of RK2678XM

Type		RK2678XM(32)	RK2678XM(70)
G R	Output current range	5.0A~32.5A	5.0A~72A
	Maximum output current	32A	70A
	The upper limit setting value of Resistance	10.0m \sim 200.0m (32A) 200m \sim 600m (10A)	10.0m \sim 200.0m (70A) 200m \sim 600m (10A)
	Output waveform	sine wave	
	Test time	0.0s~999s 0=Continuous test	
Ammeter	Measuring range	5.0A~32.5A	
	Resolution ratio	0.1A	
	Accuracy	\pm (5% reading value+5 words)	
	Display value	Root mean square value	
Resistance meter	Range	0~600m Ω	
	Accuracy	200m Ω files is less than (5% read value+2m Ω) 600m Ω files is less than (5% read value+5words)	
	Resolution ratio	200m Ω files is 0.1m Ω ,600m Ω files is 1m Ω	
	Measurement method	four-electrode	
timer	Range	0s~999s	
	Resolution ratio	0.1s	
	Accuracy	\pm 5%	
The interface of PLC		optional	

6

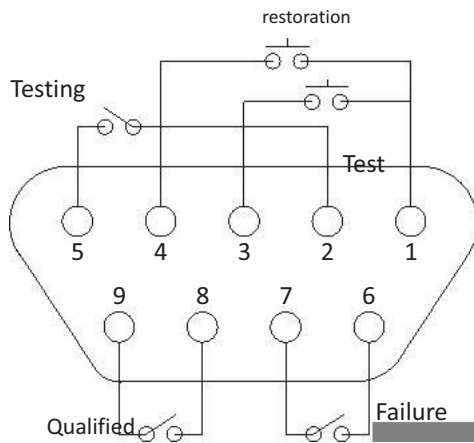
Interface of PLC

The usage of PLC interface is described in this chapter.

- 6.1 Input,output signal of PLC interface
- 6.2 Wiring
- 6.3 Connection instructions of remote control input signal and output signal
- 6.4 Electrical characteristics of PLC interface

Remote terminal on the back board of the tester,it can be connected to the remote operation.Terminal for standard 9PIND type terminal block,divided into input signal terminal and output connection terminal.

6.1 Input,output signal of PLC interface



Note:

Serial line color of optional accessories 9PIN corresponds to the serial number of DB9 as follows:

- | | |
|-----------|-------------|
| 1、 Red | 6、 Purple |
| 2、 orange | 7、 White |
| 3、 Green | 8、 Grey |
| 4、 Yellow | 9、 Blue |
| 5、 Black | Empty:Brown |

6.2 Wiring

TEST control:The control switch is connected between the PIN1 and the PIN3.

RESET control:The control switch is connected between the PIN1 and the PIN4.

Testing signal output:Between PIN2 and PIN5

Test qualified signal: Between PIN8 and PIN9

Test failure signal:Between PIN6 and PIN7.

6.3 Connection instructions of remote control input signal and output signal

The tester is equipped with a remote control point,which can be operated by the external remote control device of TEST and RESET functions.These contacts provide a power supply with a control function,the "momentary contact" switch must be used as a controller.

Special note:It can not be connected to any other power supply absolutely,if you input the other power will cause damage to the internal circuit of the instrument.

The output signal provides relay contact output.

6.4 Electrical characteristics of PLC interface

Output contact voltage: 12V AC/DC ,The maximum current:100mA

The input terminal is connected to the non-voltage control contact,null terminal voltage:< 10VDC

7

Setting of instrument parameter

The interface and parameter setting of the tester are introduced in detail in this chapter.

- 7.1 Instructions of standby interface display
- 7.2 Parameter setting
- 7.3 Adjustment of output current

7.1 Instructions of standby interface display



The information of standby interface display:

- 1、 Test time setting value: time display area display test time value which be setted.
- 2、 The upper limit alarm setting value of resistance: 150 .0m Ω
- 3、 Output current value:No current output in the test condition,the current display area is displayed as 0.0A.

7.2 Parameter setting

7.2.1 Test time setting

7.2.1.1 The preset conditions of test time

The tester must be in a reset state,that is the tester can' t be in a state of test and alarm.

7.2.1 .2 Preset method

7.2.1.2.1 Time increases

In the front faceplate has a UP button,click on this button,the time preset value plus 1;if you hold this key,preset time continuous add 1,when added to a certain value,preset time continuous add 10;until 999s.

7.2.1.2.2 Time decreases

In the front faceplate has a DOWN button,click on this button,the time preset value minus 1;if you hold this key,preset time continuous minus 1,when reduced to a certain value,preset time continuous minus 10;until 0.0s.

7.2.2 Preset value of resistance alarm

7.2.2.1 The upper limit preset condition of resistance

The tester must be in a reset state,that is the tester can' t be in a state of test and alarm.

7.2.2.2 Preset method

Press the "test/preset" button,enter the preset parameter state;the display window2 shows the resistance value is the current setting value;use the debug driver clockwise to adjust preset adjust potentiometer of resistance,preset resistance increased;adjust counterclockwise,preset resistance is reduced;set the alarm value of resistance to the required value of the test, pop up the "test / preset" button.

7.3 Adjustment of output current

When the voltage regulator knob is in the 0 place,even if start the tester,it has no current output;after starting the tester, adjust the output voltage adjusting knob clockwise,the output current increased,and reach the current required for testing.

8

Instrument test function

In this chapter, we introduce the testing function of all kinds of testing instruments.

8.1 Testing method

8.2 Testing procedure

8.1 Testing method

When testing the resistance of the tester,the four end measurement method is used to eliminate the influence of the contact resistance on the measurement accuracy.

8.2 Testing procedure

Note: please don't connect operation in boot or standby mode.

- (1) The instrument is equipped with a measuring line(two group),red group rough measuring line access the red current output terminals of tester,red group fine measuring line access the red voltage sampling terminal of tester;black group rough measuring line access the black current output terminal of tester,black group fine measuring line access the black voltage sampling terminal of tester. 。
- (2)Connect the power,turn on the power switch,the display screen light.
- (3) Setting the upper and lower limit value and testing time of grounding resistance.
- (4)Turn the current control knob counter clockwise to zero.
- (5)Press the **【START】** button, can be tested. Rotate the pressure regulating knob to make test current indicat the current value for Technical product standards specified.When you press the **【START】** button,the test flag "TEST" light.Tester start testing output current,and display the output current value,testing resistance value and test time value.
- (6)If the test time value is not set to zero,the tester timing to the time value be setted and stop the test,the test indicates that the test is qualified.
- (7)Open circuit(open circuit alarm when pressed button)
After the tester starts,if the current in the circuit is 0,then the tester is prompted that open circuit alarm,and failure lamp is light.
- (8)Excessive current alarm
If the test current is greater than 32.5A when in the test process,then the tester gives alarm(32A).
If the test current is greater than 72A when in the test process,then the tester gives alarm(70A).

Note: whether the test is qualified or not,press **【STOP】** key,you can return to the standby state and waiting for the next test.

9

Accessories and warranty

9.1 Accessories

9.2 Warranty

9.1 Accessories

1、 Power cord	1 root
2、 Test line	1 pair
3、 Instruction manual	1 copy
4、 Quality assurance	1 copy
5、 Product qualification certificate	1 copy

After the user receives the instrument,should check the contents of the box,if there is a shortage,please contact with our company or distribution unit.

9.2 Warranty

9.2.1 Warranty Period

- 1、 The use units purchase instrument from the company,calculate since the date of shipment of the company,purchase from the dtribution department,calculate since the date of shipment of the distribution unit,the whole machine warranty period of 12 months.
- 2、 The warranty period of perishable products such as accessories is 6 months.

9.2.2 Warranty

It should issue the instrument warranty card when repair.Our company provide the lifelong maintenance services for all external equipment.In the warranty period,due to the improper operation of the user and damage to the instrument,the maintenance costs will assumed by the user.

The products of Meiruike company have been approved and are being examined and approved by the Chinese patent protection.The information provided in this instructions replaces all the information that is published in the past.Our company reserves the right of change the specifications and prices.And won' t give any notice further.

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