HT9930A Ground Continuity Tester
User Manual

Safety Summary

⚠Warning ⚠Dangerous：

When you notice any of the unusual conditions listed below, immediately terminate operation and disconnect the power cable. Please Contact Hope Tech for repair of the instrument. If you continue to operate without repairing the instrument, there is a potential fire or shock hazard for the operator.

- Instrument operates abnormally
- Instrument emits abnormal noise, smell, smoke or a spark-like light during the operation.
- Instrument generates high temperature or electrical shock during operation.
- Power cable, plug, or receptacle on instrument is damaged.
- Foreign substance or liquid has fallen into the instrument.

Safety Summary

⚠Warning ⚠Dangerous：

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific WARNINGS elsewhere in this manual may impair the protection provided by the equipment. In addition it violates safety standards of design, manufacture, and intended use of the instrument.

Disclaimer	*The Hope Instruments assumes no liability for the customer's failure to comply with these requirements.*
Instrument Grounding	To avoid electric shock hazard, the instrument chassis and cabinet must be connected to a safety earth ground by the supplied power cable with earth blade.
DO NOT Operate In An Explosive Atmosphere	Do not operate the instrument in the presence of inflammable gasses or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.
Keep Away From Live Circuits	Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with the power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.
DO NOT Service Or Adjust Alone	Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.
DO NOT Substitute Parts Or Modify Instrument	Because of the danger of introducing additional hazards, do not install substitute parts or perform unauthorized modifications to the instrument. Return the instrument to Hope., LTD Sales and Service Office for service and repair to ensure that safety features are maintained.

WARNING & DANGEROUS 	**Dangerous voltage levels, capable of causing death, are present in this instrument.** **Use extreme caution when handling, testing, and adjusting this instrument.**

Statement:

hjkl & Hopeu tech mark have be applied or used.

HT9930A Ground Continuity Tester

User Manual

Simplified English

September,2011

Rev1.0.0

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CERTIFIACTION, LIMITED & LIMITATION OF UABILITY

Hope Tech certifies that this product met its published specifications at the time of shipment from the factory.

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HOPE instrument product is warranted against defects in material and workmanship for a period corresponding to the individual warranty periods of its component products. **The warranty period is 1 year and begins on the date of shipment.** During the warranty period, HOPE will, at its option, either repair or replace products that prove to be defective. This warranty extends only to the original buyer or end-user customer of a HOPE authorized reseller, and does not apply to fuses, disposable batteries or to any product which, in HOPE opinion, has been misused, altered, neglected or damaged by accident or abnormal conditions of operation or handling.

For warranty service or repair, this product must be returned to a service facility designated by HOPE. The buyer shall prepay shipping charges to HOPE and shall pay all shipping charges, duties, and taxes for products returned to HOPE from another country.

HOPE warrants that its software and firmware designated by HOPE for use with an instrument will execute its programming instruction when properly installed on that instrument. HOPE does not warrant that the operation of the instrument, or software, or firmware, will be uninterrupted or error free.

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by the Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside the environmental specifications for the product, or improper site preparation or maintenance.

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. PTE SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, WHETHER ARISING FROM BREACH OF WARRANTY OR BASED ON CONTRACT, TORT, RELIANCE OR ANY OTHER THEORY.

People's Republic of China PRC
Jiangsu Province
Hope Technologies.，Ltd
Sept. 2011

Contents

1 Security Rules

Thank you for purchasing our products! Please read this chapter carefully before using.

Following requirements and matters should be noted by pre-testing.

In this chapter, you will learn：

- General Rules
- Maintenance
- Testing Requirements
- Operator Requirements
- Test Security Procedural Requirements
- Security Points

1.1 General Rules

To ensure safety, please read instructions carefully, learning operation procedures and related safety sign.

Please select the correct input voltage (110V or 220V) specification before start the input power switch.

Danger Sign, means high voltage is outputting, No Contact!

Chassis Grounding Sign

Operations, applications and user conditions of instruments with very high risk, injuries or death maybe caused.

The voltage & current of instrument are enough to cause injury to personal, to prevent the occurrence of accidental injury or death, please observe carefully before operating before movement and using.

1.2 Maintenance

1．2．1 User’s Requirements

To prevent electric shock, non-professionals are forbidden to open the instrument cover. All internal parts are not permitted to replace. Please contact specified distributor to fix if abnormal happens.

1．2．2 Periodic Maintenance

To ensure the safety of operator and the instrument accuracy, all parts and accessories, such as input power cord, test line, etc., need to be checked and calibration per year.

1．2．3 User’s Modify Permissions

The user should not make any changes to circuit line or parts, otherwise the company’s guarantee failure and not take any responsibility for any resulted consequences.

1.3 Testing Requirements

1．3．1 Working Place

Ensure the instrument is placed where general staff cannot operate at liberty. The instrument must be isolated from the test area and production line if unable to do so, and remark “test area”. Please pay special attention if testing area is close to working place. Must indicate “dangerous, testing, non-working personal do not close to”

1．3．2 Input Power

Make the tester has a good ground before testing to ensure the operator safety. Separate switch should be installed in the entrance of test area to ensure everyone can recognize. Once an emergency occurs, turn off the power immediately.

1．3．3 Working Environment

Use a non-conductive material workbench whenever possible. Any metal cannot be used between operator and DUT. User is forbidden to operate and adjust crossing DTU. Please put the DTU in a non-conductive cabinet to test. Working place must maintain neat, clean. Put the instrument and test line in a fixed place if not use, for the operator can separate DUT, under test device and tested object. Testing environment must not contain flammable gas and flammable substances.

1.4 Operator Requirements

1．4．1 Personal Qualification

Only training qualified personal are permitted to operate, because output voltage and current is sufficient to cause personal injury or death by error operation.

1．4．2 Safety Requirement

Operators should be trained to learn the importance of various operating rules and in accordance with safety rules while operating.

1．4．3 Dressing Requirement

The operator is forbidden to wear a metal decorative clothes or jewelry and watches to avoid electric shock.

1．4．4 Medical Requirement

The tester must not be allowed to operate by person who has heart disease or wear a pacemaker.

1.5 Test Security Procedural Requirements

Forbidden to be used in charged circuit board or device!
Forbidden to touch the tested object and any connected!

The earth lead must be connected according to requirements. Connect the measured end to DUT (Device Under Test) while linking. Holding wire only can be lead into output before testing. Only insulating parts can be picked up, no gripping to conductor. Operator must be determined to be capable to operate independently, others are forbidden to control the switch and remote control switch. Put remote control switch in a fixed place.

1.6 Security Points

·Non-qualified operators and non related personnel should stay away from the test area.
·Maintain a safe and orderly state in test area.
·Forbidden to touch tested object or any connected.
·Turn off the current output and output power in case of any problems.

2 Security Rules Introductions

In this chapter, you will learn:

- Testing Importance
- Ground Resistance Testing

2.1 Testing Importance

The manufacturer must try to their best to improve the safety of instrument and avoid operator's electrical shock, even in case of error operation. Security testing is necessary to achieve general acceptance of security requirements. Present safety execution units, such as UL, CSA, IEC, BSI, VDE, TUV, and JSI etc., all require manufacturers take safety testing by grounding continuity test instrument in products design and production.

2.2 Ground Resistance Testing

Ground resistance testing is to measure contact resistance between the appliance ground wire and shell based on principles of Ohm Law, which as following, offer a current to contact point, the current and voltage values can be tested, resistance value can be calculate according to Ohm Law. If the contact resistance of the grounding line can through harsh environment test and under condition of normal use, the appliance should be security.

Every product has its own technical specifications, according to security requirements, a constant current should be offered to contact point and the current must be maintained for a required time, if the contact point resistance is maintained in a required range within required time, operation can be processed under normal conditions, proper design and construction will protect users from the threat of accidental shock.

Although you can use a general resistance meter to test the contact resistance, resistance meter only can output a low current, which can't meet the security requirements and get recognized. The user will often touch to the appliance, most of security inspection requires 25 amps, except CSA, requires 30 amps, also, current must last 60 seconds, and resistance within 100mΩ. For appliance user is not easy to touch, the specifications usually more broad, generally, 10 amps for current, and contact resistance within 500mΩ, while time is recognized as 60 seconds. In the world, there is still some specifications higher than the above criteria, take 5 times of rated input current value as test standard, while resistance of contact point still kept 100mΩ, 60 seconds test time duo to most of them belong to click type appliances with high risk.

In security requirements, contact resistance of ground wire need to be tested firstly (special requirements), only contact resistance meet ruled requirements, dielectric withstand test can be processed. This is to prevent mistaken insulation or withstand voltage is in good condition, while ground wire is not properly connected.

Ground Resistance Tester has AC & DC output form, both can test the resistance out correctly, but the destructive to poor contact point is significantly different duo to resistance value is calculated on

effective value of voltage and current, the hold effective value and peak value is the same, however, AC peak value is 1.414 times of effective valve, based on this, current value is 1.414 times of DC while in AC. In accordance with the theorem of power (power= current square * resistance), the energy generated by AC crest is 2 times of DC.

Any question, please feel free to contact us!

3 Technical Specifications

In this chapter, you will learn:

- Product Introductions
- Testing Parameters

3.1 Product Introductions

HT9930A ground continuity tester can be used to test household appliances, electronic equipment, electronic equipment, electronic components, wire, cable and other electrical products.
The instrument has function of NG/NG discriminate function, sound and alarm function and automatic time control function.

3.2 Testing Parameters

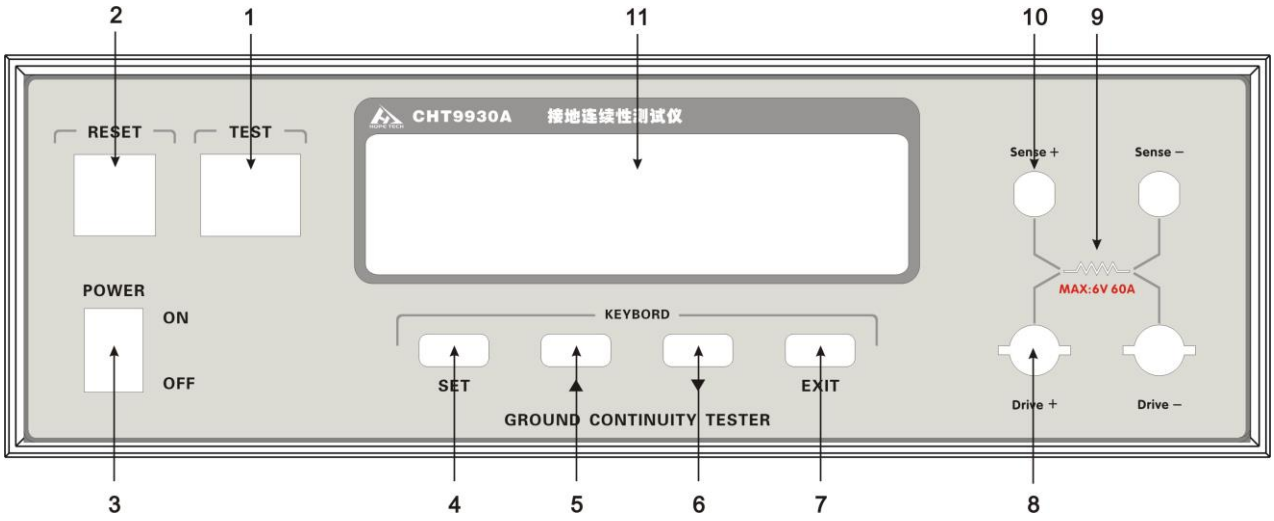
Model		HT9930A
Input	Input voltage	220VAC±10%
	Input Frequency	47Hz～63Hz
	Fuse	5A/250VAC
Output	Output Current Range	10A ～ 60A
	Output Current Accuracy	士(2% setting value +5 dgts)
	Output Current Resolution	0.01A
	Output Max. Rated Power	360VA (6V60A)
	Output Max. Voltage	6V
	Output Voltage Ripple	While full load <300mVp-p
	Current Stability	±1.0%
Current Display	Display Range	10A ～ 60A
	Display Resolution	0.01A
	Test Accuracy	士(0.5% display value+5 dgts)
Resist	Display Range	0.00uΩ ～ 600.00mΩ

	Display Resolution	0.01mΩ （600.00mΩ ～ 100.00mΩ）; 0.001mΩ（99.999mΩ ～ 10.000mΩ）; 0.1uΩ （9.9999mΩ ～ 1.0000mΩ）; 0.01uΩ （999.99uΩ ～ 0.00uΩ）;
	Test Accuracy	±(0.5% display value+5 dgts)
Resistance Upper Limit Setting	Setting Range	0 ～ 600.00mΩ （10.00A ～ 20.00A）; 0 ～ 300.00mΩ （20.01A ～ 30.00A）; 0 ～ 200.00mΩ （30.01A ～ 40.00A）; 0 ～ 150.00mΩ （40.01A ～ 50.00A）; 0 ～ 120.00mΩ （50.01A ～ 60.00A）;
	Display Resolution	0.01mΩ （600.00mΩ ～ 100.00mΩ）; 0.001mΩ（99.999mΩ ～ 10.000mΩ）; 0.1uΩ （9.9999mΩ ～ 1.0000mΩ）; 0.01uΩ （999.99uΩ ～ 0.00uΩ）;
	Test Accuracy	±(0.5% Setting value +5 dgts)
Resistance Lower Limit Setting	Setting Range	0 ～ 600.00mΩ （10.00A ～ 20.00A）; 0 ～ 300.00mΩ （20.01A ～ 30.00A）; 0 ～ 200.00mΩ （30.01A ～ 40.00A）; 0 ～ 150.00mΩ （40.01A ～ 50.00A）; 0 ～ 120.00mΩ （50.01A ～ 60.00A）;
	Display Resolution	0.01mΩ （600.00mΩ ～ 100.00mΩ）; 0.001mΩ（99.999mΩ ～ 10.000mΩ）; 0.1uΩ （9.9999mΩ ～ 1.0000mΩ）; 0.01uΩ （999.99uΩ ～ 0.00uΩ）;
	Test Accuracy	±(0.5% setting value +5 dgts)
Testing Time	Testing Time	0.5S ～ 999.9S（0.0S continuous testing）
	Time Resolution	0.1S
	Time Accuracy	±(0.1% setting value +0.05 S)
Dimension （Width*Height*Depth）		280mm×100mm×345mm
Weight		≈ 4Kg

4 Panel

4.1 Front Panel Structure

4.1.1 Front Panel Diagrammatic Drawing



4.1.2 Front Panel Introductions

1：Switch Starting
(PASS) indicator light is included in green momentary contact switch
Function: 1. Start to test voltage output
2. Green indicator light will be lit while DUT passed test

2: Reset Switch
(FAIL) indicator light is included in green momentary contact switch
Function: 1. Switch to set leave mode
2. Switch to break testing
3. Switch to exit current testing to enter next DUT state while testing is end.
4. Red indicator light will be lit while DUT not passed test

3: Power Switch
Switch of working power

4: SET Key
Function key to enter setting mode while in the state to be tested
Function key to choose test parameters while in setting mode
Function key to choose calibration parameters while in calibration mode
Function key to check testing results while in connecting test

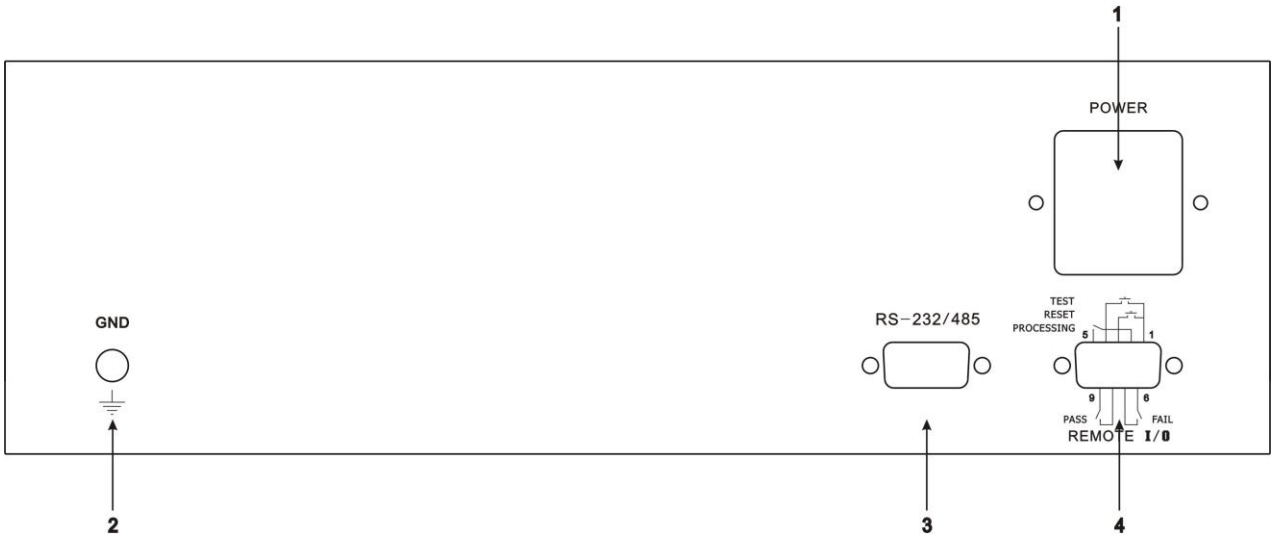
5: ▲ Key
Function key to choose parameters group while in the state to be tested
Function key to enter test parameters data while in parameters setting mode
Function key to enter standard value while in calibration mode

6:▼ Key

Function key to choose parameters group while in the state to be tested
Function key to enter test parameters data while in parameters setting mode
Function key to enter standard value while in calibration mode
7: EXIT Key
Communication key to enter setting serial port and function key to zero-setting while in standby mode
Function key to set leaving mode and save the set value while in setting mode
Function key to turn off output and save standard value while in calibration mode
8: Current output terminal
Special output terminal, which can withstand heave current within 100A, be taken as test terminal of DUT.
9: Indicator Light
Indicator light of current is lit means “voltage output, dangerous” while voltage is outputting
10: Voltage Detecting Terminal
As voltage detecting terminal of DUT
11: LCD Display Screen
16-charater * 2-line, backlit LCD display, used to display setting data and test results.

4.2 Rear Panel

4.2.1 Real Panel Diagrammatic Drawing



4.2.2 Rear Panel Introductions

1：Input Power Outlet
Standard input power outlet to supply power for instrument
2：Ground Terminal
Ground wire need to be connected in good condition to ensure the operator safety.
3：Serial Communication Port
Standard 9 PIN D-type terminal block, provide RS232 or RS485 communication
4：Remote Control Signal Terminal

Standard 9 PIN D-type terminal block, provide N.O connect point to remote monitoring signal of PASS, FALL and PROCESSING and control point of TEST, RESET

5 Operating Procedures & Steps

5.1 Operating Introductions

This series Ground Resistance Tester is mainly used to test general production line or use of quality inspection, easy operation and setting.

5.2 Operating Steps

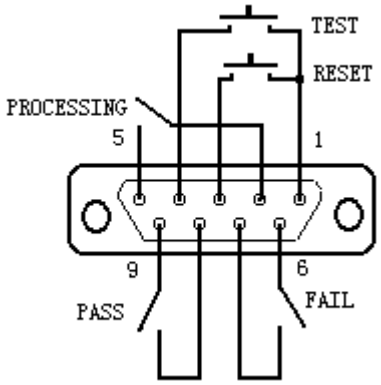
The instrument should be operated in accordance with the following steps:

1. Before the power cord is connected to the power supply, please turn off power switch, check the specification of the fuse, and connect the ground wire to the ground terminal on the rear panel.
2. Connect the power cord to instrument's power outlet
3. Test wire connection. Two thicker wire should be connected to current output terminal while the rest two connected to voltage test terminal, make sure all the test wire are in good condition.
4. Press "Power Switch" to start, the program will display the last time tested group and test parameters information automatically after showed instrument model, and entering under test and parameters setting mode. If parameters need to be reset, press key "SET", detailed steps please reference introduction of "test parameters setting"
5. Repress switch "start", current output and test indicator light lit, the time also starting counting. Do not touch DUT while testing.
6. After the test is completed, the instrument will automatically turn off the output, the green indicator light turn up on the start switch, also issued "beep" sound to confirm the test object has through the test, the display will appear "PASS" and test result data.
   If testing is need to continue, please press switch "reset" first, and then press switch "start". To view the original settings, please press switch "reset", the program will clear the test results immediately and display the original setting.
7. If you need to stop testing while it in process, press switch "reset", the instrument will stop testing immediately. Testing results will be kept. If testing need to continue, please press switch "reset" and then switch "start", testing will be started from original.
8. If DUT test failed, the instrument will stop the test immediately, the state and test value will be showed on display, meanwhile, the indicator light up on the red reset switch, warning sound "beep" also occurs. Press "reset" to turn off the beep, if testing is needed to continue, press switch "start". For displayer information, please refer to the introduction of "displayer information"
9. If you want to use an external remote control unit to operate the tester, please make it connected to remote control input terminal on the rear panel. Function keys "TEST" & "RESET" are t he same as the one on front panel. Function keys "TEST" & "RESET" can be operated simultaneously, make sure the remote control is safekeeping to avoid accidents.
10. The instrument has monitoring signal output, including PASS, FAIL. PROCESSING. These signal can be passed to control center to achieve remote signal monitoring.

6 Remote Control Input & Output Signal

6.1 Input & Output Signal

With remote monitoring and remote terminals on the rear panel, it can make working status connected to the monitoring center to monitor and connect remoter control to operate. The terminals are standard 9 PIN D type terminal block, which contain three monitoring signal output, including PROCESSING, PASS, FAIL and two remote control input signal, including TEST and RESET



6.2 Output Signal Wiring & Introduction

This tester provides three normal open (N.O.) contact signal, which provided by the instrument's three relay contact with capacity of AC125V 0.5A/DC65V 0.3A. The N.O. doesn't have restriction of positive or negative, each one is independent, no common ground wire. Pin numbers are marked on the terminal blocks, output signal connecting as following:
PROCESSING Signal: Connect between PIN2 & PIN5
PASS Signal: Connect between PIN8 & PIN9
FAIL Signal: Connect between PIN6 & PIN7

6.3 Input Signal Wiring & Introductions

The instrument is equipped with a remote control contact; function key "TEST" & "RESET" can be operated by external remote control unit. "Momentary Contact" is required as controller. Any other power is forbidden to connect, otherwise, internal circuit will be damaged. Pin number is marked on terminal block. Connecting as following:

1. TEST Control: Connect between PIN1 & PIN4
2. RESET Control: Connect between PIN1 & PIN3
3. PIN1 is common ground wire of remoter operation circuit

7 Testing Parameters Setting & Display

7.1 Test Parameters Introduction

After power up, the program will automatically enter the parameters set last time before the instrument turn off. The display will show:

Note：

SET：Prompt information, being tested or parameters setting state

Variable Declaration：

MX：Parameter group (1-3)

XXX.X S：Testing time

XX.XX A：Output current value setting

XXXXXXXΩ：Ground resistance up limit value setting

(Following variable the same as above)

Key “SET” is used to parameters setting, while in mode of be tested and parameters setting:

Press “SET”, parameters setting will enter next parameter’s set item.

Press “EXIT”, the set parameters will be saved in the memory automatically.

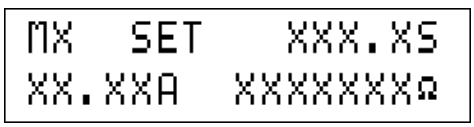
Press “RESET”, the setting is invalid.

Test parameters will be kept even power turned off, only artificially re-set can clear

“▲”is worked as operation key to group choose while “▼”is used as enter key to parameters value setting. Press “▲”, digital will increase while pressing“▼”, the cursor left shift. If you do not need to re-set all parameters, press “EXIT” to leave parameters setting mode. Program will enter under test mode automatically; test parameters will be stored in the memory. Unreasonable setting and enter are not accepted. In following parameters setting description, “X” represents any number between 0-9.

7.2 Testing Parameters Setting

After power up, the program will automatically enter the parameters set last time before the instrument turn off. The display will show:



1. Group Setting

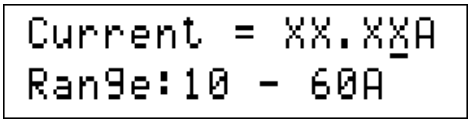
   Press “▲” or“▼”, the program will display the last or next group parameters setting. Parameters setting take “SET”-key as parameters item option key, press “SET”, the program will enter next parameter item. Setting sequence as following:

   Output current setting

High-limit grounding resistance setting
Low-limit grounding resistance setting
Testing time setting
Open-circuit alarm setting
Connect test setting

2. Output Current Setting

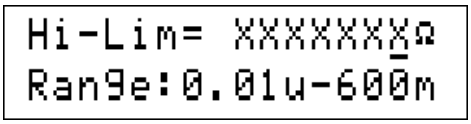
Press “SET”, the program will enter test mode option automatically; press “▼”, the display will show:



Use button “▲”or“▼”to enter output current value

3. Hi-Lim Grounding Resistance Setting

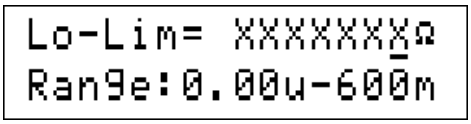
After output current setting is completed, press “SET”, the program will enter high limit grounding resistance setting mode, press button “▼”, the display will show:



Use button “▲” or “▼”to enter needed high limit value

4. Lo-Lim Grounding Resistance Setting

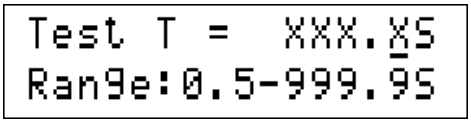
After hi-lim grounding resistance setting is completed, press button “SET”, program will enter lo-limit grounding resistance setting mode, then press “▼”, the display will show:



Use button “▲” or “▼”to enter needed low limit value

5. Test Time Setting

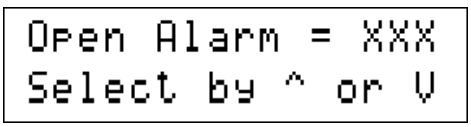
After low-lim grounding resistance setting is completed, press button “SET”, program will enter test time setting mode, then press “▼”, the display will show:



Use button to enter test time value, in second, while time setting is “0.0”, test will continue, unless DUT test fail or stopped by operator.

6. Open Alarm Setting

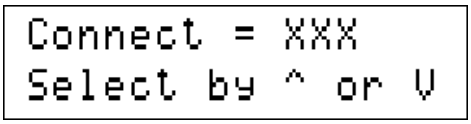
After test time setting is completed, press button “SET”, program will enter open alarm setting mode, and then press “▼”, the display will show:



Use button “▲” or “▼”to enter needed setting, “YES” or “NO”

7. Connect Test Setting

After open alarm setting is completed, press button “SET”, program will enter open connect test setting mode, and then press “▼”, the display will show:



Use button to choose connect test “YES” or “NO”. if “YES”, next group testing will continue after this test, maximum is 3 times. If “NO”, the testing will be end automatically. While connecting test set is “YES”, symbol “_” will be displayed in the end of the group, means next group testing is going.

This is the last step of parameters setting; you can press the “SET” button to return to the first parameter setting procedure, “EXIT” to save the data while “RESET” means data not save. One leaving parameters setting mode, program will enter present group test parameters and ready to test.

7.3 LCD Information

Various types of information will be showed by display while in testing, specifications are as following:

1. Under test and parameters setting mode（SET）

Following information means instrument has under test and parameters setting mode of AC/DC withstand voltage or insulation resistance

Press “START”, the instrument is ready to test, press “SET” to enter parameters setting mode.

2. ABORT

While testing is processing, press “RESET” or remote control unit to abort, the display will show:

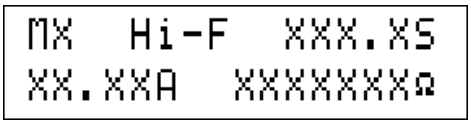
Press “RESET” to enter under test; press “START” to test

3. Grounding Resistance Test (TEST)

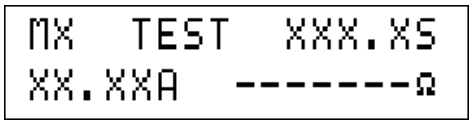
While testing, the test result will be updated and display continuously

4. Grounding Resistance Hi-limit Fail (Hi-F)

If resistance value over hi-limit value, program will judge the test fail duo to resistance value. Test will continue if resistance value within hi-limit. The display will show while test failed:

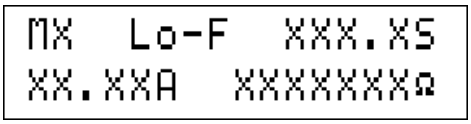


While resistance value over the hi-limit resistance value, the display will show:



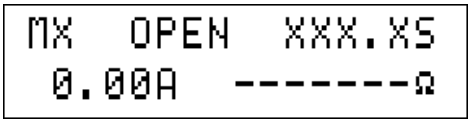
5.Grounding Resistance Low Limit Fail (Lo-F)

If resistance value over lo-limit value, program will judge the test fail duo to resistance value. Test will continue if resistance value within lo-limit. The display will show while test failed:



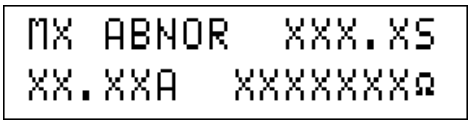
6. Open Alarm

If test failed due to the instrument detected output current is open circuit, the display will show:



7. Abnormal Alarm

If test failed due to voltage detection line connect in bad condition, the display will show：

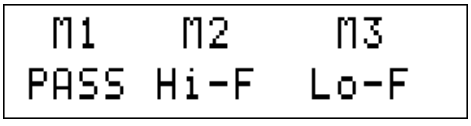


8. PASS

If test passed, the display will show:

9. Listing Display

If connecting test is set “YES”，the program will enter next group test automatically, maximum connecting is 3 times, while the test end normally, the display will show:



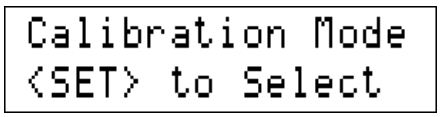
First line is to display test group and test mode, take M1, M2, M3 for example, means group 1, group 2, group 3; Second line is to display corresponding test result. Please press “SET” to check results of every group, press “RESET” to exit, test result will not be saved after exit.

8 Calibration Procedures & Steps

The instrument has been calibrated at factory according to national standard, accuracy can meet national requirements. The instruments need to be calibrated every one year to ensure the accuracy.

8.1 Into Calibration Mode

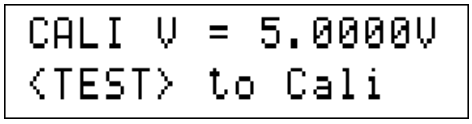
Press “SET” button first, and then start instrument power switch, the display will show:



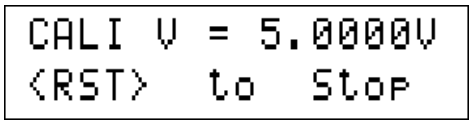
While the instrument enters operation interface, release the button. Press “SET” to choose parameters needed to calibrated, including voltage 5.0000V、500.00mV、50.000mV, current 30.00A

8.2 Voltage 5.0000V Calibration

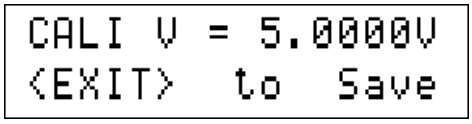
Press “SET”， program will enter voltage 5.0000V calibration mode, the display will show:



Plus a voltage of 5V to “Sense+” & “Sense-”, and then connect a standard voltage meter, press “START”， the display will show:



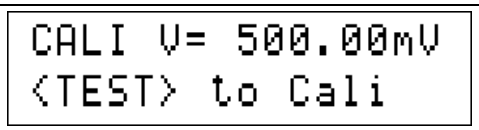
After stable of the data, use button“▲” or “▼” to enter standard voltage to calibration program, press button “▲”, digital plus, press “▼”, digital minus, and unit is V. Before pressing “RST” to turn off output voltage, please make sure the digital is right.



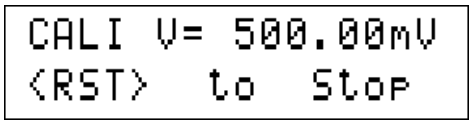
Press button “EXIT” to save entered data

8.3 Voltage 500.00mV Calibration

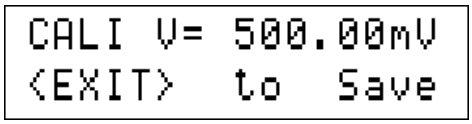
Press “SET”， program will enter voltage 500.00mV calibration mode, the display will show:



Plus a voltage of 0.5V to “Sense+” & “Sense-”, and then connect a standard voltage meter, press “START”， the display will show:



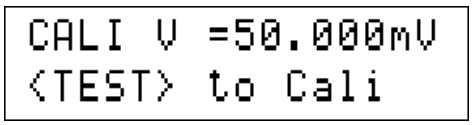
After stable of the data, use button“▲” or “▼” to enter standard voltage to calibration program, press button “▲”, digital plus, press “▼”, digital minus, and unit is mV. Before pressing “RST” to turn off output voltage, please make sure the digital is right.



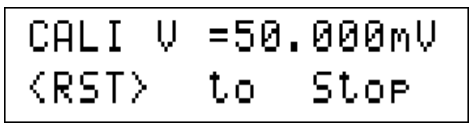
Press button “EXIT” to save entered data

8.4 Voltage 50.000mV Calibration

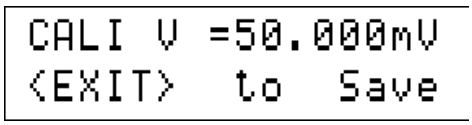
Press “SET”， program will enter voltage 50.000mV calibration mode, the display will show:



Plus a voltage of 0.05V to “Sense+” & “Sense-”, and then connect a standard voltage meter, press “START”， the display will show:



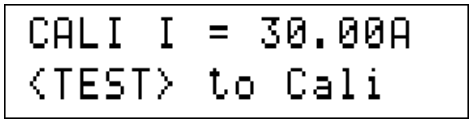
After stable of the data, use button“▲” or “▼” to enter standard voltage to calibration program, press button “▲”, digital plus, press “▼”, digital minus, and unit is mV. Before pressing “RST” to turn off output voltage, please make sure the digital is right.



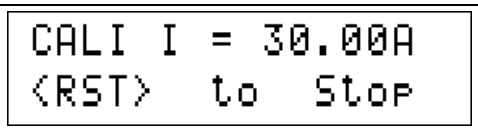
Press button “EXIT” to save entered data

8.5 Current 30.00A Calibration

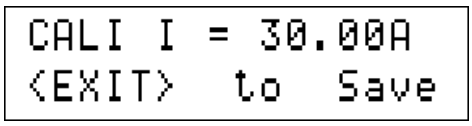
Press key “SET”， the program will enter current 30.00A calibration mode, the display will show:



Please connect standard heavy current to between of “Drive+”&“Drive-”of the instrument. Press key “Start”, the calibration program will output current about 30A automatically, the display will show:



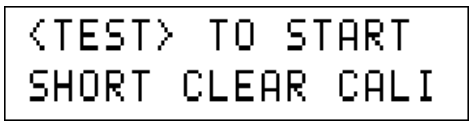
After stable of the data, use button“▲” or “▼” to enter standard voltage to calibration program, press button “▲”, digital plus, press “▼”, digital minus, and unit is A. Before pressing “RST” to turn off output voltage, please make sure the digital is right.



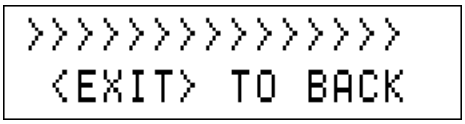
Press button “EXIT” to save entered data

8.6 Zero-setting Calibration

Press key “SET”， the program will enter zero-setting calibration mode, the display will show:



Make “Sense+”、“Sense-”、“Drive+” & “Drive-” empty connection, and then press “Start”, the display will show:



Press button “EXIT” to end.

10 Maintenance Guide

9.1 **Routing Maintenance**

1. Use environment should be well ventilated, dry, no dust and no strong electromagnetic interference.
2. If the instrument is not used in quite long time, it should be charged on a regular basis. Usually once a month, and time cannot less 30min.
3. The instrument should be turn off over 10 minutes after working 8 hours later to keep a good work condition.
4. Test line may not in good connection or disconnection after long time use, please maintenance in regular.

9.2 Simple Failure Handling

Fault	Handing Method
After startup, no display, the key is not response	Please check whether the power is normal and the fuse
After startup, indicator does not light, but has test current	indicator bad
Test Failed, but alarm indicator does not light	Alarm indicator bad

If faults cannot be fixed, please contact us!

9.3 Quality Assurance

We assure the products we manufactured all have passed our confirmation. Guarantee period is two years. During this period, we will be free to offer repair.
For the products which modified by the user or exceed the quality assurance of products, we will charge maintenance.