



Meiruike Instruction Manual

71 SERIES PROGRAM-CONTROLLED
WITHSTAND / INSULATION
VOLTAGE TESTER

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Safety requirement

1.1 Regulation

This machine is the referenced specification for Safety of the regulation of Class I (the body's protective earthing terminal). Before open the machine power switch, please make sure the input power (220 v or 110 v input) specifications

1.2 Maintenance and service

1.2.1 The maintenance from the user

In order to prevent electric shock accident, please don't open the lid of the machine. This machine all internal components, absolutely don't need the user's maintenance. If the machine has abnormal situation occurs, please seek the help of this unit or the designated distributor.

1.2.2 Periodic maintenance

This tester input power cords and related accessories please examined and verified once a year at least, in order to protect the user's safety and the accuracy of the instrument.

1.2.3 The user's modification

Users may modify the instrument by line or parts, if being changed, the machine warranty is void automatically, and not take any responsibility. Use any parts without our factory recognition also can't get any warranty from us. If found back to the overhaul of instrument has changed, we will repair the instrument designed for the original state, and the repair charge.

1.3 Instrumentation

1.3.1 Working position

Instrument should be placed on special test place, make the non-working personnel away from the test sites. Test, non-working personnel do not close to the test site.

1.3.2 Input power

This tester is must have a good grounding,, to ensure the safety of personnel. The power of the test facility must have a separate switch device in test site entrance conspicuous position, and to the special mark.

1.3.3 Workbench

Use insulation material of the workbench.

1.3.4 work environment

Test location must keep tidy and clean. And can distinguish the test line of each test equipment, tester, and the measured object under tester. The test site and the surrounding not contain flammable gas in the air, flammable or corrosive gas.

1.4 Operator rules

1.4.1 personnel qualification

Operators must be trained and qualified personnel, to ensure that the instrument is used correctly and the safety of the operator.

The instrument must not let staff have heart disease or wear heart rhythm regulator operation.

1.4.2 Dress rules

Operators must not wear clothes with metal decorations or wear a gold bracelet and watches, the metal is easy to cause accident of electric shock.

1.4.4 Safety requirement

Must not be used on electric circuit or electric equipment

Instrument ground wire must be in accordance with the provisions after completed. On the test line to pick up on the tester back route (Return Lead) receives the object under test, only can be high pressure test in the test line inserted into the high voltage output terminals. When take high pressure test line, absolute can't close to the conductive body, and should take on the insulator. If contact with earth or the earth object under test, may cause unable to measure the current situation.

1.4.5 Please pay attention to the following safety points fully

- Not qualified operators and irrelevant personnel should move away from high pressure test
- Keep high voltage test area in the safe and orderly state
- Absolute can't touch in high voltage test and test objects and

connected to test content objects.

- Accident happens, please immediately shut off the instrument working power supply.
- After the dc voltage withstand test , to properly discharge , then remove the test content.

Safety introduced

2.1 The importance of the test--- the safety of the user

In consumption meaning increasingly sound in the world today, each of the electrical equipment and electronic products manufacturers, must try my best ability, the safety of the products will do a good job. Each product design must do all it could not let the user have the possibility of electric shock, even a user error use should be no risk of electric shock. In order to meet the safety requirements of generally accepted, "withstand voltage tester" must be used. Current safety execution units, such as UL, CSA, IEC, BSI, VDE, TUV, Ken and JSI requires each manufacturer in the design and production of electrical or electronic products to use "withstand voltage tester" as a test of security testing instruments.

2.2 Dielectric Withstand Voltage Test

To make a product can be in a very bad environment also can running normal, from development to production the multistage to spread to various performance tests. The most commonly used to withstand voltage test:

- Design of functional test--Determine the designed products can

achieve its function requirements of conditions.

- Production of the specifications of the test--Make sure that the production of products can meet the specifications of the standard.
- The product may also confirm the test--Confirm the quality of the product to meet safety standards.
- The safety test after maintenance--Confirm the repaired products can maintain in accordance with safety standards.

Different products have different specifications, basically in the withstand voltage test is to a higher than normal work voltage and test on the product, the voltage must be certain specified duration. If a zero, components within the prescribed period of time test, the leakage current can keep within the prescribed scope, can think this zero, components under the condition of normal operation is safe. And excellent design and choose a good insulating material can protect the user from accidental electric shock..

The instrument of withstand voltage test, generally referred to as "high voltage dielectric test", the provisions of the basic is twice the working voltage of the object under test, add a kv, as a standard test voltage. Some products of the test voltage may be higher than $2 \times$ + working voltage 1000 v. For example, some product range of working voltage from 100 v to 240 v, this kind of product of the test voltage may be

higher than 1000 v or 4000 v or higher. In general, with "insulation" design of the product, its use of the test voltage may be higher than 2 x working voltage 1000 v + standard.

Withstand voltage test in the design of the product and the sample is more precise, because product in testing the safety of multistage has decided the product design. Although during product design just with a few samples to judge, but at the time of production test should be for all the products must be strictly can pass the gauge standard, can confirm that no bad products will be out of the production line

Withstand voltage tester is the output voltage must be kept within the prescribed voltage within the range of 100% to 120%.AC Withstand voltage tester is the frequency of the output voltage must be maintained between 40 and 70 Hertz, while its crest value shall not be less than 1.3 times of the root mean square (RMS) voltage, and its peak value shall not be higher than 1.5 times of root mean square (RMS) voltage value.

2.3 Advantages and disadvantages of AC and DC

Please make sure the corresponding safety unit to the tested product is allowed to use for the ac voltage or dc voltage, ac voltage as required. Some products which can use ac voltage test, also can use dc voltage test, then the manufacturer can be used according to the product characteristics to determine ac voltage or dc voltage testing, users must know the advantages and disadvantages of these two kinds of test voltage.

2.3.1 The characteristics of the ac withstand voltage (ACW) test

Most do withstand voltage test products will have some stray capacitance, using ac test will have a continuous capacity current through the stray capacitance.

2.3.1.1 The advantages of ac withstand voltage (ACW) test

1. In general, the communication than dc testing more easily accepted by safety unit. This is because most of the products are using alternating current (ac) and ac test can be both positive and negative polarity of product testing, and product use environment completely consistent, conform to the actual usage

2. Unless the product particularly sensitive to impulse voltage, or slow standards require booster, with communication test can exert full voltage directly from the start.

3. Communication generally don't have to wait for discharge after test.

2.3.1.2 The shortcoming of AC test

1. If stray capacitance of a lot of the object under test or a capacitive load when the object under test, tests of current will be greater than the actual leakage current, and therefore not privy to the actual object under test the leakage current.

2. Another disadvantage is that as a result of the test equipment needed to supply the stray capacitance current, so the instrument to supply current is larger than take to test the dc current. Sometimes need a big power instrument to test properly

2.3.2 The characteristics of dc voltage withstand (DCW) test

In dc voltage withstand test, stray capacitance of the object under test will be charged and capacitive current will eventually be reduced to zero.

2.3.2.1 The advantages of dc voltage withstand (DCW) test

1. Once the stray capacitance of the object under test is fully charged, the leakage current of the object under test will remain. So the dc withstand voltage test can clearly show the actual leakage current of the object under test

2. Because only in a short period of time providing stray capacitance charging current, the rest of the time needed for current is very small, so the power of instruments is far lower than the ac withstand voltage test instrument of power

2.3.2.2 The defect of dc voltage withstand (DCW) test

1. Unless there is no capacitance on the object under test or the test voltage must begin from "zero" slowly rising, in order to avoid charging current is too large, the greater the capacitance of the required rise slowly, the longer time can increase the voltage is lower. Charging current is too large will cause the misjudgment of tester, the test result is not correct.

2. The DC withstand voltage test will be measured charging treat, so in the test, you must first measure the object to discharge, and then to do the next work.

3. And the AC withstand voltage test is not the same, DC withstand voltage test can only do single polarity test, if the product is to be used in AC voltage, this defect must be

confiscated to consider. This is the most safety unit are recommended to use AC withstand voltage tester.

4. When the ac voltage withstand test, voltage wave voltage value is 1.4 times of the indicated value, so most safety unit is required, if the use of dc voltage withstand test, must improve the test voltage to the equal value

2.4 Only withstand voltage test can detect the following situations

- Insulation dielectric strength is too weak
- The distance between the parts and components is not enough
- On insulator have gas pore
- Insulators by extrusion rupture

Acceptance inspection

3.1 Opened and checked

This product is packed in a packing box, use foam to protect the packing if received is broken, please check whether the appearance of the instrument deformation, scratches, or panel damage, etc. If there is damaged, please immediately notify the unit or its dealers. And please keep the packing cases and the foam, in order to understand the causes. Our service center will help you repair or upgrade. Before fails to notify the unit or the dealer, please do not immediately returned products.

3.2 Get ready for the use

3.2.1 The input voltage of the requirements and choice

71 Series resistance voltage tester using 220 v or 110 v AC + / - 15%, 47 hz - 63 hz single-phase power supply. At the same time must use only a fuse of the correct specifications. Replacing the fuse, turn off the power supply and remove the input power, in order to avoid danger.

Attention! ! ! The instrument using fuse for 3 a fast fuse type

3. 2. 2 The input power requirements

Before plugged into a power supply, you must first make sure that the ground wire power cord is completed, will also ground earthing terminal from the body. Instrument on the power plug can only be inserted on the power supply with ground wire. If you use the extension, must pay attention to whether the extension cord with a ground wire, withstand voltage test instrument is the use of three core power. When the power cord plug into the socket with ground wire, both completed the body ground.

3. 3 Environmental conditions of use

Temperature : 0°C—— 40°C (32°F—— 104°F)

Relative humidity: 0 —— 80%RH.

High degree : At an altitude of 2000 meters (6500feet)

3.4 Storage and transportation

71XX Series Storage and transportation:

ambient temperature.....-40 to -+75 %

altitude.....7620 meter (25000 feet)

The machine must avoid a sharp change of temperature, rapid temperature change may cause water condensation within the body.

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specifications

4.1 71Series of technical specifications

Mode I	
7122	AC/DC Withstand Voltage/Insulation Tester
7120	AC/DC Withstand Voltage Tester
7112	AC Withstand Voltage/ Insulation Tester
7110	AC Withstand Voltage Tester

4.2 technical specification

Function / Model	7122	7120	7112	7110
Input properties	single-phase 47-63HZ, 115V/230V AC $\pm 15\%$ Optional			
AC withstand voltage test	Extra output : 5KV AC, AC 12mA			
Output frequency	Range : 50Hz/60Hz Optional			
Output ripple	Sine wave THD <2%(Crest Factor)> 1.3 <1.5			
Upper limit setting	Range: 0.10--12.00mA Resolution: 0.01mA/Step Precision: \pm (2%Set value+2Counts)			
Lower limit setting	Range: 0.00--12.00mA Resolution: 0.01mA/Step Precision: \pm (2%Set value+2Counts)			

DC withstand voltage test	Rated output : 6KV DC 5mA	NO
Ripple	< 5% measured under 6kV / 5mA resistance load	
Upper limit setting	Range:0.02--5.00mA Resolution:0.01mA/Step Precision:± (2%Set value+2Counts)	
Lower limit setting	Range:0.00--5.00mA Resolution:0.01mA/Step Precision:± (2%Set value+2Counts)	
Voltage setting (AC/DC)	Range:AC:0.00--5.00KV DC:0.00--6.00KV Resolution:10V/Step Precision:± (2%Set value+5V)	
Voltage stability rate	± (1%Set value+5V) No load to full load	
Slow rise	Range : 0.1--999.9s , 0.1s/Step	

time		
Test time	Range : 0.2--999.9s , 0.1s/Step 0=continuity	
ARC Detector	Range:Level 1-9 can be set	
voltmeter (AC/BC)	Range:AC:0.00--5.00KV DC:0.00--6.00KV Resolution:0.01V/Step Precision:± (2%Set value+1Counts)	
ammeter (AC/BC)	Range:AC:0.00--12.00mA DC:0.00--6.00mA Resolution:0.01mA/Step Precision:± (2%Set value+1Counts)	
Automatic discharge	Maximum discharge capacity with discharge time of 200ms 0.2μTime input voltage≤1KV 0.1μTime input voltage≤2KV 0.05μTime input voltage≤ 4KV 0.04μTime input voltage≤ 5KV 0.015μTime input voltage≤ 6KV	NO

Note: * Precision range:0 — 11mA AC

0 — 4mA DC

insulation resistance test	7122/7112
input voltage setting	range:0.10 — 1.00kVDC Resolution: 0.1kV/Step accuracy: $\pm (2\%+2V)$
Display of voltage	range: 0.00 — 1.00kV Resolution: 0.01kV/Step accuracy: $\pm (2\%+1\text{Count})$
Display of high resistance	range: 1 — 1000M Ω accuracy: $\pm (5\%+2\text{Counts})$ at voltage $\geq 500\text{VDC}$ $\pm (7\%+2\text{Counts})$ at voltage $< 500\text{VDC}$
Test time	range: 0.5 — 999.9S 0=continuous resolution: 0.1S/Step
upper limit	range: 1 — 1000M Ω resolution: 1 M Ω /Step accuracy: $\pm (5\%+2\text{Counts})$ at voltage $\geq 500\text{VDC}$ $\pm (5\%+2\text{Counts})$ at voltage $\geq 500\text{VDC}$
lower limit	range: 1 — 1000M Ω resolution: 1 M Ω /Step accuracy: $\pm (5\%+2\text{Counts})$ at voltage $\geq 500\text{VDC}$ $\pm (7\%+2\text{Counts})$ at voltage $< 500\text{VDC}$

model	7122	7120	7112	7110
interface	input: Test Reset / output: Pass Fail Test — in — Process			
Test instrument failure alarm	Buzzer, LCD display "FAIL", designator light			
remembered group	5 groups of memory, each group of 4 kinds of test mode (W , I , W — I , I — W)			
Safety lock keyboard	Can choose to "lock" or "not locked" two modes			
LCD	16x2 Dot matrix, backlight type			
Calibration	Software calibration			
working environment	environment temperature: 0 — 40°C humidity; 0 — 80%RH			
size	89x280x390			
weight	9kg			

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4.3 Standard Accessories

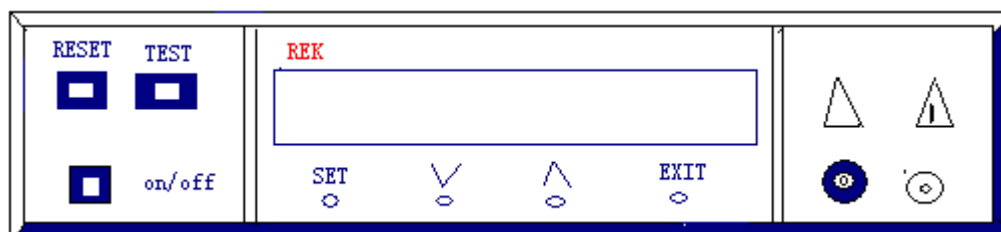
1101	High Voltage Test Lead

1102	Return Test Lead
	Power cord 1
	Instruction manual 1
	Product certificate 1
	Calibration certificate 1

4.4 (OPTION) —— For the user choose

1112	Hipot /insulation resistance test fixture (for Electronic finished product)
1124	71/7305Backplane remote connection
1125	High Voltage Test Probe
1110	(Remote Test/Reset Controller)

5.1 Panel shows



1 Input power switch

"1" (ON) and "0" (OFF)

2 (RESET)

Red transient contact switch, at the same time, it contains FAIL indicator. In its function is the same as the EXIT button when setting mode, set the mode switch can be used as a left. During the test, as a closed warnings to the next state of the switch under test. In the test, can also act as interrupt the switch of the test. In failing to pass the test object under test, the red indicator light is bright.

3 (TEST)

Red transient contact switch, at the same time, it contains PASS light, as the starting switch test. In the tested object pass test, the green will bright lights.

4 (SET)

As choose to enter setting mode and the choice setting project operation keys.

5 (V) DOWN

In setting mode as a numerical input parameters of the function keys.

6 (^) UP

In setting mode as a numerical input parameters of the function keys.

7 (EXIT)

As leave the setting mode of function keys.

8 high voltage output (H.V.)

Test the power supply output terminals, can withstand the 6 kv voltage.

9 " (TEST ON) " indicator light

When the instrument to output, "TEST ON" indicator light flashing.

10 Low-voltage test (RETURN)

Loop current terminal

11 LCD display

16 words x2 line backlit LCD, as a display display setting data or test results.

5 . 2 The back shows

1 Cooling Fan

Must keep more than 15 cm distance with other objects.

2 SIGNAL OUTPUT

Is a standard 9 PIN type D, terminal to provide "normally open" (N.O.) contact to PASS, and FALL and TEST, RESET the control input signal.

3 The input power socket

Standard IEC320 power socket, can accept the standard NEMA power plug.

4 Input power fuse holder

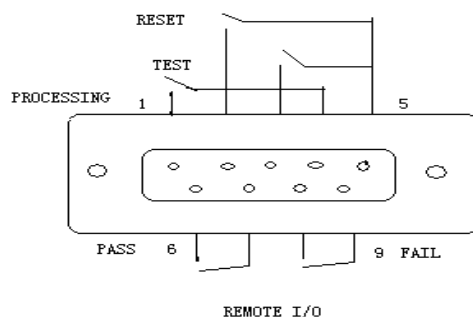
Turn off the input power switch and unplug the power cord to replacing the fuse, and should be replaced standard specifications of the fuse.

5 (EARTH)

Instrument grounding terminal, please be sure to answer the grounding line to ensure the safety of operating personnel.

Remote control input and output signals

In this series on the tester, comes with a remote monitoring and remote control terminal, it can be the instrument working condition to the monitoring center as a monitor, and can be connected to the remote control to operate. The terminal for the standard 9 PIN type D terminals, contains PROCESSING (in the TEST execution), PASS TEST (through), FAIL (failure) and other three monitoring signal output and the TEST, RESET the second remote control signal input.



6.1 Remote control output signal wiring and instructions

71 series Provide without the power of "normally open" (N.O.) contact to the above three signals. Contact has a capacity of AC 125 v 1 a/DC 30 v 2 a, these contacts without the restrictions of the positive and negative polarity, and each signal is independent connection, no public connection (COMMON). A number of labeled terminal seat with foot,

output signal wiring is as follows:

- 1 PROCESSIN signal : The output signal between the PIN1 and PIN4.
- 2 PASS signal : The output signal between the PIN6 and PIN7.
- 3 FAIL signal : The output signal between the PIN8 and PIN9.

6.2 Remote control input signal wiring and instructions

71 series Have the remote remote control contact, can by an external remote control operation instrument TEST and RESET function. These contacts provide has the function of power control, must use the "instant contact (MOMENTARY)" switch as the controller. Please pay special attention to, absolutely cannot access any other power supply, if input other power, will cause the instrument damage action of the internal circuit. Terminal with the foot on a number, PIN5 for remote operation circuit COMMON ground (COMMON), the detailed wiring is as follows:

- 1 RESET control : Control swith between the PIN2 and PIN5.
- 2 TEST control : Control swith between the PIN3 and PIN5.

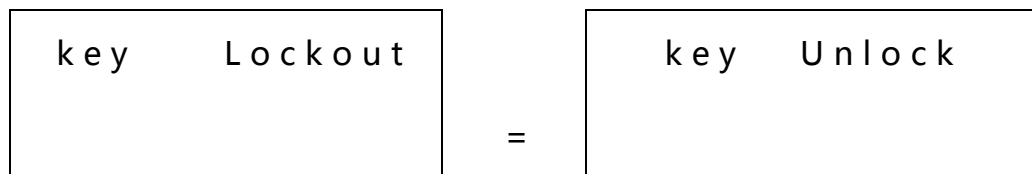
Note: the remote control and the operation of the voltage resistance tester can be done at the same time, to avoid accident, the remote control must be properly kept by the operating personnel.

7. Keyboard lockout

To prevent the operator arbitrarily change test parameters, the 71 series voltage resistance tester is equipped with a keyboard lock function, please follow the following procedure for keyboard locking and unlocking.

- 1 Press 'set' and 'v' at the same time and then power on

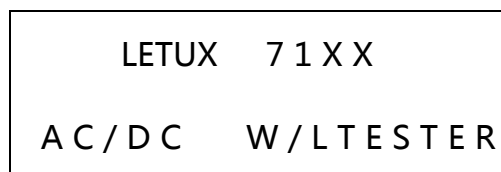
LCD display:



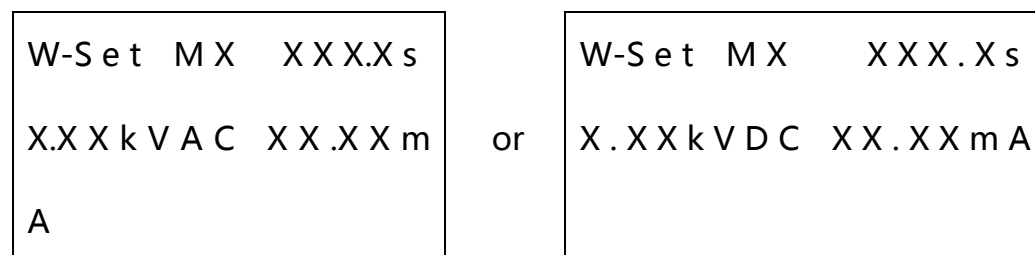
- 2 By the "add" key or "reduce" button to change the keyboard locked. Set the state will be saved in the memory.

- 3 After keyboard locked, panel in addition to the TEST and the RESET switch, all the rest of the buttons will not work.

After a short time later, the program will automatically enter the boot mode :



Then the program into under test mode :



ac withstand voltage test

dc voltage withstand test

or

I - Set	MX	XXX.Xs	or	W-Set	MX_	XXX.Xs
X.XXkVDC		XXXXMΩ		X.XXkVAC		XX.XXmA

insulation resistance test
resistance

Ac withstand voltage and insulation

or

W - Set	MX_	XXX.Xs		I - Set	MX	XXX.Xs
X.XXkVDC		XX.XXmA	or	X.XXkVDC		XXXXMΩ

Dc voltage withstand and Insulation resistance

Insulation Resistance and wistanding

8. Automatic discharge circuit

After do withstand voltage test, especially in the dc test, test object and the circuit will have a great deal of power, must be discharged before dismantling the line work. 71 series of withstand voltage tester is specially add a discharge circuit, after the end of the test, the instrument will automatically start the discharge circuit. In 0.2 seconds, the object under test circuit, the electric charge at retained generally can be all put out. Discharge circuit can withstand maximum total electricity capacity is as follows:

0.2μF——output voltage≤1kV

0.1μF——output voltage≤2kV

0.06μF——output voltage≤3kV

0.05μF——output voltage≤4kV

0.04μF——output voltage≤5kV

0.015μF——output voltage≤6kV

If it is beyond the scope of the output voltage corresponding to the electric capacity, automatic

discharge circuit will be affected by damage caused by fault, please pay special attention to not more than to allow the discharge capacitance.

Attention! ! ! If inputs the power source by the midway closure , Automatic discharge circuit doesn't work , test object will not be discharged. Turn off the power supply should be avoided in the test, to ensure safety.

9. Test parameters setting program

71 series of withstand voltage tester is equipped with a keyboard locking function, to enter the parameters SET before, you need to determine whether the keyboard is locked, if be locked, when press the (SET), the instrument will have "drops" sound, at the same time will be displayed:

Key Lock out

And then back to the original display. So you must first unlock to set parameters. After the completion of the set, can be locked again.

"Setting (S E T)" button, enter the parameter setting mode of operation keys. When enter the parameter setting mode, automatic conversion for key project consequent transformation parameters. Each time you press the "set (S E T)", will be to set the parameter project transformation to the next project, and will set the parameters in the memory of the body. Deposited in the memory parameter in the body will not be lost after power off.

Transform to the project after the last parameter, click on the "Settings (S E T)" key will return to the initial parameters of the project, in order to check the content of the set. Only in the "exit (I T E X)" button to exit the

parameter setting mode.

In the parameter setting mode, "increase (\wedge)" and "reduce (\vee)" keys as function selection operation key and the parameters of the enter key. "Reduce (\vee)" button for the consequent turn the key, press the key digital will reduce; "Increased (\wedge)" button to reverse turn the key, press the key digital will increase.

Each time you press the "reduce (\vee)" key or "increase (\wedge)" key, digital will be reduced "1" or increased "1", when the hold time is more than 3 seconds, digital will increase or decrease according to increase or decrease in 10 every 0.2 seconds (regardless of the decimal point) the rate of change.

In the process of test parameters setting, can use "setting (S E T)" button to skip the project. At any time can use the "exit (I T E X)" key to exit the setup mode and return to under test mode.

Programs do not accept unreasonable setting input, such as unreasonable setting input, instrument "drops" sound. Set the following parameters notes "X" on behalf of any digital between 0-9.

9.1 Preparation of the test parameters setting

Make sure the keyboard under the "unlocked" model, if lock, unlock first. The LCD will display the last set of programs.

W- S e t M X X X X . X s
X . X X k V A C X X . X X m A

 or

W- S e t M X X X X . X s
X . X X k V D C X X . X X m A

Ac withstand voltage test

dc voltage withstand test

I - Set	MX	XXX.Xs
X.XXkVDC	XXXXMΩ	or
W-Set	MX_	XXX.Xs
X.XXkVAC	XX.XXmA	

insulation resistance test

Ac withstand voltage and insulation

resistance

W - Set	MX_	XXX.Xs
X.XXkVDC	XX.XXmA	or
I - Set	MX	XXX.Xs
X.XXkVDC	XXXXMΩ	

Dc voltage withstand and insulation

insulation resistance

resistance

and withstand voltage

Parameter setting can be divided into memory set set, test program set, withstand voltage test parameters setting and insulation resistance test set. , in turn, described as follows:

9.2 Memory group setting

This series instrument memory had five memory group, each group memory storage corresponding parameters. Once you determine a set of memory, follow it to set is the set the content of the memory set.

In under test mode (to) press the "SET (SET)" button, the program will automatically enter the memory SET pattern, liquid crystal display (LCD):

M e m o r y = X

R a n g e : 1—5

Please use "add (^)" or "reduce (v)" let digital"program group of memory" input parameters set within the program.

9.3 Test program set

In the memory set and press SET button, the program will enter the test project settings mode, the LCD display will show

T e s t = X

S e l e c t b y ^ o r v

This tester is equipped with a single voltage withstand test (W), single insulation resistance test(I), withstand voltage test and insulation resistance test (W - I), and insulation resistance and voltage withstand test (I - W), four kind of test project. Of course, different types of instruments in different project decisions

Model	test project
7 1 2 2	W、 I、 W—I、 I—W
7 1 1 2	W、 I、 W—I、 I—W

7 1 2 0	W
7 1 1 0	W

9.4 Withstand voltage test parameters setting

9.4.1 Ac and dc voltage withstand test selection (7122 and 7120)

Have a withstand voltage test (W, W - I, I - W), Press the SET after the program will enter the ac and dc voltage withstand test selection, LCD display

W - Mode = AC
Select by ^ or v

W—Mode = AC
Select by ^ or v

9.4.2 The output voltage setting

Last SET is determined, press SET after the program will automatically enter the ac or dc output voltage setting mode, LCD display

Ac withstand voltage test

W - Voltage = X . X X
kV
Range : 0-5 . 00 kV AC

or

Dc voltage withstand test

W - Voltage = X . X X k
V
Range : 0 - 6 . 00 kV DC

Please use add (^) or reduce (v) choice test voltage value. The unit is Kv.

9.4.3 Leakage current Limit set - (HI-Limit)

Last SET is determined, press SET , the program will automatically

enter the alternating current or direct current limit mode, LCD display:

Ac withstand voltage test

W - High = XX. XX mA
Range : 0. 01 - 12. 00
mA

or

Dc voltage withstand test

W - High = X. XX mA
Range : 0. 02 - 5. 00 m
A

Please use "add (^)" or "reduce (v)" choice on the leakage current limit. The unit is mA.

9.4.4 Leakage current Limit set (Low Limit)

Last SET is determined, press SET , the program will automatically enter the alternating current or direct current limit SET pattern, LCD display:

Ac withstand voltage test

W - Low = XX. XX mA
Range : 0. 00 - 12. 00
mA

or

Dc voltage withstand test

W - High = X. XX mA
Range : 0. 00 - 5. 00 m
A

Please use "add (^)" or "reduce (v)" , choice leakage electricity flow limit. The unit is mA.

9.4.5 Rise time setting (W-R a m p)

Last SET is determined, press SET, the program will automatically enter the slow rise time setting mode, LCD display:

W - R a m p = X X X . X s

R a n g e : 0 . 1 - 9 9 9 . 9

Please use "add (^)" or "reduce (v)" ,choice slow rise time value. The unit is second.

9.4.6 Test time setting (Dwell)

Last SET is determined, press SET , the program will automatically enter the test time setting mode, LCD display:

W - D w e l l = X X X . s

0 . 2 - 9 9 9 . 9 0 = C O N

T

Please use "add (^)" or "reduce (v)" , choice test time value. The unit is second.

9.47 Set the output frequency

If these setting is ac withstand voltage test, in the last SET is determined, press SET, the program will automatically enter the output frequency setting mode, LCD display:

F r e q = 5 0 H z

S e l e c t b y ^ o r v or

F r e q = 6 0 H z

S e l e c t b y ^ o r v

And if you choose to dc voltage withstand test, there is no this set, automatic beating "electrical isolated sensitive degree" setting.

Please use "add (^)" or "reduce (v)" , choice test frequency

9.4.8 Electrically isolated sensitivity (W - A r c) setting

Last SET is determined, press SET, the program will automatically into electricity solitary sensitivity setting mode, LCD display:

W - A r c = X
R a n g e : 0 - 9 0 = o F F

Please use "add (^)" or "reduce (v)" , choice electric solitary sensitivity. "9" for the electrical isolated the highest sensitivity, "0" for not detection.

At this point, is the last SET , if the instrument model for 7120 and 7120, and SET the end, after press SET key, SET the project back to the first SET, in order to make inspection on your SET, if you want to EXIT the setup mode, just click on the EXIT key, you can leave SET into the under test mode.

9.5 Insulation resistance test parameters setting

With insulation resistance testing function for 7122 and 7112, when designed according to the selection for the "I", press SET, instrument directly into insulation resistance setting mode; With a designed according to the choice of "W - I" or "I - W", the first after resistance to voltage parameters to SET mode, resistance to voltage SET after press SET key, the instrument into the insulation resistance parameter setting mode. Insulation resistance parameter setting can be divided into: set the output voltage insulation resistance, insulation resistance limit, lower limit setting and to determine delay time setting

9.5.1 Insulation resistance testing output voltage setting

Last SET is determined, press SET, program will automatically enter the insulation resistance testing output voltage setting mode, LCD display:

I - V o l t a g e = X . X X k V

0.10 – 1.00 kVDC

Please use "add (^)" or "reduce (v)", choice test voltage value. The unit is Kv

9.5.2 Insulation resistance limit set - (HI—Limt)

Last SET is determined, press SET, program will automatically enter the insulation resistance testing output voltage setting mode, LCD display :

I – H i g h = X X X X M Ω
0-1 0 0 0 0 = o F F

Please use "add (^)" or "reduce (v)" , choice test voltage value. The unit is M Ω. If the upper limit set to 0, said do not do insulation resistance limit determination.

9.5.3 Insulation resistance limit (Ho - Limt) setting

Last SET is determined, press SET , Program will automatically enter the insulation resistance testing insulation resistance limit set pattern, LCD display:

I – H i g h = X X X X M Ω
R a n g e : 1 – 1 0 0 0

Please use "add (^)" or "reduce (v)" , choice test voltage value. The unit is M Ω.

9.5.4 Delay to determine time setting

Last SET is determined, press SET , Program will automatically enter the insulation resistance test delay of time setting mode, LCD display:

I – D e l a y = X X X . X s 0 . 5 – 9 9 9 . 9 0 = C O N T

Please use "add (^)" or

"reduce (v)" , choice

delay time , unit is in seconds.

If it is 0.It is continuous testing and judgement.

The information of display

If followed in display memory group "-" (namely "MX -"), said the test for the voltage and insulation resistance connection test or insulation resistance and voltage connection test. The following is a single functional test of display information stated below

10.1 Withstand Voltage Test

AC and DC test show message is roughly same, just after the unit of voltage and "AC" or "DC" to show the difference

10.1.1 Under test and parameter setting mode

The following displays a message said the instrument has entered the withstand voltage test under test and parameter setting mode:

W – S e t M X X X X . X s X . X X k V A C X X . X X m A	or	W – S e t M X X X X . X s X . X X k V D C X X . X X m A
--	----	--

If you press the T E S T key, the instrument into the withstand voltage test; If press SET key, the instrument into the withstand voltage parameter setting mode.

10.1.2 voltage withstand test **Stop (A b o r t)**

In the test, if press the RESET key or RESET signal communication port input, voltage withstand test is aborted, the display shows:

W – A b r t M X X X X . X s X . X X k V A C X X . X X m A	or	W – A b r t M X X X X . X s X . X X k V D C X X . X X m A
--	----	---

In no testing is completed for the first time, discharge of the "X" will become "-"

10.1.3 Ramp Up

Ac or dc voltage withstand test on gently test, voltage value will be constantly updated, current value generally will be updated constantly, in this process, the display shows

W – R a m p M X X X X . X s	or	W – R a m p M X X X X . X s
--------------------------------	----	--------------------------------

X.XXkVAC XX.XXmA

X.XXkVDC XX.XXmA

In no testing is completed for the first time, discharge of the "X" will become "-"

10.1.4 voltage withstand test **Dwell**

Ac or dc voltage withstand test in the test, the test values generally will be updated constantly, in this process, the display shows:

W – Test MX XXX.Xs

X.XXkVAC XX.XXmA 或

W – Test MX XXX.Xs

X.XXkVDC XX.XXmA

10.1.5 Leakage current limit (**HI-Limit**)

10.1.5.1 If the object under test when doing ac or dc voltage withstand test the leakage flow rate value exceeding limit value, will be Germany object under test flow discord, the display will show:

W – High MX XXX.Xs

X.XXkVAC XX.XXmA or

W – High MX XXX.Xs

X.XXkVDC XX.XXmA

10.1.5.2 If under test item when doing ac or dc voltage withstand test the leakage flow rate value exceeding limit value and range of measurement, will be Germany object under test flow discord, the display shows:

W – High MX XXX.Xs

X.XXkVAC OFL mA or

W – High MX XXX.Xs

X.XXkVDC OFL mA

10.1.6 Leakage current limit (**Ho-Limit**)

If the object under test when doing ac or dc voltage withstand test the leakage flow rate value is

lower than the lower limit value, would be considered and measured object under test line contact is bad or there is something wrong with the test state object under test, the display will show:

W – Low MX XXX. Xs X.XXkVAC XX. XXmA	or	W – Low MX XXX. Xs X.XXkVDC XX. XXmA
--	----	--

10.1.7 Electrically isolated test to fail (**Arc Fail**)

If the ac or dc voltage withstand test of the object under test in setting between the upper and lower average current, but the electrical isolated phenomenon, and electric solitary amount more than quantitative, the object under test also is fail (If electricity solitary detection capabilities), display shows:

W – Arc MX XXX. Xs X.XXkVAC XX. XXmA	或	W – Arc MX XXX. Xs X.XXkVDC XX. XXmA
--	---	--

10.1.8 **Breakdown**

If in ac or dc voltage withstand test of the object under test current is much higher than the instrument measuring range, and electrical isolated the instrument test range, the display:

W – BRK MX XXX. Xs X.XXkVAC OFL mA	or	W – BRK MX XXX. Xs X.XXkVDC OFL mA
--	----	--

10.1.9 **PASS**

If the object under test for ac or dc voltage withstand test of all without exception occurs during the process of adjustment, is considered by the test object under test, display shows:


```
W - Pass MX XXX. Xs
X.XXkVAC XX. XXmA
```

或

W – P a s s M X X X X . X
S
X . X X k V D C X X . X X m A

10.2 insulation resistance test

If the memory set on the display "MX" followed by "-" (namely "MX -") said testing withstand voltage and insulation resistance connection or insulation resistance and voltage withstand test, the following is a single test instructions.

10.2.1 Under test and parameter setting mode

The following displays a message says it has entered the under test of insulation resistance testing and parameter setting mode

I - Set	MX	XXX.	Xs
X.XXkVDC	XXX.XM	Ω	

If the "test (T E S T)" the instrument into the insulation resistance test; If press "SET" (SET) key, the instrument into the insulation resistance parameter setting mode.

10.2.2 Insulation resistance test stop (**A b o r t**)

In the test, if press the "RESET (RESET)" key or RESET signal communication port input, voltage withstand test is aborted, the display shows:

I - Ab r t	M X	X X X . X
------------	-----	-----------

s X.XXkVDC XXXX M Ω

In no testing is completed for the first time, discharge of the "X" will become "-"

10.2.3 Determine the Delay time (Delay)

In insulation resistance testing, test value generally will be updated constantly, in this process, the display shows:

I – Test MX XXX. X s X.XXkVDC XXXX M Ω
--

In no testing is completed for the first time, discharge of the "X" will become "-"

10.2.4 Insulation resistance Limit - (**HI-Limit**)

10.2.4.1 If the object under test for insulation resistance testing insulation resistance value more than limit value, to determine limit test fails, if the insulation resistance value in the range of the instrument, the display shows:

I – High MX XXX.Xs X.XXkVDC XXXX M Ω

10.2.4.2 If the object under test for insulation resistance testing insulation resistance value more than limit value, to determine limit test fails, if the insulation resistance value out of the range of the instrument, the display shows:

I – H i g h	M X	X X X . X s
X . X X k V D C	>	1 0 0 0 M Ω

10.2.5 Insulation resistance lower limit (**Low-Limit**)

10.2.5.1 If the object under test for insulation resistance testing insulation resistance value is lower than the lower limit value, to determine the test limit failure, if the insulation resistance value in the range of the instrument, the display

I – L o w	M X	X X X . X s
X . X X k V D C	X X X X	M Ω

10.2.5.2 If the object under test for insulation resistance testing insulation resistance value is lower than the lower limit value, judged to be lower limit test fails, if the insulation resistance value is lower than 1 m Ω, display shows:

I – L o w	M X	X X X . X s
X . X X k V D C	<	1 M Ω

10.2.6 Test pass (**PASS**)

If the object under test for the whole process of testing insulation resistance of all without exception happens, is considered by the test object pass test, display shows:

I – P a s s	M X	X X X . X s
-------------	-----	-------------

X.XXkVDC XXX.XMΩ

11. Operating programs and steps

71 series of withstand voltage tester is designed for the use of general production or quality inspection, its operation and setting are very simple. The unreasonable operating instruments are some warnings

Please according to the following code to the instrument operation:

- 1 Plug in the power cord and connected to ground properly. Please don't plug in first test line.
- 2 The low voltage test line (Return) and object connected, and then is connected with the high voltage test line, and check the connection.
- 3 Open the power switch, the instrument will enter into the last set under test condition.
- 4 If you want to reset the parameters, according to related parameters set by the ninth chapter narration. On the keyboard locked, must first unlock can be set.
- 5 Press the "TEST (TEST)" switch, TEST instruments into the state, on the front panel kept flashing red warning light, display shows the corresponding program and parameters. Do not touch and close to the test content and test clamp.

TEST has been completed, the instrument will automatically cut off the output voltage, the "TEST (TEST)" the green light will be on the switch, at the same time have a "drop" , said the TEST has passed the TEST, there

are "PASS" on display.

If you want to continue to TEST, just click on the "TEST (TEST)" switch, the "recovery (RESET)" button, return to under TEST mode

6 If want to suspend the test in the test, just click on the "recovery (RESET)" switch, cut off the output voltage and stop as soon as the instrument testing, display shows have been tested to the relevant test values. If you want to continue to TEST, just click on the "TEST (TEST)" switch.

7 If relevant quantity does not conform to the setting of parameters of test instrument will automatically cut off the test voltage and to stop testing, and display the related results of the test to suspend the characters. In this case, the "recovery (RESET)" red light on the switch and alarm for a long time, the "recovery (RESET)" switch can close the alarm and the red light.

8 If you want to work by external equipment control instrument, can use communication interface on the backplane socket, see chapter 6.

Please note that the communication port "TEST" signal input and the "TEST (TEST)" on the panel switch can take effect at the same time, absolutely must pay attention to the related safety issues.

9 The instrument has a "PASS", "FAIL" and "PROCESSING" remote monitoring signal output, these signals can be received from the control center monitoring, remote monitoring and the instrument signal action.

12.calibration

The instrument has been carefully calibrated before they go out, completely conform to the requirements of the index of the instrument. The instrument for at least a yearly calibration, calibration precision of the instrument must be better than 0.5%, to ensure that the instrument can continue after calibration is precision of the instrument should be.

12.1 Calibration of instrument and equipment

Voltmeter : Measuring range above the 0-6000 V AC

Ammeter : Measuring range from 0-15 mA AC above

Ammeter : Measuring range from 0-2 mA AC above.

Load resistance : 500 k Ω - 800 k Ω , more than 0.5 WATT

12.2 Enter the calibration mode

Hold the C A L (behind) key after open the power switch, the display shows

C A L M o d e	^ : I R
S E T : V	v : A

The instrument into the calibration model, please release the two buttons

- Press "exit" (^), to calibrate insulation resistance.
- Press the "SET (SET)" button, to calibrate voltage
- Press "reduce (v)" , to calibrate current.

The instrument calibration insulation resistance only need to calibrate the DC current; Calibration voltage only need to calibrate the ac voltage; calibration current only need to calibrate ac current.

Note: this instrument can only start a separate calibration, don't have to be all right. But press the option button, it must be calibrated effectively. When don't calibration please press "EXIT (EXIT)" key.

12.3 Voltage calibration

12.3.1 Voltage calibration

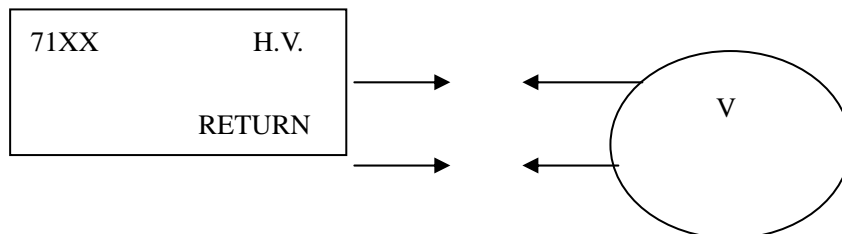
On the instrument of terminal "high voltage output (H.V.)" and the "low voltage measurement (RETURN)" on the terminal one after another to measure to the standards of ac 6000 v ac voltmeter, if measurement terminals of the standard table has a "high", "low" measuring endpoints, please set up the "lower" end of the standard table of the instrument on "low pressure (RETURN)" terminal, in the "high" end of standard table to receive instrument on "high pressure (H.V.)" terminal, avoid high, low-end child meet the damage a standard table.

In the calibration mode, press "SET" (SET) key, the instrument will output of about 5000 v ac voltage, at the same time display shows :

<p>V o l t a g e = 5 0 0 0 V</p> <p>E n t e r S T D V — o u t</p>
--

Please use "add (^)" button on the panel or "reduce (v)" master data is modified to the reading on the standard table, its unit is "v (v)".

Confirm information is correct, press "SET" (SET), a voltage to the instrument calibration, the instrument automatically return to the calibration model. If the press "SET (SET)" to determine the calibration before don't want to make a new calibration, can press "EXIT" (EXIT) key instruments automatically return to the calibration model. Voltmeter wiring diagram of the reference below



12.3.2 Current calibration

Please let the standard AC ammeter(can measure up to 15ma) in series with a resistor(500k Ω —— 800k Ω /60W),and then received a "high pressure (H.V.) terminals of the instrument and" low pressure (RETURN) between "terminal,

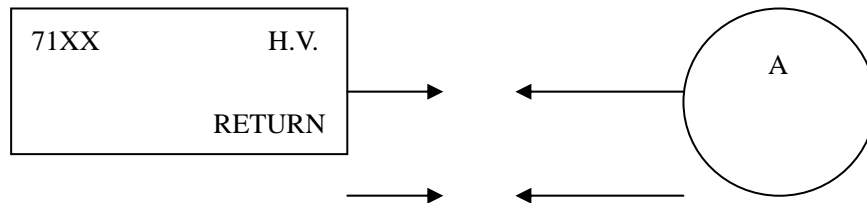
with the ammeter connection to the terminal instrument on" low pressure (RETURN) "terminal to prevent damage of ammeter.

Press "reduce (v)" , instruments into current calibration mode, The instrument output 5000 v ac voltage(if the voltage have been calibration ever),At the same time display shows:

<p>Current = XX . XX m</p> <p>Enter STD A — out</p>

Please use "add (^)" button on the panel or "reduce (v)" master data is modified to the reading on the standard table, its unit is A.

]Confirm information is correct, click "Settings" (SET) key, the instrument of the current calibration, the instrument automatically return to the calibration model. If the press "SET (SET)" to determine the calibration before don't want to make a new calibration, can press "EXIT" (EXIT) key instruments automatically return to the calibration model. Voltmeter wiring diagram of the reference below:



12.3.3 The current calibration of the insulation resistance

Please let the standard AC ammeter(can measure up to 1.5ma) in series with a resistor(500k Ω —— 800k Ω /0.5W),then received a "high pressure (H.V.) terminals of the instrument and" low pressure (RETURN) between "terminal, and instrument terminals connected to the ammeter on" low pressure (RETURN) terminals, for reading correctly and in case of damage of ammeter.

Press add (^) instrument into the insulation resistance current calibration models, the equipment output voltage (500 v ac if voltage have been calibration cases), before and at the same time display shows:

<p>Current = XXXX μA</p> <p>Enter STD A — out</p>
--

Please use the panel on the increase (\wedge) or "reduce (\vee)" master data is modified to the reading on the standard table, its unit is "microamps (μ)".

After the data is verified, press "SET" (SET), instrument calibration, the insulation resistance of current equipment automatically return to the calibration model. If the press "SET (SET)" to determine the calibration before don't want to make a new calibration, can press "EXIT" (EXIT) key instruments automatically return to the calibration model.

12.3.4 The calibration completed

After completion of calibration, the calibration model state, press "EXIT" (EXIT) key pattern can be back to stay.



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SHENZHEN MEIRUIKE ELECTRONIC TECHNOLOGY CO.,LTD

SHENZHEN MEIRUIKE ELECTRONIC TECHNOLOGY CO.,LTD.

Address : Floor 5,Block 1,Qingchangtai Industrial
Zone,No365,Silian Road ,Henggang
Town ,Longgang District ,Shenzhen

Tel: 86-755-83987768

86-755-82736668

Http://www.chinarek.com