

Instruction manual

JK7110/7122/7120/7200A type Programmable voltage insulation tester

Address: C3, No.22 Building, New Impetus Pioneering Center, No.1, North Qingyang Road, Tianning District, Changzhou City

Phone: 0519-85563477 89187775

Fax: 0519-85565067

Homepage address: www.jaldz.com

E-mail: mailjk17@126.com

Tel:0519-85563477 89187775

FaX:0519-85565067

Http:www.jaldz.com

Email:mailjk17@126.com

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Chapter one : Brief introduction

Cautions before the high voltage test

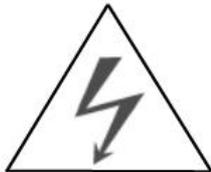
1.1 Safety Instructions

Please understand the symbols and the icons that the tester uses before operating this withstand insulation tester, to keep it safe.

- This tester quotes the standard of **Safety Class I** (the body has the earth terminal for protection)
- Before power on the tester, please select the correct input voltage (115 v or 115 v input).



High voltage warning sign. Please read all the cautions and warnings in the manual to prevent the personnel injury or equipment damage.



Danger sign, high voltage may exist, please avoid contacting.



Earth symbol



Warning the programs, applies or conditions be carried out are highly dangerous, it may cause the personnel injury.



Caution the programs, applies or conditions be carried out may cause the tester damage or lost all of the storage data.

The voltage or current that the tester produces may cause the personnel injury or electronic shock, in order to prevent the harm or death, please be careful while moving or using the tester.

Maintenance

User's maintenance

In order to avoid electric shock, please don't open the lid of the tester. Do not move or change all the internal parts of the tester. If there's something wrong with the tester, **please contact with us or the authorized agents to maintain**. The attached circuit diagram and block diagram are for reference only.

Regular maintenance

Please check and calibrate the withstand tester, input power wire, test wire and the related accessories at least once a year, in order to keep the user's safe and the accuracy of the tester.

The modify of the user

Do not modify the circuit or parts in the tester, if it is modified, the warranty of the tester will be void automatically and the company shall be responsible for nothing. Using any of the parts or accessories that have not been authorized by JINKO electronic system are not guaranteed as well. If the tester have found modified which is send back to us to be repaired, we will recover the circuits or parts in the tester to its original design, and it will be paid.

Test working station

Working Position

The position of working station must be selected in the place that the people is not allowed in and away from the non-working personnel. If it can't be done because of the arrangement of the production line, it must be separated with other facilities and marked "**high voltage test working station**". If the high voltage test station is very close to the other working stations, please pay attention to the safety problems. When testing, it must be marked "**Danger! High voltage testing is ongoing, non-working personnel do not close**".

Input power

Withstand tester must have a good earthing, make sure that earth wire is connected correctly before operation, in order to keep the personnel safe. The power supply of test station must have a individual switch and mark the special slogan in the the prominent place of the device and the working station to make all the people recognize that this is the power switch of the test station. Once emergency accident happens, immediately shut off the power, and then handle the accident.

Working place

Using non-conductive workbench as possible as the user can. It shall not be used any metals between the users and the under-test object. The users can not across the under-test object to operate or adjust the tester. If the under-test object is small, please be placed in the non-conductive box.

The testing place should keep tidy and clean all the time. Please put the tester and the wires into the safety place when they don't need to use. Be sure to let all the people tell the differences between testing objects, under-test objects and tested objects immediately.

The air of test station including its surroundings can not contain of flammable gas or using withstand tester beside the combustibile matters.

The regulation to the users

The qualification to the person

The voltage and current produced by withstand tester in the wrong way will happen the electric

shock, it is enough to cause the personnel injury even death, so it must be used and operated by the trained and qualified person.

Safety rule

The users must be educated and trained all the time, to make them understand the importance of the various operating rules, and in accordance with the rules to operate the withstand tester .

Wearing regulation

The user must not wear clothes with metal decorations or wear metal bracelet and watch,etc, these metal accessories are easy to cause accidental electric shock. When it get the electric shock, it will be very terrible.

Medical regulations

The withstand tester must not operated by the persons who have heart disease or with cardiac pacemakers.

test safe program regulation

The withstand tester is not allowed to use for the electrified circuit or equipment!

The earth wire of the tester must be connected correctly in accordance with the regulations. When connecting the test wire , **[Return Lead]** must be connected in the under- tested objects. Please put the high voltage test wires into high voltage output terminal only before the test. It must be held at the isolation part of the high voltage wires while taking it to test, absolutely not to hold on the conductive part. The users must be sure to fully autonomous control the withstand tester's control switch and remote control switch, remote control switch should be placed on the safety position when it doesn't need to use, it is not allowed to put at any place.

When testing, the under-tested objects must be completely isolated with the earth. If it in touch with the earth or earthing, it may unable to test the current, or the tested current will be inaccurate.

WARNING

When testing, it must not touch the testing objects or anything that is related with the under-tested objects.

Pay attention to the followings

- Unqualified operators and other irrelevant persons should away from the high voltage test zone.
- Keep the high voltage test zone safe and orderly at any time.
- On the high voltage test, it must not touch the testing objects or anything that is related with the under-tested objects.
- If it has any problems, please immediately cut off the high voltage output and input power.
- After the DC withstand test, it must be properly discharged first, so that the test wires can be removed then.

1.3 install preparation

technical specifications

Unpack and check

JINAI' s electronic products is usually packed in a paper box with the white poly-foam for protection, please check the box whether there is deformation, scratch, or damage on its appearance when receiving it. If there is damaged, please immediately notify our company or the agents. And please keep the packing box and poly-foam, in order to know the causes. We will help you to repair it or replace a new one. Before fails to notify the company or the agents, please do not return the product.

Preparation before using

The Requirement and selection of input voltage

71 series withstand tester using AC 115 v AC or 230 v + 15% to 47-63 Hz single-phase power supply. Before turning on the power switch, please confirm that if the voltage selection switch on the back plate is in the right place. Also make sure the fuse is correct specification, the specifications of the fuse is marked on the tester' s back plate. Before replacing the fuse, it must turn off the input power to keep safe.

Caution! This tester using 3A fast fusing fuse

Input power requirements

WARNING

Before connecting the input power, please make sure the earthing wire of the power has been connected successfully, meanwhile put the earthing wire into the earthing terminal of the tester. The power plug of the tester can only be inserted on the power socket with earthing wire. If you use the extension wires, please pay attention to whether the extension wires have earthing wire. Withstand tester is using three-core cable. When the cable plug into the socket with earthing wire, the earthing is complete.

Using condition

Temperature: 0° -40° C (32° -104° F)

Humidity: 20% ~80%

Height: under 2000 meters (6500 inches)

Storage and Delivery

technical specifications

Conditions

71 series withstand tester can be stored and delivered as the following conditions

Temperature.....-40°~75° C

Height.....7620 meters(25000 inches)

This tester have to avoid the sharp temperature change, or it will make the water vapor condensation in the internal of the tester.

Package

Original package

Please keep all the original packaging materials, if the tester must be sent back to the factory to repair, please use the original packing material to pack. When it needs to be repaired , please send the tester with power wires, test wires and other accessories and indicate its fault phenomenon and reasons. In addition, please mark "fragile" on the packing box and be careful of delivering.

Chapter Two : Technical regulations

specification

Type	Description
7122	AC/DC Withstand Voltage/Insulation Tester
7120	AC/DC Withstand Voltage Tester
7112	AC Withstand Voltage/Insulation Tester)
7110	AC Withstand Voltage Tester

SPECIFICATIONS

MODEL	7122	7120	7112	7110
AC WITHSTAND VOLTAGE				
Output Rating	5kVAC/12mA			
	Range	Resolution	Accuracy	
Output Voltage, KVAC	0-5.00	0.01	± (1% of setting + 5V)	
Output Frequency	50Hz/60Hz ± 1Hz, User Selection			
Output Waveform	Sine Wave, THD. <2%(Resistive Load), Crest Factor=1.3-1.5			
Output Regulation	± (1% of output + 5V), From no load to full load			

technical specifications

SETTINGS			
Hi-Limit AC Current, mA	0.01-12.00	0.01	\pm (1% of setting + 2counts)
Lo-Limit AC Current, mA	0.00-12.00	0.01	\pm (1% of setting + 2counts)
Ramp Time, second	0.1-999.9	0.1	\pm (0.1% + 0.05sec)
Dwell Time, second	0, 0.2-999.9 (0=continuous)	0.1	
Arc Detection	0, 1-9 ranges (0=OFF, 9 is the most sensitivity)		
DC WITHSTAND VOLTAGE (7120, 7122 ONLY)			
Output Rating	6kVDC/5mA		
Output Voltage, KVDC	0-6.00	0.01	\pm (1% of setting + 5V)
Output Ripple	<5% (在 6KV/5mA at Resistive Load)		
SETTINGS			
Hi-Limit DC Current, mA	0.02-5.00	0.01	\pm 1% of setting + 2counts)
Lo-Limit DC Current, mA	0.00-5.00	0.01	\pm (1% of setting + 2counts)
Ramp Time, second	0.1-999.9	0.1	\pm (0.1% + 0.05sec)
Dwell time, second	0, 0.2-999.9 (0=continuous)	0.1	
Arc Detection	0, 1-9 ranges (0=OFF, 9 is the most sensitivity)		
Discharge Time	\leq 200msec		

technical specifications

INSULATION RESISTANCE (7112, 7122 ONLY)			
Output Rating	1kVDC/9999MΩ		
Output Voltage, KVDC	0.10-1.00	0.01	± (1% of setting + 2V)
SETTINGS			
Hi-Limit Resistance, MΩ	0, 1-1000 (0=OFF)	1	± (3% of setting + 2counts) at >500VDC ± (7% of setting + 2counts) at <500VDC
	1000-9999	1	± (5% of setting + 2counts) at >500VDC ± (10% of setting+2counts) at <500VDC
Lo-Limit Resistance, MΩ	1-1000	1	± (3% of setting + 2counts) at >500VDC ± (7% of setting + 2counts) at <500VDC
	1000-9999	1	± (5% of setting + 2counts) at >500VDC ± (10% of setting+2counts) at <500VDC
Delay Time, second	0, 2-999.9 (0=continuous)	0.1	± (0.1% + 0.05sec)
test			
AC/DC Voltage, kV	0-6.00	0.01	± (1% of reading+1count)
DC Voltage, kV (IR only)	0.10-1.00	0.01	± (1% of reading+2V)
AC Current, mA	0.01-12.00	0.01	± (1% of reading+2count)
DC Current, mA	0.02-5.00	0.01	± (1% of reading+2count)
Resistance, MΩ	1-1000 (Auto Range)	0.001 0.01 0.1	± (3% of reading + 2counts) at >500VDC ± (5% of reading + 2counts) at <500VDC
	1000-9999	1	± (5% of setting + 2counts) at >500VDC ± (10% of setting+2counts) at <500VDC
GENERAL			
Input Voltage AC	115V/230V AC ± 15%, 50/60Hz ± 5%, Fuse 3A Fast		
PLC Remote Control	Input: Test, Reset		
	Output: Pass, Fail, Processing		
RS-232			
Memory	5 Sets Store/Recall of each Memory, 4 Test Mode Selectable (W, I, W-I, I-W Only 7112, 7122)		
Display	16×2 LCD with back light		

Key Lock	To prevent unauthorized alteration of the test Parameters
Calibration	Build-in software and external calibrated meters
Environment	0-40°C, 20-80%RH
Dimension/Net Weight	280mm (W) × 100mm (H) × 375mm (D) / 10Kg
STANDARD ACCESSORIES	
Power Cord(10A)	×1
Fuses	×3(Including a spare contained in the fuse holder)
High Voltage Test Cable	×1
Return Test Cable	×1

*product specifications are subject to change without notice.

ORDERING INFORMATION

7110 AC Withstand Voltage Tester

7112 AC Withstand Voltage/Insulation Resistance Tester

7120 AC/DC Withstand Voltage Tester

7122 DC Withstand Voltage/Insulation Resistance Tester

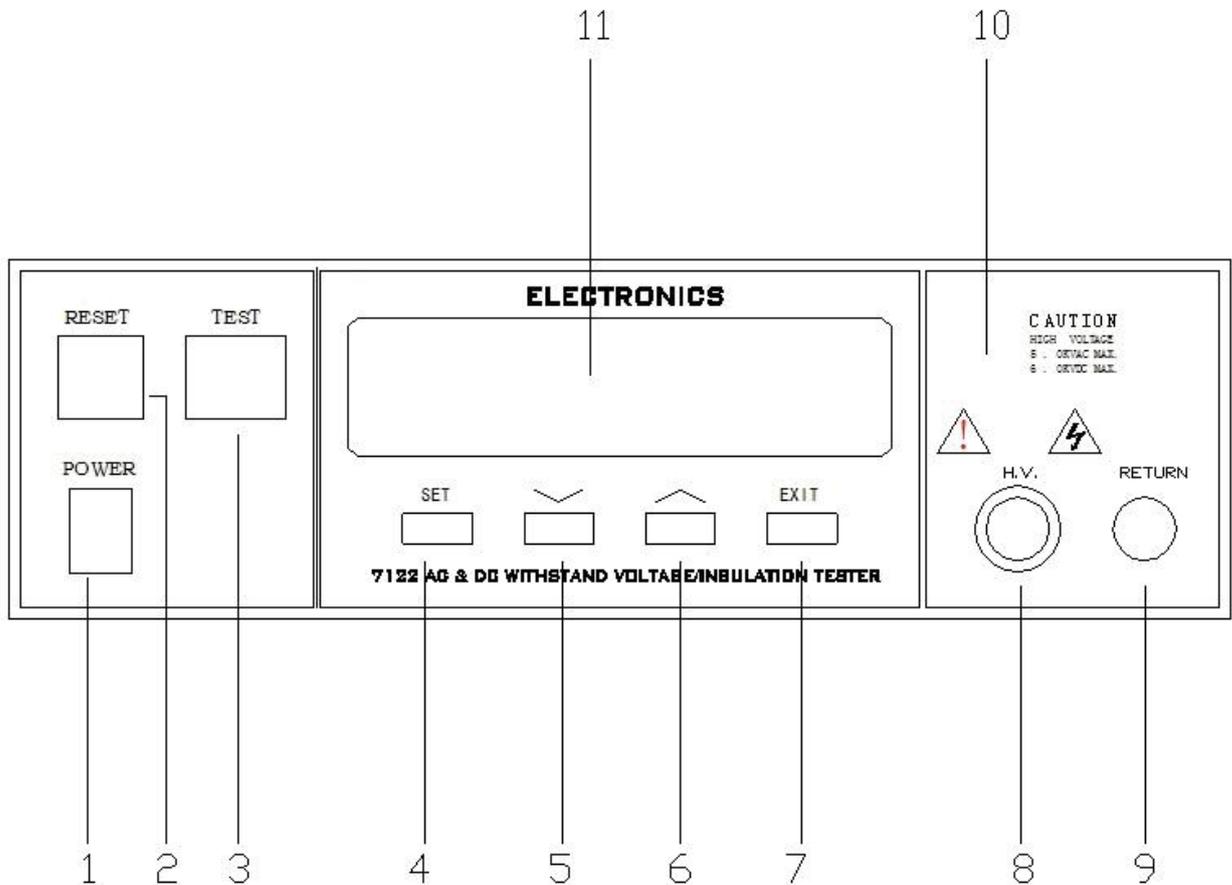
Specification

Type	Description
JK7200A	Insulation Tester

INSULATION RESISTANCE			
	Range	Resolution	Accuracy
Output Rating	1KVDC/9999MΩ		
Output Voltage, VDC	100-1000	10	± (2% of setting + 2V)
SETTINGS			
Hi-Limit Resistance, MΩ	0, 1-1000 (0=OFF)	1	± (5% of setting + 2counts)at>500VDC ± (10% of setting + 2counts)at<500VDC
	5000-9999	1	Reference values
Lo-Limit Resistance, MΩ	1-1000	1	± (5% of setting + 2counts)at>500VDC ± (10% of setting + 2counts)at<500VDC
	5000-9999	1	Reference values
Delay Time, second	0, 1. 0-999. 9 (0=continuous)	0. 1	± (1% + 0. 05sec)
Test range			
Resistance, MΩ	1-1000 (Auto Range)	0. 001 0. 01 0. 1	± (5% of reading + 2counts)at>500VDC ± (10% of reading + 2counts)at<500VDC
	5000-9999	1	Reference values
GENERAL			
Input Voltage AC	115/230V AC ± 15%, 50/60Hz ± 5%, Fuse 3A Fast		

Chapter Three : front plate and back plate

3.1 Front plate instructions



- a) Input power switch
- b) Input power switch is the switch marked international standard 1” (ON) and “0” (OFF)
- c) RESET switch
Red momentary contacting switch contains of FAIL indicator light inside. In the setting mode, its function is as same as the EXIT button, it can be the switch to exit the setting mode. During the test, it can be the switch to close the alarm and get into the next state of under-test condition. In the test, it can also be a switch that interrupt the test. If the testing object do not pass the test, the red indicator light will bright.
- d) Test switch
Green momentary contacting switch contains of PASS light inside. it can be the starting switch of the test. If the under-test object passes the test, the green light will bright.

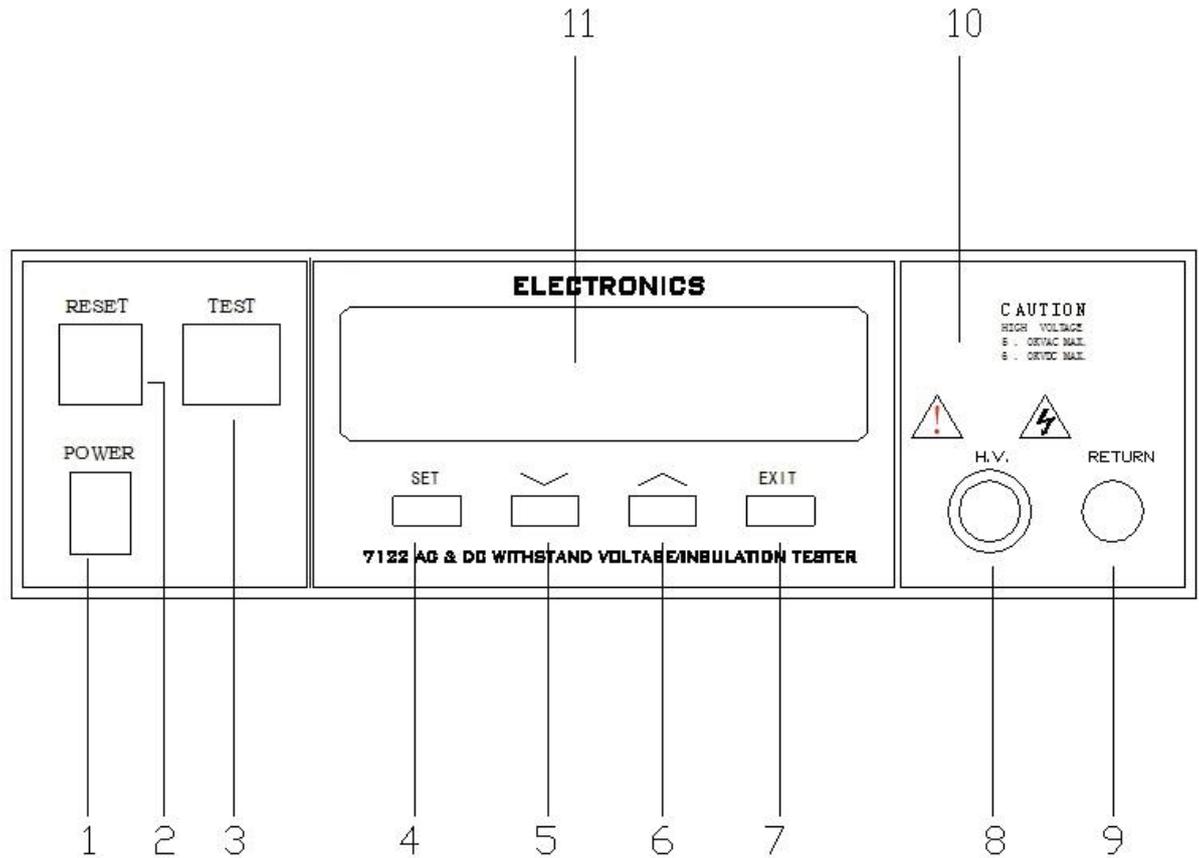
technical specifications

e) SET button

It can be the switch to enter the setting mode, select the memory group, test items, DC or AC withstand test and its parameters, or the isolation resistance test and its parameters, it is also can be the switch to lock the keyboard.

f) “V” DOWN button

It can be the functional button to select the functions and input the parameter values of every test items in the setting mode, it also can be the adjust button to fall off the output voltage.



g) “^” UP button

It can be the functional button to select the functions and input the parameter values of every test items in the setting mode, it also can be the adjust button to rise up the output voltage.

h) EXIT button

It can be the functional button to exit the setting mode

i) High voltage output terminal

It is the special output terminal that can absorb over **20kV high voltage**.

j) RETURN terminal

It is the special terminal that can keep the good connection

k) High voltage mark

l) When the tester begins to output the voltage, the light in **high voltage mark** will bright, it means **“Danger! The high voltage is outputting!”**

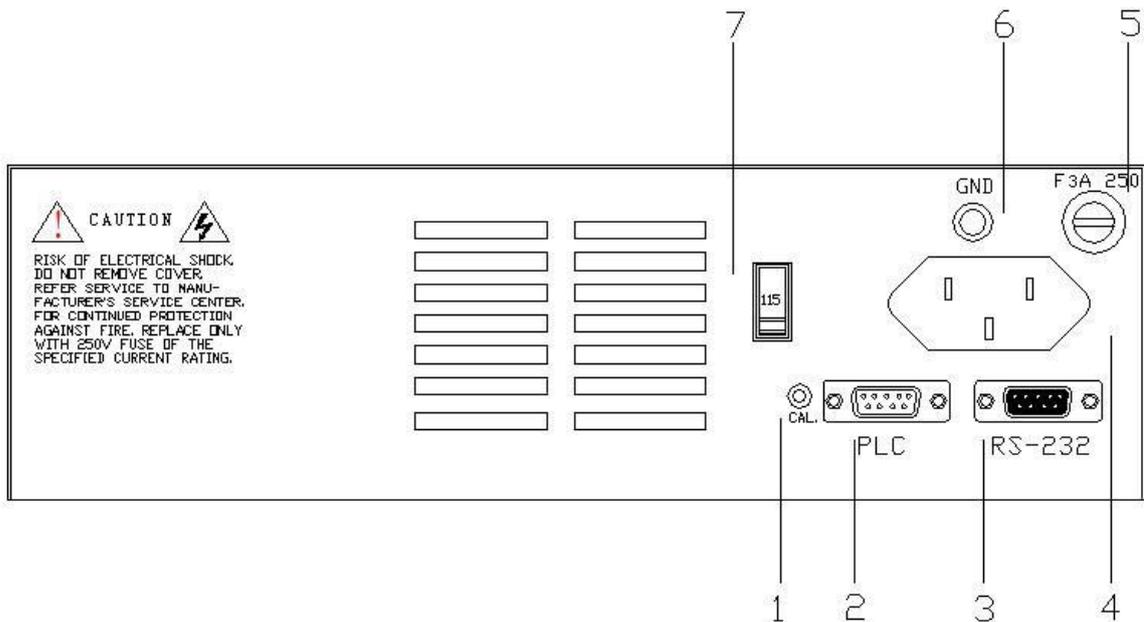
m) LCD 显示器 LCD display

16 words* 2 line Backlight LCD display can be the display that shows the setting data or test results.

technical specifications

Panel description

Back panel description



1. Adjusting switch(version 2.0 has no such switch)
 2. Please press adjusting switch before entering the adjusting mode, then turn on the input power supply switch.
 3. PLC remote signal terminal
 4.

*
- It is a standard 9 PIN D type terminal seat,to supply “N.O.” connection to PASS ,FAIL and the remote monitoring signal of PROCESSING and the control connection of TEST、RESET
5. RS-232 signal terminal(V 2.0 has no such signal terminal)
 It is a standard 9 PIN D type terminal seat,to supply the test state and the data information by serial.It can be a test system combined with PC to statistic,analyze,print the sheet,etc.
 6. Input power supply socket
 Standard IEC 320 power supply socket can accept standard NEMA power socket.
 7. Input power supply fuse seat
 Turn off the power switch first, then replace the fuse and it should be replaced the standard fuse.
 8. Earth terminal

technical specifications

The tester' s earth terminal must be connected correctly in order to keep the operator safe.

9. The input voltage switch selection

Selecting the input power voltage, down to the switch is 115V, up to the switch is 230V, the factory setting is 230V.

Chapter Four : Operation

71 series withstand tester has keyboard lock function. If it needs to enter the parameter setting, please press SET button and turn on the power switch at the same time. If it only turn on the power switch, the keyboard will be locked, then press SET key, the LCD display will show:

Key was Locked

Therefore, it must be unlock it first, so that the parameter' s setting can be began.

SET button is the button to enter parameters setting mode, when entering the parameter setting mode, it will be automatically converted into the parameter clockwise turning button, pressing SET button each time , it will turn to the next setting items and save the setting parameters to the storage automatically at the same time. The parameters or patterns which saved to the storage will be still reserved not deleted after turning off the power, unless someone reset it.

When it turns to the last test setting items , it will be back to the first test parameters setting item. And then the turned parameter setting items will be different according to the selection such like AC withstand test , DC withstand test or insulation resistor test , the program will also provide the different parameter settings in accordance with the different items.

In parameters setting mode, “^” and “v” button will be the functional select button and the parameter values input button. “v” is consequent turning button, when pressing this button, the numbers will be fallen down, and “^” is obsequent turning button, when pressing this button, the numbers will be raised up.

Press “^” or “v” button each time , the rightest digit in the screen will increase “1” or reduce “1” number , for instance, the original Numbers is “5”, it will increase to “6” or reduce to “4”, if press on it for more than 0.3 seconds, it will increase “1” or reduce “1” every 0.3 second on the second digit of the display' s right side (not including the decimal point) and the rightest side of the digit will automatically return to “0”. For example the original Numbers is “55”, it will become “60” or “50”. If according to the changing rate, it will increase or reduce “10” every 0.3 seconds, but if press on it over 3 second , it will become to increase or reduce “10” every 0.1 second, and it will restore to the original rate if release the button.

In the process of test parameters setting, if it doesn't need to reset all the settings , it can be exit the parameter setting mode by pressing EXIT button when any step is finished, the program will automatically enter under-tested mode, and saved the tested parameters in the storage.

technical specifications

The Program does not accept unreasonable setting and input, if there' s unreasonable setting or input, it will have a "beep" alarming. Set the following parameters notes "X" means any numbers between 0 and 9.

4.1 Normal test parameters setting

Turn on the input power, the display will show

LANKE
71XX VER: X. X

And the program will display the last test parameters before turn off the power last time. The display will show as following,

W_Set MX XXX. Xs X. XXXKVAC XX. XXmA	or	W_Set MX XXX. Xs X. XXXKVDC XX. XXmA	or	I_Set MX XXX. Xs X. XXXKVDC XXXXMΩ
---	----	---	----	---------------------------------------

W_Set:withstand set	W_Set:withstand set	I_Set:insulation set
MX:memory group 1-5	MX:memory group 1-5	MX:memory group 1-5
XXX. Xs:time set	XXX. Xs:time set	XXX. Xs:delay time set
X. XXXKVAC:AC set	X. XXXKVDC:DC set	X. XXXKVDC:DC set
XX. XXmA:leakage current high limit	XX. XXmA:leakage current high limit	
XXXXXMΩ:insulation resistance low limit		

The program has entered the parameters setting mode at this time, firstly, to explain the processes and steps of withstand Test (W - Test) parameters setting , and then there will be withstand voltage Test, insulation resistance Test, compression Test connection insulation resistance testing in turn, finally is insulation resistance testing withstand voltage Test.

Withstand test parameters setting

Withstand voltage test parameters setting is as the SET button to select the items, press SET button each time , it will enter the next parameter item, and will be Memory (Memory) setting, the selection of test items, ac /or dc withstand voltage test selection, the output voltage setting and leakage current high limit setting, leakage current low limit setting, slow rising time setting, test time setting, output frequency selection (dc withstand voltage test has no such item) and electric arc current sensitivity setting in turn.

Memory group setting

Press SET button on the front plane, the program will automatically enter the memory group setting.

Memory= X
Range:1-5

Please use “^” or “v” button “program memory group”

test items selection

After finishing the memory group setting, then press SET button, the program will enter “test items selection” pattern, LCD display will show

Test= X
Select by v or ^

Please use “^” or “v” button to select the test items, the tester has withstand test (W) (I), insulation resistance test, withstand voltage and insulation resistance connection test (W - I) and insulation resistance and compression

technical specifications

connection test (I - W) to select. Different models may have different optional test items, the following table is the optional test items in different models, for

Type	Selective test items
7122	W、 I、 W-I、 I-W
7112	W、 I、 W-I、 I-W
7120	W
7110	W

Its rotation order is for the withstand test (W), insulation resistance test (I), withstand voltage and insulation resistance connection test (W - I) and insulation resistance and compression connection test (I - W), when selecting the items that the tester doesn't have, the program will ignore it and begin to the next item that the tester have. In the next section, every test items will be explained respectively to the detailed instructions, it will going to be start with this section withstand test (W) project to continue.

if the test item is withstand voltage test, the LCD display will show:

Test= W
Select by √ or ^

DC or AC withstand voltage test should choose type (7120/7122).

After set the withstand test mode, then press SET button, the program will enter DC or AC withstand voltage setting mode, the LCD display will show

W-Mode = AC
Select by √ or ^

or

W-Mode = DC
Select by √ or ^

button to select DC or AC withstand voltage setting mode

output voltage setting

After set DC or AC withstand voltage mode, then press SET button, the program will enter output voltage setting mode of withstand voltage test, the LCD display will show

AC withstand test
W-Voltage=X. XXKV
Range:0-5. 00KVAC

or

DC withstand test
W-Voltage=X. XXKV
Range:0-6. 00KVDC

Please press “^” or “√” button to set the output voltage, its unit is kV

Leakage current high limit setting

After set DC or AC withstand voltage mode, then press SET button, the program will enter Leakage current high limit setting mode, the LCD display will show

technical specifications

AC withstand test

W-High = XX.XXmA
Range: 0.01-12. mA

or

DC withstand test

W-High = XX.XXmA
Range: 0.02-5mA

Please press “^” or “v” button to set Leakage current high limit, its unit is “mA”

Operational instructions

Leakage current low limit setting

After set Leakage current high limit, then press SET button, the program will enter Leakage current low limit setting mode, the LCD display will show

AC withstand test	DC withstand test
W-Low = XX.XXmA	W-Low = XX.XXmA
Range: 0.00-12mA	Range: 0.00-5mA

or

Please press “^” or “v” button to set Leakage current low limit, its unit is “mA”

Ramp up time setting

After set the Leakage current low limit, then press SET button, the program will enter Ramp up time setting mode, the LCD display will show

W-Ramp = XXX.Xs
Range:0.1-999.9

Please press “^” or “v” button to set Ramp up timing, its unit is “S”

test time setting

After set the Ramp up time, then press SET button, the program will enter test time setting mode, the LCD display will show

W-Dwell = XXX.Xs
R:0.2-999.9 0=C

Please press “^” or “v” button to set test time, its unit is “S”

If the test time is set to “0”, this test will continue and not stop, unless the test failed or someone stop it. The timer will continue to count to the highest values, then it will be return to “0” and count from the beginning automatically but it will not stop automatically.

output frequency setting

technical specifications

After set the test time, then press SET button, the program will enter output frequency setting mode, the LCD display will show

Freq = 50Hz
Select by \vee or \wedge

or

Freq = 60Hz
Select by \vee or \wedge

Comment :DC withstand tester has no such function, the program will ignore this item automatically and enter “ electric arc sensitivity setting ”

Please use “^” or “v” button to select output frequency “50” or “60” Hz

electric arc sensitivity setting

After set the output frequency, then press SET button, the program will enter electric arc sensitivity setting mode, the LCD display will show,

W-Arc = X
Range: 0-9 0=OFF

Please use “^” or “v” button to input the electric arc sensitivity values, its electric arc sensitivity values are 1~9 phases, 9 phase is the highest arc sensitivity, and 0 is not working state. Comment: When the ranges of X are 1~9, their correspond arc sensitivity values are **20mA、18mA、16mA、14mA、12mA、10mA、7.7mA、5.5mA、2.8mA**, factory default values is 5.

This is the last parameter setting of the withstand tester, it can be pressed SET button to back to the first parameters setting and check every setting item if its wrong or press EXIT button to exit the parameters setting and enter under-tested pattern, ready for the test.

withstand resistance test parameters setting

withstand resistance test parameters setting can also use SET button as the parameter item selection button, it will enter the next item when pressing it each time, its order is memory group setting, test item selection, output voltage setting, withstand resistance high limit setting, withstand resistance low limit setting, delay time setting.

memory group setting

Press SET button, the program will enter memory group setting pattern, the LCD display will show

Memory= X
Range: 1-5

Please use “^” or “v” button to input the memory group numbers to the parameters setting program, its memory groups are 1~5 group.

test item selection

technical specifications

After set the memory group, then press SET button, the program will enter test item selection setting mode, the LCD display will show,

Test= X
Select by V or ^

Please use “^” or “V” button to select the test items, this tester has withstand test (W) , insulation resistance test(I), withstand voltage and insulation resistance connection test (W - I) and insulation resistance and compression connection test (I - W) for selection. Different models may have different optional test items, the following table is the optional test items in different models

Operational instructions

Type	Selective test item
7122	W、 I、 W-I、 I-W
7112	W、 I、 W-I、 I-W
7120	W
7110	W

Its rotation order is the withstand test(W), insulation resistance test (I), withstand voltage and insulation resistance connection test (W - I) and insulation resistance and compression connection test (I - W), when selecting the items that the tester doesn't have, the program will ignore it and begin to the next item that the tester have. In this section, it will be explained the parameter setting of insulation resistance test (I)

If the test item is insulation resistance test (I), the LCD display will show,

Test= I
Select by V or ^

output voltage setting

After set the memory group, then press SET button, the program will enter test item selection setting mode, the LCD display will show,

I-Voltage=X.XXKV
R: 0.10-1.00KVDC

Please use “^” or “V” button to set the output voltage, its unit is “kV”

insulation resistance high limit setting

After set the output voltage, then press SET button, the program will enter insulation resistance high limit setting mode, the LCD display will show,

I-High = XXXXMΩ
R:0-9999 0=OFF

Please use “^” or “V” button to set insulation resistance high limit, its unit is “MΩ”, it is set to be “0”, it means there's no high limit.

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insulation resistance low limit setting

After set the insulation resistance high limit , then press SET button, the program will enter insulation resistance low limit setting mode, the LCD display will show,

I-Low = XXXXM Ω Range: 1-9999

Please use “^” or “v” button to set insulation resistance low limit, its unit is “MΩ” .

Delay time setting

After set the insulation resistance low limit , then press SET button, the program will enter Delay time setting mode, the LCD display will show,

I-Delay = XXX. Xs 2-999.9 0=CONT
--

Please use “^” or “v” button to set Delay time, its unit is “s” . If the delay time is set to be “0” , it means the test will be sustained, unless it failed or someone stop it, or it will not be stopped automatically. The timer will continue to count to the highest values, then it will be return to “0” and count from the beginning automatically but it will not be stopped automatically.

This is the last parameter setting of insulation resistance test, it can be pressed SET button to back to the first parameters setting and check every setting item if its wrong or press EXIT button to exit the parameters setting and enter under-tested pattern, ready for the insulation resistance test.

withstand voltage and insulation resistance connection test

The Main function of this test item is to have the withstand voltage test to the under-tested object first, after finishing the test and pass it, it will begin to the insulation resistance test automatically, no need to restart another individual test procedures, it can be simplified the operating procedure and reduce the working hours, and increase the operation correctness.

The parameters setting of withstand voltage and insulation resistance connection test is also using SET button as the item selection button, it will enter the next test item by pressing SET button each time, after finishing the withstand voltage test setting, it will begin to the insulation resistance parameters setting, its order is memory group setting, test item selection, after selecting the W-I test, it will enter withstand voltage test setting mode, its order is DC/AC withstand voltage test selection, output voltage setting, leakage current high limit, leakage current low limit, ramp time setting, test time setting, output frequency selection (DC withstand voltage has no such item), electronic arc selectivity setting, then it will

technical specifications

be insulation resistance parameters setting, its order is output voltage setting, insulation resistance high limit setting, insulation resistance low limit setting, delay time setting.

memory group setting

Press SET button, the program will enter memory group setting pattern automatically, the LCD display will show,

Memory= X
Range: 1-5

Please use “^” or “v” button to input the memory group numbers to the parameters setting program, its memory groups are 1~5 group.

Operational instructions

test item selection

After set the memory group, then press SET button, the program will enter test item selection setting mode, the LCD display will show,

Test= X
Select by √or∧

Please use “∧” or “√” button to select the test items, this tester has withstand test (W) , insulation resistance test(I), withstand voltage and insulation resistance connection test (W - I) and insulation resistance and compression connection test (I - W) for selection. Different models may have different optional test items, the following table is the optional test items in different models

Type	Selective test item
7122	W、 I、 W-I、 I-W
7112	W、 I、 W-I、 I-W
7120	W
7110	W

Its rotation order is the withstand test(W), insulation resistance test (I), withstand voltage and insulation resistance connection test (W - I) and insulation resistance and compression connection test (I - W), when selecting the items that the tester doesn' t have, the program will ignore it and begin to the next item that the tester have. In this section, it will be explained the parameter setting of withstand voltage and insulation resistance connection test(W-I)

If the test item is withstand voltage and insulation resistance connection test(W-I), the LCD display will show,

Test= W-I
Select by √or∧

Then press SET button, the program will enter the voltage setting of withstand voltage test, the LCD display will show,

W-Mode = AC	or	W-Mode = DC
Select by √or∧		Select by √or∧

When entering withstand voltage parameters setting mode, please in accordance with “withstand voltage parameters setting program” to enter each parameters item. After finishing the setting, the program will enter insulation resistance

technical specifications

parameters setting mode, the LCD display will show,

I-Voltage=X. XXKV
R: 0.10-1.00KVDC

When entering insulation resistance parameters setting mode, please in accordance with “insulation resistance setting program” to enter each parameters item.

After finishing the last setting, it can be returned to the first parameters setting item by pressing SET button to check every test item if its wrong, or press EXIT to exit the parameters setting mode and enter under-tested mode, ready for the withstand voltage and insulation resistance connection test (W - I)

insulation resistance and withstand voltage connection test parameters setting

If the test item is insulation resistance and withstand voltage connection test, the LCD display will show,

Test= I-W
Select by V or ^

This parameters setting program has no difference with withstand voltage and insulation resistance connection test. But it will test insulation resistance first, then test withstand voltage.

4.2 LCD display information

The following is when this tester begin to test, various of information will be shown in the display.

withstand voltage test

Dc and AC test will show the same information in the display, the only difference is it will show “AC” or “DC” behind the unit of the voltage, in order to distinguish them.

under-tested and parameters mode

The following information in the display means it has entered the under-tested and parameters mode.

W_Set MX XXX. Xs
X. XXKVAC XX. XXmA

or

W_Set MX XXX. Xs
X. XXKVDC XX. XXmA

If press TEST button, this tester will begin to withstand voltage test, if press SET button, this tester will begin to withstand voltage test parameters setting.

test abort

If it is having DC or AC withstand voltage test, it can be abort by pressing RESET button or using remote device.

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W_ABRT MX XXX. Xs
X. XXKVAC XX. XXmA

or

W_ABRT MX XXX. Xs
X. XXKVDC XX. XXmA

Ramp up time test

When DC or AC withstand voltage testing in the ramp up time, the test result will update continually, the LCD display will show,

W_Ramp MX XXX. Xs
X. XXKVAC XX. XXmA

or

W_Ramp MX XXX. Xs
X. XXKVDC XX. XXmA

withstand voltage test

When DC or AC withstand voltage testing, the test result will update continually, the LCD display will show,

W_Test MX XXX. Xs
X. XXXKVAC XX. XXmA

or

W_Test MX XXX. Xs
X. XXXKVDC XX. XXmA

Leakage current high limits

If it is having DC or AC withstand voltage test to under-tested object and the leakage current is over the high limit values, it will be determined the test is failed that the leakage current high limits caused, if its leakage current voltage values is not over the range of the tester, the LCD display will show,

W_High MX XXX. Xs
X. XXXKVAC XX. XXmA

or

W_High MX XXX. Xs
X. XXXKVDC XX. XXmA

If the under-tested object over the leakage current high limits values while having DC or AC withstand voltage test, it will be determined the test is failed that the leakage current high limits caused, if its leakage current voltage values is over the range of the tester, the LCD display will show,

W_High MX XXX. Xs
X. XXXKVAC OFLmA

or

W_High MX XXX. Xs
X. XXXKVDC OFLmA

Leakage current low limits

If it is having DC or AC withstand voltage test to under-tested object and the leakage current is below the low limit values, it will be determined the test is failed that the leakage current low limits caused, the LCD display will show,

W_Low MX XXX. Xs
X. XXXKVAC XX. XXmA

or

W_Low MX XXX. Xs
X. XXXKVDC XX. XXmA

Arc Fail

If the leakage current values of under-tested object is in the range of the leakage current high limit setting, but the electronic arc current has over the the range of the arc current setting and the tester's arc searching and judging function is set to be "ON" that caused the test failed, then the program will determine the test result is failed caused by the arc of under-tested object , the LCD display

technical specifications

will show,

W_Arc MX XXX. Xs
X. XXXKVAC XX. XXmA

or

W_Arc MX XXX. Xs
X. XXXKVDC XX. XXmA

test pass

If the under-tested object has no any unusual in the whole process of the test while testing, it will be determined pass the test, the LCD display will show,

W_Pass MX XXX. Xs
X. XXXKVAC XX. XXmA

or

W_Pass MX XXX. Xs
X. XXXKVDC XX. XXmA

insulation resistance test

If it shows “_” behind the memory group “MX” in the display (that is “MX_”), it means this test is withstand voltage and insulation resistance connection test. The following is

under-tested and parameters setting function

The following information on the display means the tester has entered the insulation resistance under-tested and parameters setting mode.

I_Set MX XXX. Xs
X. XXXKVDC XXXXM Ω

If press TEST button, this tester will begin to insulation resistance test, if press SET button, this tester will begin to insulation resistance test parameters setting.

Abort

If it is having DC or AC insulation resistance test, it can be abort by pressing RESET button or using remote device. the LCD display will show,

I_ABRT MX XXX. Xs
X. XXXKVDC XXXXM Ω

When pressing “RESET” button or using remote device to stop the test,

I_ABRT MX XXX. Xs
X. XXXKVDC ----M Ω

judging delay time

When testing insulation resistance during the delay time, the test result will be

technical specifications

update constantly, the LCD display will show,

I_Test MX XXX. Xs
X. XXKVDC XXXXM Ω

insulation resistance high limit

If the insulation resistance values is over the high limit values when testing, it will be determined the test is failed that the insulation resistance high limits caused, if its insulation resistance values is still in the range of the tester, the LCD display will show,

I_High MX XXX. Xs
X. XXKVDC XXXXM Ω

If the under-tested object is over the insulation resistance high limits values when having insulation resistance test, it will be determined the test is failed that the insulation resistance high limits caused, if its insulation resistance values is out of the range of the tester, the LCD display will show,

I_High MX XXX. Xs
X. XXKVDC >9999M Ω

insulation resistance low limit

If the insulation resistance values is over the low limit values when testing, it will be determined the test is failed that the insulation resistance low limits caused, if its insulation resistance values is still in the range of the tester, the LCD display will show,

I_Low MX XXX. Xs
X. XXKVDC XXXXM Ω

If the under-tested object is over the insulation resistance low limits values when having insulation resistance test, it will be determined the test is failed that the insulation resistance low limits caused, if its insulation resistance values is out of the range of the tester, the LCD display will show,

I_Low MX XXX. Xs
X. XXKVDC < 1M Ω

Pass

If the under-tested object has no any unusual in the whole process of the test while testing, it will be determined the test is passed, the LCD display will show,

technical specifications

I_Pass MX XXX. Xs X. XXXKVDC XXXXM Ω

The operation procedure and steps

1. 71 series withstand voltage tester is mainly designed to the normal production lines or quality inspection, it's easy to operate and set. Unreasonable settings and operations will be given the short warning beep and return to the original settings.
2. Please turn off the tester's input power switch before put the input power cord plugs into the AC power supply, and turn the voltage selection switch of the back plate to the right input voltage position and check if the fuse specification is correct, then get the earth into the ground terminal on the back plate.
3. Put the input power cord connect to the tester and socket respectively, please do not put the test wire connect to the output terminal of the tester first.
4. Connecting all the under-tested object or test wire correctly, then put the Return wire into Return terminal of the tester, finally put the high voltage test wire into high voltage terminal of the tester and check if all the test wires are connect correctly.
5. Turn on the input power switch of the tester, and the display will show,

LANKE 71XX VER: X. X

Then the program will show the memory group and the test parameters data of the last test and enter under-tested and parameters setting pattern

W_Set MX XXX. Xs X. XXXKVAC XX. XXmA

or

W_Set MX XXX. Xs X. XXXKVDC XX. XXmA

or

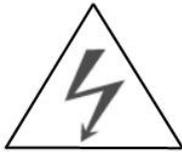
I_Set MX XXX. Xs X. XXXKVDC XXXXM Ω
--

Comment: If there is “_” behind the memory group “MX”, it means there is no W-I or I-W connection in this test.

5. If it needs to be reset the parameters setting, please press SET button to set the parameters, please read the test parameters setting instructions about the settings, programs and the procedures carefully.
6. If it needs to be invoked the parameters in the memory group to test, please press SET button, the program will enter memory group setting mode, the LCD display will show,

Memory= X Range: 1-5

Please use “^” or “v” button to choose the numbers of program memory group to input into the parameters setting program , the numbers of program memory group are 1-5 groups. After choose it ,press EXIT button to exit parameters setting mode and return to under-tested and parameters setting mode, the program will invoke the parameters of this memory group to wait for the test ,the LCD display will show the parameters of chosen memory group.



If it needs to be test, please press TEST button, the red light of high voltage on the plate will twink, the timer will also start counting at the same time. Do not touch the under-test object when testing, please keep safety. The display will show the information of the test. When the test is completed, the tester will automatically turn off the output, the green indicator on the test switch

will light up and ring a short "beep" sound, it means the tester confirms the testing objects is passed, the display will show "PASS" and the values of the test result.

If it needs to be continue the test, please press TEST button again, If it needs to be checked the original setting, press RESET button, the program will delete the test results and show the original setting.

8. If it needs to be terminated the test while testing, please press RESET button, this tester will be stopped the test, the display will reserve the present test values.

If it needs to be continue the test, please press TEST button, the program will retest from the beginning.

9. If the test to the under-test object is failure, the tester will immediately stop the test and the display will show its condition and the failure values, the red lights in RESET button will bright , and ring the "beep" sound. It can be closed the sound by pressing RESET button and reserve the test reading value, If it needs to be continued the test, please press TEST button. Please read the "display information" instruction to know the information about all kinds of the display.

9. If it needs to be used the external remote device to operate the tester, please put the remote into the remote input terminal on the plate.

Due to the TEST and RESET button of the tester and the remote can be pressed at the same time, so please keep the remote safe, do not let the unrelated personnel touch it, in order to prevent the danger.

This withstand voltage tester's PLC interface has far-end monitoring signal output, it can be put the signals connect to the control center for monitoring, far-end monitoring signal is accordance with this tester.

4.4 keyboard locking

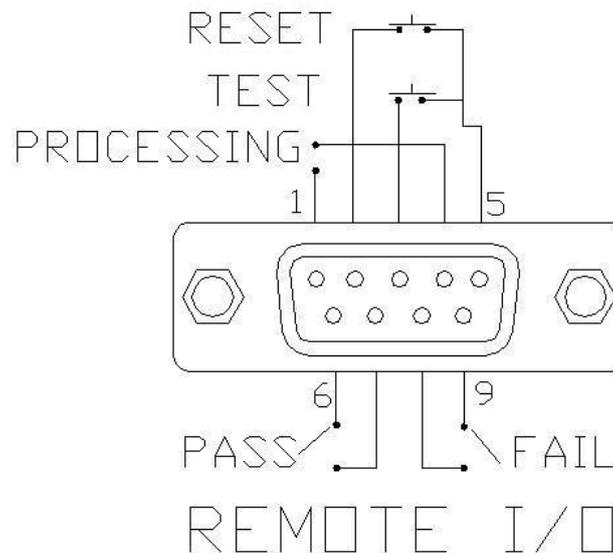
To prevent the operators change the test parameters randomly, 71 series withstand voltage tester has the keyboard locking function, please follow these steps to lock the keyboard:

Chapter Five :surface instructions

5.1 Far-end monitoring and remote connection wire terminal are attached to the back plate of the withstand voltage tester , it can be communicated the tester's working condition to the monitoring center as monitoring, and can be connected to the remote control to operate. This terminal is type 9PIND standard terminal seat with 3 monitoring signals of

technical specifications

PROCESSING,PASS,FAIL and 2 remote input signals of TEST, RESET.



71 series withstand voltage tester's PLC interface offers "normal open" (N.O) terminal to these 3 signals without power supply.terminal has a capacity of AC 250 v 1.0 Amp, these terminals have no limits of the positive and negative polarity, and each signal is a independent connection wire without common earth (COMMON).There is a mark of pin-out numbers on the terminal seat , the output signal wiring is as follows:

- PROCESSING: The output signal should connect between PIN2 and PIN5
- PASS: The output signal should connect between PIN8 and PIN9
-
- FAIL: The output signal should connect between PIN6 and PIN7
-

2. remote output connecting wires instruction

71 series withstand voltage tester is equipped with the far-end remote control terminal, it can be controlled TEST function(test switch) of the tester by external remote control device.These terminals offer the power supply which has the function of power control, it must be using the "momentary" (MOMENTARY) switch as the controller.Please pay special attention, it can not be connected to any other power supply, if it inputs the other power supply, it will cause the tester damage and the mistakes.There is a mark of pin-out numbers on the terminal seat ,PIN5 is the common earth (COMMON)of the far-end operation circuit , the wires are as follows:

- RESET control :its control switch is connected between PIN1 and PIN4.
- TEST control :its control switch is connected between PIN1 and PIN3.

Comment:The remote and withstand voltage tester can be operated at the same time,in order to avoid accidents,the remote must be kept safe by the personnel,do not put it in anyplace to let the unrelated person touch it.

Chapter Six: Calibration

The tester has been calibrated according to the national standard before it leaves the factory, the accuracy of the tester which uses for calibrate the tester is completely accord with the technical specifications of national standard and even more accurate. JINAI electronics suggested that the tester should be calibrated at least once a year ,the accuracy of the calibration tester must be within 0.5%, to ensure the its accuracy is completely accords with the technical specifications of JINAI electronics.

The calibration tester and device

The calibration tester and device as followings are capable of calibrating the tester, please make sure the accuracy of the calibration tester must be within 0.5%.

1. high-tension voltmeter: the test range should be over 0-6000V AC
2. current voltmeter: the test range should be over 0-15mA AC
3. current voltmeter: the test range should be over 0-5mA DC
4. Load: Resistance is about $1M\Omega / 4W$

Calibration steps

Version 1.9 should press CAL switch button on the back plate first, the LCD display will show (Version 2.0 should press “^” UP button and EXIT button)

CAL	Mode
AC	U

CAL	Mode
DC	U

JK7200A interface display

The tester has entered the calibration program, please release the button.

Please use “^” or “v” button to select the test item, this withstand voltage tester has 4 items of AC voltage (AC U), AC current (AC I), DC voltage (DC U), DC current (DC I) in turn.

The calibration order of 7200A is DC voltage (DC U), DC current (DC I) in turn.

Comment: This withstand voltage tester can select one of these items to calibrate, no need to calibrate all of them.

Voltage calibration

Connecting a standard high voltage voltmeter which can test 6000V AC/DC voltage to “H.V.” and “RETURN” terminal of the tester. (7200A should use the voltmeter which can test 1000V DC) Please pay attention to high and low voltage terminal if it have , please put the high voltage terminal connect to “H.V.” terminal, and put the low voltage terminal connect to “RETURN” terminal, to avoid the mistakes or damages of the high voltage voltmeter.

Press “^” or “v” button to enter AC voltage (AC U) or DC voltage (DC U) calibration item, the LCD display will show,

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AC voltage			DC voltage	
CAL	Mode	or	CAL	Mode
AC	U		DC	U

And then press TEST button, the tester' s calibration program will automatically output 3000V AC or DC voltage, after the ramp time is over, the LCD display will show,

Instrument calibration

Voltage= 3.000KV Enter STD V-out

Please use “^” or “v” button on the plate to input the standard voltage values to calibration program, the numbers will be increased by pressing “^” button and the numbers will be reduced by pressing “v” button, its unit is “V”

Please make sure the numbers are correct, then press SET button to confirm the calibration parameters, if it needs to be stopped and change the calibration parameters, please press EXIT button or RESET switch, the tester will be return to the calibration mode, waiting for the next parameters calibration.



Current calibration

Please link the standard current voltmeter and $1M\Omega$ resistor in series, and connect to the “H.V.” and “RETURN” terminal of the tester.

Then please press “^” or “v” button on the plate to select AC current (AC I) or DC current (DC I) calibration item, the LCD display will show,

CAL	Mode
AC	I

or

CAL	Mode
DC	I

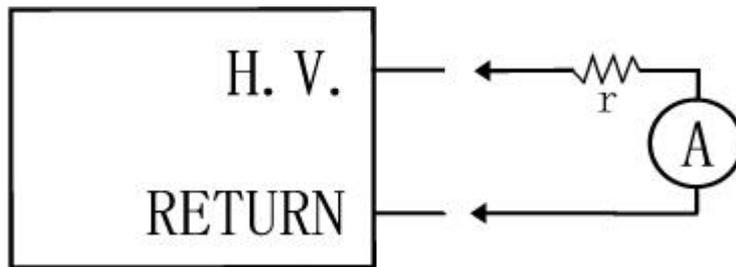
And then press TEST button, the tester's calibration program will automatically output 1000V AC or DC voltage, after the ramp time is over, the LCD display will show,

Current= 1.000mA
Enter STD A-out

Please use “^” or “v” button on the plate to input the standard current values to calibration program, the numbers will be increased by pressing “^” button and the numbers will be reduced by pressing “v” button, its unit is “mA”

Please make sure the numbers are correct, then press SET button to confirm the calibration parameters, if it needs to be stopped and change the calibration parameters, please press EXIT button or RESET switch, the tester will be return to the calibration mode, waiting for the next parameters calibration.

Please see the following picture for reference



Comment: Please connect the current voltmeter to RETURN terminal, to prevent the current values error and the damage of the current voltmeter.

Finish the calibration

After calibrating DC voltage and DC current, the insulation resistance will be calibrated by the program automatically, therefore, it should not be calibrated the insulation resistance separately.

It must be turn off the power first and then turn on it after input the calibration parameters of the tester, or it can not be entered under-test mode. Then the program will save the calibration parameters to the calibration storage automatically while turning off the power.

Please pay attention to the followings:

- RESET switch can be the operational key for exiting the calibration mode which is carrying on.
- It must be turned off the input power then turn on it after calibrate the tester, or it can not be entered the setting or under-test mode.
- The saved calibration parameters will be restored in the storage, and will not be changed or disappeared unless someone modify it.
- The calibration cycle of the tester is one year.

Chapter Seven :appendix

7.1 standard accessories

Name	quantity	remarks
test stick	1	
power wire	1	
test wire	1	
fuse	3	
manual	1	
certificate	1	
warranty card	1	
test report	1	

7.2 Warranty

Every product that produced by JINAI electronic company is strictly quality inspected ,and assure that if there is something wrong with the body or the parts of the tester in a year after leave the factory ,the company will repair it for free.But if the user changes its circuit ,functions or repair the tester without permission and caused the parts or body damaged,the company will not offer free warranty service and will charge a fee depend on the situation. If it is not in accordance with the regulations to connect all the earth correctly or not follow the regulations to operate the tester and occurs the unusual conditions, the company will not provide free warranty service as well.

This warranty is not contain of the fittings or any accessories that are not produced by JINAI electronic company

In warranty,please send the damaged tester to our company or the agents authorized by our company,our company will repair it carefully.

If the tester is used under Abnormal operation,or human negligence,or uncontrollable factor such as earthquake,flood,riots or fire hazard,our company will not provide the free warranty service.

- If there is any problems,please call us