



# ALLWIN INSTRUMENT

## Manual

CS99XSeries

Programmable safety  
tester operation manual

*NANJING ALLWIN INSTRUMENT SCIENCE AND  
TECHNOLOGY CO. LTD*

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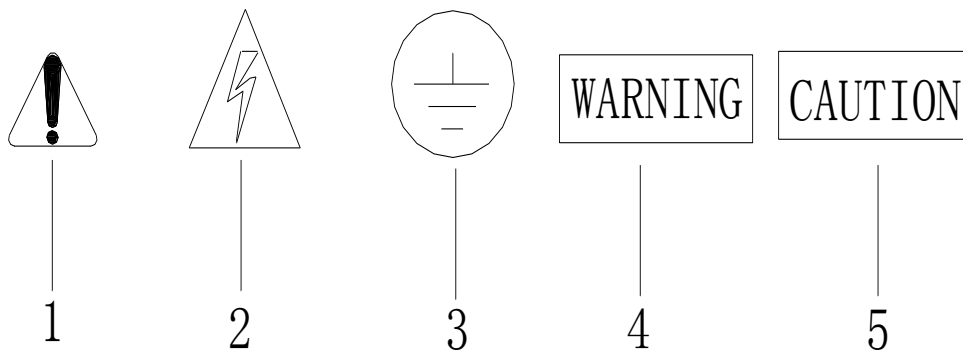
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# Chapter 1 Safety information

## Regulation and notices before High-voltage test!!!

### 1.1 General regulation

- Please acknowledge of the relatively used safety symbols of this Withstanding Voltage Tester before using.
- Please check the input voltage with that signed on the brand before electrifying.



1-----High voltage caution. Please refer to the listed cautions and instructions in the reference book to prevent hurt and damage.

2-----Dangerous! Do not touch it for the high voltage may exist.

3-----Earth.

4----- Warning. Please attend to the high danger exists in the executive procedure, application or conditions which may lead to hurt even death.

5-----Caution. Please attend to the high danger exists in the executive procedure, application or conditions which may damage the instruments or lose the storied date.

**The generated voltage and current by Withstanding voltage tester can enough hurt people or result a electric shock, in order to prevent such injuries or death, please inspect it clearly at first and then operate before moving and using.**

### 1.2 Care and Maintenance

#### 1.2.1 Users' maintenance

To avoid electric shock, Please do not take apart the tester's box. All the inner hardware of this Withstanding Voltage Tester needn't users' maintenance absolutely. If there is any problem or abnormity, please contact with Allwin Instrument or its appointed dealer.

### 1.2.2 Periodical maintenance

The inputting electrical source line, testing leads and related accessories etc. of this Withstanding Voltage Tester must be checked and verified carefully in due time according to their using frequency to protect users' safety and accuracy of the instrument.

### 1.2.3 Users' change

Users can not change the inner circuitry and hardware of the instrument by themselves, if be changed, our company will not guarantee and be responsible for any duties anymore, making use of the hardware or accessories unauthorized by Allwin Instrument as well. If changes have been made in the instrument sent back, Allwin Instrument will renovate the changed circuitry or hardware into the formal design, and charge the servicing.

## 1.3 Testing work place

### 1.3.1 Worktable location

The worktable must be located in a special place where other non-workers have no need to go by and shall be far away from. If it does not work for assembly line's arrangement, it must be separated from other establishment especially marked "Area for High-Voltage test". If the High-Voltage Test worktable is much near to other worktables, special attention shall be paid to avoid electric shock. While testing, "Dangerous"! High-voltage test is making, non-worker keeps away please!" must be marked.

### 1.3.2 Input electrical source

Withstanding Voltage Tester must have good grounding. The tester has a grounding terminal on its rear panel, please ground the terminal with the earth well. This tester must have an individual switch, please equip it in a distinct place and mark its function. In case of any emergency, please cut off the electrical source for further processing.

The electrical source of this Withstanding Voltage Tester is AC one, with its Power Range: 220V $\pm$ 10%, Power frequency: 50Hz. If the power is unstable within the Power Range, it is possible to make the tester abnormal and damage the inner components.

### 1.3.3 Worktable in test

Being in the Withstanding Voltage testing, the tester must be put on the worktable made of non-conducting materials, no conducting materials can be used between operators and the DUT. Operator cannot cross the DUT to operate or calibrate the tester.

**In order to prevent explosion and fire, no test can be made in or around the area where flammable gas and/or flammable substance exist.**

## 1.4 Operator

The output voltage and current of Withstanding Voltage Tester can lead to electric shock even casualty with wrong operation, therefore the operators must be strictly practiced and qualified. Operators cannot wear clothes or decorations with metal ornaments, such as watch etc. and they cannot be the people with heart disease or heart pacemaker too.

## 1.5 Safety points

Non-qualified operators and irrelevant staff shall be far away from the high-voltage test area. Always keep a safe and ordered state in the high-voltage test area.

Mustn't touch the testing objects or anything connected with the DUT.  
 Cut off the high voltage input and output power source immediately, if anything happens.  
 Make sure that discharge appropriately first after DC Withstanding Voltage test, and then dismantle the test leads.

## Chapter 2 Notices before use

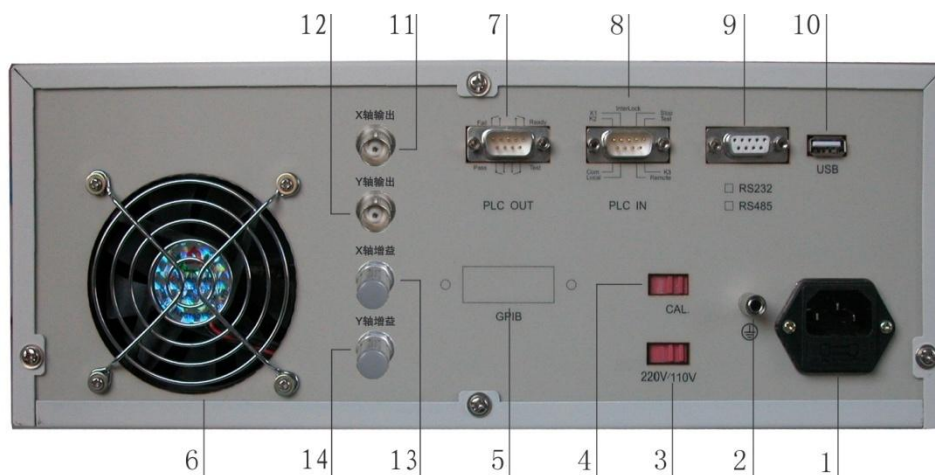
**The highest voltage of this Withstanding Voltage tester is 6KV; any incorrect or wrong using will result in accidents even death. In favor of the users' safety, please read these notices carefully.**

### 1. Prevention from electric shock

In order to guard against electric shock, please wear insulated rubber gloves to deal with the works related to electricity before using the test instrument.

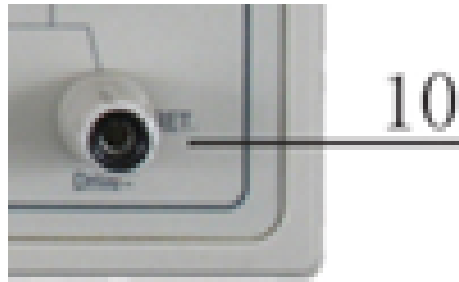
### 2. Grounding

Ground the terminal on the rear panel of the test instrument, if there is no trustful grounding, the coat of the instrument will induce short circuit with power source or with high-voltage testing lead wires while testing, and then brings high voltage, and therefore it is very dangerous for any touch of the coat.



### 3. Connecting test lead wires and RETURN terminal(marked number2)

Well connect the test lead wires and RETURN terminal. While using this tester, at anytime must the test lead wires be checked whether it has been connected well and without loosing or dropping. When planning to connect the test lead wires with the test object, please connect the RETURN terminal to the device under test first for the dropping and dropped of the RETURN terminal are too dangerous because the whole device under test is probably to be filled of high voltage.



Secure the test line well at this point 10( return terminal)

#### 4. Connection of the test lead wires to the high voltage output terminal

After connecting the test lead wires to the RETURN terminal, connect the high voltage output line as following procedure:

- Press [STOP] first.
- Confirm the test light is off.
- Insert high voltage input line into the high voltage output terminal.

#### 5. Test stopping

When the test has been finished in a period or halt for some time or the test instrument needn't using any longer, please be sure the power switch has been turned off.

#### 6. Tester in testing state

While testing, please do not touch the test lead wires, device under test, test probe and output terminal for all of these are with voltage.

**Notice: While testing, do not touch the alligator clip on the test lead wires to avoid electric shock for its low insulated quality cannot obstruct the high voltage the test lead wires brings.**

#### 7. Confirmation after test

At anytime before touching the high voltage lines, testing objects or high voltage output terminal, please confirm:

- (1) The power source switch is opened and display is not enlightened.
- (2) Do not touch anywhere that may make electric shock immediately, for after Insulation Resistance test or DC test, the tested object brings high voltage is probable, and it needs a period to discharge completely when the power source is cut off.

#### 8. Changing of DUT

When turning another object to be tested after one has been finished, please confirm:

- The tester states in "Replacement".
- Testing light does not sparkle.
- LCD showing numbers are not jumping.

**Special notice: Do not touch the high-voltage probe when changing the device under test.**

## 9. Opening or closing the power source switch

Once the power source switch has been opened, it will need a few seconds to restart, please be sure not to open and close the switch continuously especially as the high voltage is being output for it will work wrong to damage the instrument or generate dangers.

**When turning on or cutting off the power source, the high voltage output terminal cannot be connected with any objects to prevent the dangers made by abnormal output.**

## 10. Other notices

Do not make short circuit happen among the output and grounding line and the transmission line or other grounding line's conductor, lest the whole tester brings voltage.

## 11. Processing in danger

For the sake of avoiding bigger loss, in any urgent circumstance such as electric shock, device under test or mainframe burns, please process as following steps:

- Firstly cut off the power source.
- Pull out the plug of power source line.

## 12. Problems happening

Under the following circumstance, please be extremely careful for even you have pressed the STOP key, the output terminal may still hold high voltage which will be very dangerous.

- The test light is still bright after pressing the STOP key.
- Voltmeter does not show data but the test light is still shining.

If such dangerous status happens, please cut off the power source and pull out its plug, don't reuse it but return it back to our company or office for maintenance.

## 13. Malfunction of test light

Having pressed the START key, the Voltmeter shows data but the test light is not bright, then please turns off the tester and returns it back to our company or office for test light maintenance.

## 14. Processing when tester doesn't work

This series tester is Withstanding Voltage or Withstanding Voltage Insulation resistance one with the highest output voltage is 5.000kVac or 6.000kVdc, the working environment of the tester is extremely abominable, if it does not work while being used, please cut off the power source and restart it after 5 seconds.

## Chapter 3 Function introduction

CS9912AX,CS9912BX,CS9913AX,CS9913BX,CS9914AX,CS9914BX, CS9919AX, CS9929AX, CS9929CX, CS9919BX, CS9929BX, CS9929EX, CS9922BX, CS9922CX, CS9922DX, CS9922EX, CS9922FX, CS9933X, CS9921BX, CS9950CX, CS9950DX, CS9922G, CS9922G-1 , CS9933G, CS9919G, CS9950CG,CS9950CG-1 , CS9914G, CS9912Y, CS9914Y, CS9915AX, CS9916AX, CS9916BX, CS9917AX, CS9917BX are intelligent Programmable Withstanding Voltage Testers. Adopting the high-speed MCU and large-scale digital circuit design, the high-performance safety testers are fully controlled by MCU in bulk, rising and falling and the frequency of their output voltage, they also can display the disputative circuit and voltage in real time and calibrate the soft system, with the equipped signal input and output terminals PLC needs, and the optional RS232C or RS485 terminal, the testers can conveniently compose a comprehensive test system with computer or PLC which can test the withstanding voltage intensity of the electronic components, domestic appliance, insulating materials, instruments and meter, illuminating electronically appliance, electro motion and galvanothermy apparatus.

The series testers in accordance with the following standards: Domestic Appliance Standard (IEC6035、GB4706.1-2001)、Medical Apparatus Standard ( IEC601-1-1998 、 GB4706.1-1998 ) 、 Lamps and Lanterns Standard (IEC60598-1-1999、GB7000.1-2000)、Information Standard (GB8898-2001、GB12113、GB4943-2001、IEC60065、IEC60950) etc..

### 3.1 Automatic voltage rising、 automatic voltage falling

#### 3.1.1 Automatic voltage rising

User can set up the voltage rising speed according to time, such as: Rated test voltage is 1000V,if the tester voltage rises 50V per second, the voltage rise time can be set up to 20s, if 200V per second, 5s. When the voltage is rising, if the test current is higher than the upper limit one, the tester will cut off the output voltage automatically with the hinting of sound and light and hold the voltage and current showed in the display at that moment. This function is usually used to test or analyze the disputative points of the device under test and its tolerance when processing the Withstanding Voltage test. The traditional test equipment just cannot achieve such function.

#### 3.1.2 Automatic voltage falling

User can set up the voltage falling speed according to time. For example: Rating test voltage is 1000V, as the falling speed of tester is 50V per second, the time can be set up to 20s, if 200V per second, 5s. When the voltage is falling, if the test current is higher than the upper limit one, the tester will cut off the output voltage automatically with the hinting of sound and light and hold the voltage and current showed in the display at that moment.

### 3.2 Software calibration



All the measure instruments need calibrating in fixed time. Traditionally, external standard apparatus is connected firstly, and then calibrate the inner components with the out shell opened to make the instrument fit for the standard parameter. This method is troublesome for repeating and also needs professional technicians to dismantle the equipment.

Software calibration is simple and easy to learn, it is to calibrate the instrument via connecting with standard equipment, inputting the standard parameter of the equipment into the instrument, and then pressing EXIT to finish the calibration. User can do it by them without difficulty.

### **3.3 Zero turn-on function**

Most Withstanding Voltage test equipment will damage the DUT by generated “Impact” when starting, but this tester can avoid surging voltage as the output test voltage rises in a certain assurgent rate from zero to the setting value controlled by controller from starting.

### **3.4 Outer controlling and communication**

With “PLC” terminal, the tester can compose a pipelining test system with PLC, while selecting and equipping RS232C or RS485 terminal, it can compose a testing system which fulfills quality statistic、analysis、report printing and so on .

### **3.5 Automatically saving of setting value**

Each setting parameter can be saved by tester automatically, and will not be lost because of closing or power off, if start again; the setting parameter is still available without new setting before.

### **3.6 Timing and Pause**

Timing hour is the time lasts from the output voltage reaches the setting value. The tester will begin timing from the voltage outputs as set after time value has been set and stop timing automatically and cut off the power when it arrives the setting value. If the timing hour set to “0”, the tester will not stop timing and cut off power though the timing hour displayed on calculagraph, however it works only by pressing “STOP” key. Pause time is a period from stop timing automatically and cut off power to restart, during this period, operator needs not press “START” to reboot after the testing objects have been changed, which can save time and improve working efficiency. If pause time is set to “0”, the tester will not start automatically after the timing hour has been over and the voltage been cut off automatically, and keep in starting status.

### **3.7 Invalid connecting judgment in test terminal**

When the leakage current lower limit has been set, the tester will generate alerting sound and light while starting, indicating the connection shall be detected or leakage current lower limit be reset to “0”for the circuit connection is not well.

### **3.8 Frequency Selection of test voltage**

The tester provides two kinds of industrial frequency of output voltage: 50Hz & 60Hz. It can be chosen in menu list if necessary.

### 3.9 Three test time

The times of AC/DC Withstanding voltage and Insulation Resistance test are three timers.

### 3.10 Test mode setting at random

CS9912AX, CS9913AX, CS9914AX, CS9915AX, CS9916AX, CS9917AX can perform the random combination tests of ACW test.

CS9912BX, CS9913BX, CS9914BX, CS9916BX, CS9917BX can perform the random combination tests of ACW, DCW test.

CS9922BX、CS9922DX、CS9922EX、CS9922FX, CS9922G, CS9922G-1 can perform the random combination tests of ACW、DCW and IR test.

CS9922CX can perform the random combination tests of ACW and IR test.

CS9933X can perform the random combination tests of ACW, DCW, IR, GR test.

CS9950CX, CS9950DX, CS9950CG, CS9950CG-1 can perform the random combination tests of GR test.

### 3.11 Switch with buzzer

The buzzer switch can be available by menu setting.

### 3.12 Capability of detecting power supply (CS9913AX/CS9913BX have no such function)

To protect the operator from danger, the series Safety tester has adopted the I species working way of grounding outer shell, however the power supply circuit polarities fail to connect will result in such dangers as electrification of the outer shell (Correct way: Left-Null line, Right-Live line, Upper-Ground line). The series tester carries power supply safety test function, it can judge whether the N、L、G lines have been connected properly after the power plug inserted well (Instrument switch stays in OFF). If the "OK" light is bright, the power connection is right, otherwise wrong and please do not touch the outer shell to avoid electric shock.

### 3.13 Detecting the arc according to current range

Judging whether the arc is eligible in terms of current, the detecting range can be set as following:

CS9912AX/CS9912BX : 0~20.00mAac/0~10.00mAdc

CS9913AX/CS9913BX: 0~50.00mAac/0~20.00mAdc

CS9914AX/CS9914BX: 0~100.00mAac/0~50.00mAdc

CS9922CX : 0~20.00mA

CS9922BX: 0~20.00mAac/0~9.999mAdc

CS9922DX:0~50.00mAac/0~20mAdc

CS9922EX/CS9922FX: 0~100mAac/0~50mAdc

CS9933X:0~20mA

### 3.14 Statistics and analysis (Optional) of testing data carried out by Serial

**communication software.**

With selected and matched Serial communication software RS232C or RS485, the series tester can store the testing data into EXCEL automatically each time, even closed the software of the Position machine, PC can add up the testers in all, eligible products and ineligible products.

If need the software, please contact with Allwin Instrument, communication software, communication protocols and operation manual are in the enclosed disc.

## Chapter 4 Technology index

### 4.1 The model and function

Model	Function Statement
<b>CS9912AX</b>	AC Withstanding Voltage tester
<b>CS9912BX</b>	AC/DC Withstanding Voltage tester
<b>CS9913AX</b>	AC Withstanding Voltage tester
<b>CS9913BX</b>	AC/DC Withstanding Voltage tester
<b>CS9914AX</b>	AC Withstanding Voltage tester
<b>CS9914BX</b>	AC/DC Withstanding Voltage tester
<b>CS9919AX</b>	8 channels AC/DC Withstanding Voltage tester
<b>CS9929AX</b>	8 channels AC/DC/IR Withstanding Voltage tester
<b>CS9929CX</b>	8 channels AC/DC/IR Withstanding Voltage tester
<b>CS9919BX</b>	4 channels AC/DC Withstanding Voltage tester
<b>CS9929BX</b>	4 channels AC/DC/IR Withstanding Voltage tester
<b>CS9929EX</b>	14 channels AC/DC/IR Withstanding Voltage tester
<b>CS9922BX</b>	AC/DC Withstanding Voltage / Insulation resistance tester
<b>CS9922CX</b>	AC Withstanding Voltage / Insulation resistance tester
<b>CS9922DX</b>	AC/DC Withstanding Voltage / Insulation resistance tester
<b>CS9922EX</b>	AC/DC Withstanding Voltage / Insulation resistance tester
<b>CS9922FX</b>	AC/DC Withstanding Voltage / Insulation resistance tester
<b>CS9933X</b>	AC/DC/IR/GR Withstanding Voltage tester
<b>CS9950CX</b>	40A Ground Bond Tester
<b>CS9950DX</b>	60A Ground Bond Tester
<b>CS9922G</b>	AC/DC/IR Withstanding Voltage tester for solar module
<b>CS9922G-1</b>	AC/DC/IR Withstanding Voltage tester for solar module
<b>CS9933G</b>	AC/DC/IR/GR Withstanding Voltage tester
<b>CS9919G</b>	Plate short-circuit tester
<b>CS9950CG</b>	Ground Bond Tester for solar module
<b>CS9914G</b>	AC/DC Withstanding Voltage for PV modules
<b>CS9912Y</b>	AC/DC Withstanding Voltage for medical apparatus
<b>CS9914Y</b>	AC/DC Withstanding Voltage for medical apparatus
<b>CS9915AX</b>	10kV ACW Hipot tester
<b>CS9916AX</b>	10kV ACW Hipot tester
<b>CS9916BX</b>	10kV DCW Hipot tester
<b>CS9917AX</b>	10kV ACW Hipot tester
<b>CS9917BX</b>	10kV DCW Hipot tester
<b>CS9920A</b>	AC Withstanding Voltage tester
<b>CS9920B</b>	DC Withstanding Voltage tester
<b>CS9923G</b>	10kV DCW/ IR 1kV@50GΩ
<b>CS9939X</b>	8 channels, ACW/DCW/IR/GR tester

## 4.2 Technology index

### 4.2.1 CS9921BX/CS9933X Technology index

Model			CS9921BX	CS9933X
ACW	Output voltage	range	0.050kV~5.000kV	
		accuracy	$\pm (2\% \text{read value} + 5V)$	
		resolution	1V	
	Max output power		100VA (5.000kV/20mA)	
	Test current		20mA	
	Low-current		0~20mA, 0= not judged	
	Range		200uA、2mA、20mA	
	Waveform		Sine wave	
	Distortion		$\leq 2\%$ ( Unloaded or resistance of the load )	
	Crest factor		1.3~1.5	
	Waveform mode		DDS+ Amplifier	
	Rise time		0.3s~999.9s 0= OFF	
	Test time		0.3s~999.9s 0= Continuous	
	Descend time		0.3s~999.9s 0= OFF	
	Interval time		0.0s~999.9s 0= OFF	
	Output mode		N mode 、G mode	
DCW	output voltage	range	0.050kV~6.000kV	
		accuracy	$\pm (2\% \text{read value} + 5V)$	
		resolution	1V	
	Maximum power		60W (6.000kV/10mA)	
	Test current		10mA	
	range		2uA、20uA、200uA、2mA、10mA	
	Ripple coefficient		$\leq 5\%$ (6kV/10mA)	
	Discharge time		$\leq 200\text{ms}$	
	Maximum charge current		10mA	
	Voltage rise time		0.3s~999.9s 0= OFF	
	Test time		0.3s~999.9s 0= Continuous	
	Fall time		0.3s~999.9s 0= OFF	
	Interval time		0.0s~999.9s 0= OFF	
	Delay alarm time		0.3s~999.9s 0= OFF	
	Output mode		N mode 、G mode	
IR	Output	range	-----	0.050kV~1.000kV

	voltage	accuracy	-----	$\pm (2\% \text{read value} + 5V)$
		resolution	-----	1V
	Maximum high-limit		-----	9.999G $\Omega$
	Maximum low-limit		-----	9.999G $\Omega$
	Minimum low-limit		-----	1M $\Omega$
	Rise time		-----	0.3~999.9s 0= OFF
	Test time		-----	0.3s~999.9s 0= Continuous
	Interval time		-----	0.0s~999.9s 0= OFF
	Auto range		-----	ON / OFF
	Discharge time		-----	$\leq 200\text{ms}$
GR	Output current	range	3.0A~30.0A	
		accuracy	$\pm (2\% \text{read value} + 0.2A)$	
		resolution	0.01A	
	Max output power		135W (30A/0.15 $\Omega$ )	
	Max output current		30A	
	High-limit of GR		$\frac{30A}{Setcurrent} \times 150\text{m}\Omega$	
	Waveform		Sine wave	
	Distortion		$\leq 2\%$ ( Unloaded or resistance of the load )	
	Crest factor		1.3~1.5	
	Waveform mode		DDS+ Amplifier	
	Test time		0.3s~999.9s 0= Continuous	
	Interval time		0.0s~999.9s 0=OFF	
Volt meter	range		0.050kV~6.000kV	
	Accuracy		$\pm (2\% \text{read value} + 5V)$	
	Resolution		1V	
	Displayed value		RMS	
Ampere meter	range	AC	0 ~ 20mA	
		DC	0 ~ 10mA	
	resolution	AC	200uA:0.1uA, 2mA:1uA, 20mA:10uA	
		DC	2uA:0.001uA, 20uA:0.01uA, 200uA:0.1uA, 2mA:1uA, 10mA:10uA	
	Accuracy		$\geq 2\text{Ma}$ : $\pm (2\% + 5\text{counts})$ , $< 2\text{mA}$ : $\pm (3\% + 5\text{counts})$	
	Offset current		Current of test leads and accessories can be deducted.	
	Mode		GND: RETURN terminal is connected to the case FLOAT: RETURN terminal is not connected to the case	
IR ohm meter	Range		1M $\Omega$ ~9999M $\Omega$	
	Resolution		1M $\Omega$ ~9.999M $\Omega$ :0.001M $\Omega$ , 10M $\Omega$ ~99.99M $\Omega$ :0.01M $\Omega$ , 100M $\Omega$ ~999.9M $\Omega$ :0.1M $\Omega$ , 1000M $\Omega$ ~9999M $\Omega$ :1M $\Omega$	
	Accuracy		0.100kV~0.200kV:1M $\Omega$ ~999M $\Omega$ $\pm 5\%$ , 1000M $\Omega$ ~3000M $\Omega$ $\pm 10\%$ 0.201kV~0.499kV:1M $\Omega$ ~999M $\Omega$ $\pm 5\%$ , 1000M $\Omega$ ~5000M $\Omega$ $\pm 10\%$ 0.500kV~1.000kV:1M $\Omega$ ~999M $\Omega$ $\pm 5\%$ , 1000M $\Omega$ ~9999M $\Omega$ $\pm 10\%$	

GR Ampere meter	Range	3.00A~30.00A
	Resolution	0.01A
	Accuracy	$\pm (2\% \text{read value} + 0.2A)$
	Displayed value	RMS
GR ohm meter	Range	0~510m $\Omega$
	Accuracy	current<5.00A: $\pm (3\% \text{read value} + 3m\Omega)$ current $\geq 5.00A$ : $\pm (2\% \text{read value} + 2m\Omega)$
	Resolution	0.1m $\Omega$
	Measure method	4-terminal method
Timer	Range	0~999.9s
	Resolution	0.1s
	Accuracy	$\pm (0.1\% + 50ms)$

#### 4.2.2 CS9950CX/CS9950DX Technology index

Model			CS9950CX	CS9950DX
GR	Output current	range	1.0A~40.00A	1.0A~60.00A
		accuracy	$\pm (2\% \text{read value} + 0.2A)$	
		resolution	0.1A	
	Max output power		240W (40A/0.15 $\Omega$ )	540W (60A/0.15 $\Omega$ )
	Max output current		40A	60A
	High-limit of GR		$\frac{40A}{setcurrent} \times 150m\Omega$	$\frac{60A}{setcurrent} \times 150m\Omega$
	Waveform		Sine wave	
	Distortion		$\leq 2\%$ ( Unloaded or resistance of the load )	
	Crest factor		1.3~1.5	
	Waveform mode		DDS+ Amplifier	
	Test time		0.3s~999.9s    0= Continuous	
	Interval time		0.0s~999.9s    0= OFF	
GR Ampere meter	Range		1.00A~40.00A	1.00A~60.00A
	Resolution		0.01A	
	Accuracy		$\pm (2\% \text{read value} + 0.2A)$	
	Displayed value		RMS	
GR ohm meter	Range		0~510m $\Omega$	
	Accuracy		Current<5.00A: $\pm (3\% \text{read value} + 3m\Omega)$ Current $\geq 5.00A$ : $\pm (2\% \text{read value} + 2m\Omega)$	
	Resolution		0.1m $\Omega$	
	Measure method		4-terminal method	
Timer	Range		0~999.9s	
	Resolution		0.1s	
	Accuracy		$\pm (0.1\% + 50ms)$	

## 4.2.3 CS9950CG/CS9950CG-1 Technology index

Model			CS9950CG	CS9950CG-1
GR	Output current	range	3.00A~30.00A	3.00A~40.00A
		accuracy	$\pm (1.5\% \text{ read value} + 0.2A)$	
		resolution	0.01A	
	Max output power		135W (30A/0.15Ω)	240W (40A/0.15Ω)
	Max output current		30A	40A
	High-limit of GR		$\frac{30A}{setcurrent} \times 150m\Omega$	$\frac{40A}{setcurrent} \times 150m\Omega$
	Waveform		RMS	
	Distortion		$\leq 2\%$ ( Unloaded or resistance of the load )	
	Crest factor		1.3~1.5	
	Waveform mode		DDS+ Amplifier	
	Test time		0.3s~999.9s 0= Continuous	
	Interval time		0.0s~999.9s 0= OFF	
GR Ampere meter	Range		3.00A~30.00A	3.00A~40.00A
	Resolution		0.01A	
	Accuracy		$\pm (1.5\% \text{ read value} + 0.2A)$	
	Displayed value		RMS	
GR ohm meter	Range		0~510mΩ	
	Accuracy		current <5.00A: $\pm (3\% \text{ read value} + 3m\Omega)$ current $\geq 5.00A$ : $\pm (2\% \text{ read value} + 2m\Omega)$	
	Resolution		0.1mΩ	
	Measure method		4-terminal method	
Timer	Range		0~999.9s	
	Resolution		0.1s	
	Accuracy		$\pm (0.1\% + 50ms)$	

## 4.2.4 CS9922BX/CS9922CX Technology index

Function/Model	CS9922CX	CS9922BX
Input characteristics	Single-phase 50Hz 220Vac $\pm 10\%$	
Withstand voltage test	Output: 5kVac @20mA	Output : 5kVac @20mA 6kVdc @10mA
	Stability : $\pm (1\% \text{ Output value} + 5V)$ Resolution : 1 volts/Step Accuracy: $\pm (1\% \text{ Reading value} + 5V)$ Voltage $\geq 1.000kV$ $\pm (2\% \text{ Reading value} + 5V)$ Voltage $< 1.000kV$	



<b>Leakage current</b>	Ran: 5.0uA-20.00mAac	Range: 5.0uA-20.00mAac 0.050uA-10.00mAdc
	Resolution : AC:1.0uA/Step DC:0.010uA/step	
<b>Insulating output voltage</b>	(0.050~1.000)kV Accuracy : $\pm(2\%\text{Setting value}+5\text{V})$	
<b>Insulation resistance</b>	1Mohm-9.999G ohm	
	Resolution : 1M/Step	
<b>Insulation resistance testing range</b>	1-1000M Accuracy : $\pm 5\%$ 1000M—9.999Gohm Accuracy : $\pm 10\%$	
<b>Test time</b>	0.1-999.9s 0=Continue	
<b>Pause time</b>	0.1-999.9s 0= Test time over, test stop automatically	
<b>Slow rise time</b>	0.5-999.9s 0= Slow rise time stop	
<b>Slow fall time</b>	0.5-999.9s 0= Slow fall time stop	
<b>Arc detect time</b>	0-999.9s 0 = Disable	
<b>Voltmeter</b>	AC : 0.050-5.000kV	AC:0.050-5.000kV DC:0.050-6.000kV
	Resolution : 1V Accuracy : $\pm (1\%\text{Reading value}+5\text{V})$ Voltage $\geq 1.000\text{kV}$ $\pm (2\%\text{Reading value}+5\text{V})$ Voltage $< 1.000\text{kV}$	
<b>Ampere meter</b>	AC: 0.050-20.00mA	AC:5.0uA-20.00mA DC:5.0uA-10.00mA
	Resolution : $\leq 1\text{mA}$ is 0.001mA, $> 1\text{mA}$ is 0.01mA Accuracy : $\pm (2\%\text{Reading value}+2\text{counts})$	
<b>Timer</b>	0-999.9s	
	Resolution : 0.1s, Accuracy : $\pm 1\%$	
<b>Memory unit</b>	30 units	
<b>Testing step</b>	8steps	
<b>Arc detect setting</b>	0-20.00mAac 0=closed	0-20.00mAac 0= closed 0-10.00mAdc 0= closed
<b>Operating temperature</b>	0°-40°C	
<b>Comparative humidity</b>	Less than 75%	
<b>Test fail mode</b>	Buzzer, Indicator light, display	
<b>Buzzer</b>	Open and close can be set	

<b>Size</b>	355mmx133mmx455mm
<b>Weight</b>	20kg

#### 4.2.5 CS9912AX/CS9912BX Technology index

Function/Mode	CS9912AX	CS9912BX
<b>Input characteristics</b>	Single-phase 50Hz 220Vac $\pm 10\%$	
<b>Withstand voltage test</b>	Output: 5kVac @20.00mA	Output: 5kVac @20.00mA 6kVdc @10.00mA
	Stability: $\pm (1\% \text{Output value} + 5V)$ Resolution: 1 volts/Step Accuracy: $\pm (1\% \text{Reading value} + 5V)$ Voltage $\geq 1.000kV$ $\pm (2\% \text{Reading value} + 5V)$ Voltage $< 1.000kV$	
<b>Current leakage setting</b>	Range: 0.01-20.00mAac	Range: 0.01-20.00mAac 0.01-10.00mAac
	Resolution: 0.01mA/Setp	
<b>Test time</b>	0.1-999.9s	0=Continuous
<b>Pause time</b>	0.1-999.9s	0=Test time over, tester stops testing automatically
<b>Rise time</b>	0.5-999.9s	0=Rise time closed
<b>Fall time</b>	0.5-999.9s	0=Fall time closed
<b>Arc detecting time</b>	0-999.9s	0=Disable
<b>Voltmeter</b>	AC: 0.00-5.00kV	AC: 0.00-5.000kV DC: 0.00-6.000kV
	Resolution: 1V Accuracy: $\pm (1\% \text{Reading value} + 5V)$ Voltage $\geq 1.000kV$ $\pm (2\% \text{Reading value} + 5V)$ Voltage $< 1.000kV$	
<b>Ampere meter</b>	AC: 0.000-20.00mA	AC: 0.000-20.00mA DC: 0.000-10.00mA
	Resolution: $\leq 1mA$ 0.001mA, $> 1mA$ 0.01mA Precision: $\pm (2\% \text{Reading value} + 2\text{counts})$	
<b>Counter</b>	0-999.9s	
	Resolution: 0.1s, Precision: $\pm 1\%$	
<b>Memory</b>	20 units	
<b>Test step</b>	8 steps	
<b>Arc detecting setting</b>	0-20.00mAac 0=closed	0-20.00mAac 0=closed 0-10.00mAac 0=closed
<b>Operating temperature</b>	0°-40°C	
<b>Relative humidity</b>	$\leq 75\%$	
<b>Test FAIL mode</b>	Buzzer、Indicator light、Display	
<b>Buzzer</b>	Open and close can be set	

<b>Dimension</b>	285mmx96mmx400mm
<b>Weight</b>	20kg

#### 4.2.6 CS9913AX/CS9913BX Technology index

Function/Mode	CS9913AX	CS9913BX
<b>Input characteristics</b>	Single-phase 50Hz 220Vac $\pm 10\%$	
<b>Withstand voltage test</b>	Output: 5kVac @50.00mA	Output: 5kVac @50.00mA 6kVdc @20.00mA
	Stability: $\pm (1\% \text{Output value} + 5V)$ Resolution: 1 volts/Step Accuracy: $\pm (1\% \text{Reading value} + 5V)$ Voltage $\geq 1.000kV$ $\pm (2\% \text{Reading value} + 5V)$ Voltage $< 1.000kV$	
<b>Current leakage setting</b>	Range: 0.01-50.00mAac	Range: 0.01-50.00mAac 0.01-20.00mAac
	Resolution: 0.01mA/Setp	
<b>Test time</b>	0.1-999.9s	0=Continuous
<b>Pause time</b>	0.1-999.9s	0=Test time over, tester stops testing automatically
<b>Rise time</b>	0.5-999.9s	0=Rise time closed
<b>Fall time</b>	0.5-999.9s	0=Fall time closed
<b>Arc detecting time</b>	0-999.9s	0=Disable
<b>Voltmeter</b>	AC: 0.00-5.00kV	AC: 0.00-5.000kV DC: 0.00-6.000kV
	Resolution: 1V Accuracy: $\pm (1\% \text{Reading value} + 5V)$ Voltage $\geq 1.000kV$ $\pm (2\% \text{Reading value} + 5V)$ Voltage $< 1.000kV$	
<b>Ampere meter</b>	AC: 0.000-50.00mA	AC: 0.000-50.00mA DC: 0.000-20.00mA
	Resolution: $\leq 1mA$ 0.001mA, $> 1mA$ 0.01mA Precision: $\pm (2\% \text{Reading value} + 2\text{counts})$	
<b>Counter</b>	0-999.9s	
	Resolution: 0.1s, Precision: $\pm 1\%$	
<b>Memory</b>	20 units	
<b>Test step</b>	8 steps	
<b>Arc detecting setting</b>	0-50.00mAac 0=closed	0-50.00mAac 0=closed 0-20.00mAac 0=closed
<b>Operating temperature</b>	0°-40°C	
<b>Relative humidity</b>	$\leq 75\%$	
<b>Test FAIL mode</b>	Buzzer、Indicator light、Display	
<b>Buzzer</b>	Open and close can be set	
<b>Dimension</b>	285mmx96mmx400mm	
<b>Weight</b>	20kg	

## 4.2.7 CS9914AX/CS9914BX Technology index

Model			CS9914AX	CS9914BX
ACW	Output voltage	range	0.050kV~5.000kV	
		accuracy	$\pm (2\% \text{ read value} + 5V)$	
		resolution	1V	
	Max output power		500VA (5.000kV/100mA)	
	Test current		100mA	
	Low-current		0~100mA, 0= not judged	
	Range		200uA、2mA、20mA、100mA	
	Waveform		Sine wave	
	Distortion		$\leq 2\%$ ( Unloaded or resistance of the load )	
	Crest factor		1.3~1.5	
	Waveform mode		DDS+Amplifier	
	Rise time		0.3s~999.9s 0= OFF	
	Test time		0.3s~999.9s 0= Continuous	
	Descend time		0.3s~999.9s 0= OFF	
	Interval time		0.0s~999.9s 0= OFF	
	Output mode		N mode、G mode	
DCW	output voltage	range	0.05kV~6.000kV	
		accuracy	$\pm (2\% \text{ read value} + 5V)$	
		resolution	1V	
	Maximum power			300W (6.000kV/50mA)
	Test current			20mA
	range			2uA、20uA、200uA、2mA、20mA、100mA
	Ripple coefficient			$\leq 5\%$
	Discharge time			$\leq 200\text{ms}$
	Maximum charge current			20mA
	Voltage rise time			0.3~999.9s 0=OFF
	Test time			0.3~999.9s 0= continuous
	Fall time			0.3~999.9s 0= OFF
	Interval time			0.0~999.9s 0= OFF
	Delay alarm time			0.3~999.9s 0= OFF
	Output mode			N mode、G mode
Volt meter	range		0.050kV~5.000kV (AC) 0.050kV~6.000kV (DC)	
	Accuracy		$\pm (2\% \text{ read value} + 5V)$	
	Resolution		1V	

	Displayed value		RMS	
Ampere meter	range	AC	0 ~ 100mA	0 ~ 100mA
		DC		0 ~ 50mA
	resolution	AC	200uA: 0.1uA, 2mA: 1uA, 20mA: 10uA, 100mA (50mA): 10uA	
		DC	2uA: 0.001uA, 20uA: 0.01uA, 200uA: 0.1uA, 2mA: 1uA, 20mA: 10uA	2uA: 0.001uA, 20uA: 0.01uA, 200uA: 0.1uA, 2mA: 1uA, 20mA: 10uA, 100mA: 10A
	Accuracy		$\geq 2\text{mA}$ $\pm (2\%+5 \text{ counts})$ , $< 2\text{mA}$ $\pm (3\%+5 \text{ counts})$	
	Offset current		Current of test leads and accessories can be deducted.	
	Mode		GND: RETURN port is connected to case FLOAT: RETURN port is not connected to case	
Timer	Range		0~999.9s	
	resolution		0.1s	
	Accuracy		$\pm (0.1\%+50\text{ms})$	

#### 4.2.8 CS9915AX / CS9916AX/ CS9917AX Technology index

Model			CS9915AX	CS9916AX	CS9917AX
ACW	Output voltage	range	0.500kV~9.999kV		
		accuracy	$\pm (2\% \text{read value} + 5\text{V})$		
		resolution	1V		
	Max output power		100VA	200VA	500VA
	Test current		10mA	20mA	50mA
	Low-current		0~10mA	0~20mA	0~50mA
	Range		200uA、2mA、10mA	200uA、2mA、20mA	200uA、2mA、20mA、50mA
	Waveform		Sine wave		
	Distortion		$\leq 2\%$ ( Unloaded or resistance of the load )		
	Crest factor		1.3~1.5		
	Waveform mode		DDS+ Amplifier		
	Rise time		0.3s~999.9s 0= OFF		
	Test time		0.3s~999.9s 0= Continuous		
	Descend time		0.3s~999.9s 0= OFF		
	Interval time		0.0s~999.9s 0= OFF		
	Output mode		N mode 、 Gmode		
Volt meter	range		0.500kV~10.00kV		
	Accuracy		$\pm (2\% \text{read value} + 5\text{V})$		

	Resolution		2.5V		
	Displayed value		RMS		
Ampere meter	range	AC	0 ~ 10mA	0 ~ 20mA	0 ~ 50mA
	resolution	AC	200uA:0.1uA, 2mA:1uA, 10mA、20mA:10uA; 50mA:10uA		
	Accuracy		$\geq 2\text{mA}$ $\pm (2\%+5\text{counts})$ , $< 2\text{mA}$ $\pm (3\%+5\text{counts})$		
	Offset current		Current of test leads and accessories can be deducted.		
	Mode		GND: RETURN port is connected to case FLOAT: RETURN port is not connected to case		
Timer	Range		0~999.9s		
	resolution		0.1s		
	Accuracy		$\pm (0.1\%+50\text{ms})$		

#### 4.2.9 CS9916BX/ CS9917BX Technology index

Model			CS9916BX	CS9917BX
DCW	Output voltage	range	0.500kV~9.999kV	
		accuracy	$\pm (2\% \text{ read value}+5\text{V})$	
		resolution	1V	
	Max output power		100VA	200VA
	Test current		10mA	20mA
	Low-current		0~10mA	0~20mA
	Range		2uA、20uA200uA、2mA、10mA	2uA、20uA200uA、2mA、20mA
	Ripple factor		$\leq 5\%$	
	Maximum charge current		10mA	20mA
	Voltage rise time		0.3s~999.9s 0= OFF	
	Test time		0.3s~999.9s 0= Continuous	
	Fall time		0.3s~999.9s 0= OFF	
	Interval time		0.0s~999.9s 0= OFF	
	Delay alarm time		0.3s~999.9s 0= OFF	
	Output mode		N mode 、G mode	
Volt meter	range		0.500kV~10.00kV	
	Accuracy		$\pm (2\% \text{ read value}+5\text{V})$	
	Resolution		2.5V	
	Displayed value		RMS	
Ampere meter	range	DC	0 ~ 10mA	0 ~ 20mA
	resolution	DC	2uA: 0.001uA, 20uA: 0.01uA, 200uA:0.1uA, 2mA: 1uA, 10mA、20mA: 10uA	
	Accuracy		$\geq 2\text{mA}$ $\pm (2\%+5\text{counts})$ , $< 2\text{mA}$ $\pm (3\%+5\text{counts})$	
	Offset current		Current of test leads and accessories can be deducted.	

	Mode	GND: RETURN port is connected to case FLOAT: RETURN port is not connected to case
Timer	Range	0~999.9s
	resolution	0.1s
	Accuracy	$\pm (0.1\%+50\text{ms})$

#### 4.2.10 CS9920A Technology index

Model			CS9920A
ACW	Output voltage	range	0.500kV~19.999kV
		accuracy	$\pm (2\%\text{read value}+5\text{V})$
		resolution	1V
	Max output power		200VA
	Test current		10mA
	Low-current		0~10mA
	Range		200uA、2mA、10mA
	Waveform		Sine wave
	Distortion		$\leq 2\%$ ( Unloaded or resistance of the load )
	Crest factor		1.3~1.5
	Waveform mode		DDS+ Amplifier
	Rise time		0.3s~999.9s 0= OFF
	Test time		0.3s~999.9s 0= Continuous
	Descend time		0.3s~999.9s 0= OFF
	Interval time		0.0s~999.9s 0= OFF
	Output mode		N mode 、 G mode
Volt meter	range		0.500kV~20.00kV
	Accuracy		$\pm (2\%\text{read value}+5\text{V})$
	Resolution		2.5V
	Displayed value		RMS
Ampere meter	range	AC	0 ~ 10mA
	resolution	AC	200uA:0.1uA, 2mA:1uA, 10mA:10uA;
	Accuracy		$\geq 2\text{mA}$ $\pm (2\%+5\text{counts})$ , $< 2\text{mA}$ $\pm (3\%+5\text{counts})$
	Offset current		Current of test leads and accessories can be deducted.
	Mode		GND: RETURN port is connected to case FLOAT: RETURN port is not connected to case
Timer	Range		0~999.9s
	resolution		0.1s
	Accuracy		$\pm (0.1\%+50\text{ms})$

#### 4.2.11 CS9920B Technology index

Model			CS9920B
DCW	Output voltage	range	0.500kV~19.999kV
		accuracy	$\pm (2\% \text{ read value} + 5V)$
		resolution	1V
	Max output power		200VA
	Test current		10mA
	Low-current		0~10mA
	Range		2uA、20uA    200uA、2mA、10mA
	Ripple factor		$\leq 5\%$
	Maximum charge current		10mA
	Voltage rise time		0.3s~999.9s    0= OFF
	Test time		0.3s~999.9s    0= Continuous
	Fall time		0.3s~999.9s    0= OFF
	Interval time		0.0s~999.9s    0= OFF
	Delay alarm time		0.3s~999.9s    0= OFF
	Output mode		N mode 、G mode
Volt meter	range		0.500kV~20.00kV
	Accuracy		$\pm (2\% \text{ read value} + 5V)$
	Resolution		2.5V
	Displayed value		RMS
Ampere meter	range	DC	0 ~ 10mA
	resolution	DC	2uA: 0.001uA,            20uA: 0.01uA, 200uA: 0.1uA,            2mA: 1uA,            10mA: 10uA
	Accuracy		$\geq 2mA: \pm (2\% + 5\text{counts})$ , $< 2mA: \pm (3\% + 5\text{counts})$
	Offset current		Current of test leads and accessories can be deducted.
	Mode		GND: RETURN port is connected to case FLOAT: RETURN port is not connected to case
Timer	Range		0~999.9s
	resolution		0.1s
	Accuracy		$\pm (0.1\% + 50ms)$

#### 4.2.12 CS9922DX/CS9922EX/CS9922FX Technology index

Model			CS9922DX	CS9922EX	CS9922FX
ACW	Output voltage	range	0.05kV~5.00kV		
		accuracy	$\pm (2\% \text{ read value} + 5V)$		
		resolution	1V		
	Max output power		250VA (5.000kV/50mA)	500VA (5.000kV/100mA)	
	Max test current		50mA	100mA	



	Low-current		0~50mA,0=disable		0~100mA,0= disable	
	Range		200uA、2mA、20mA、50mA		200uA、2mA、20mA、100mA	
	Distortion		Sine wave			
	Distortion		≤2%（ Unloaded or resistance of the load ）			
	Crest factor		1.3~1.5			
	Waveform mode		DDS+ Amplifier			
	Rise time		0.3s~999.9s 0= OFF			
	Test time		0.3s~999.9s 0= Continuous			
	Descend time		0.3s~999.9s 0= OFF			
	Interval time		0.0s~999.9s 0= OFF			
	Output mode		N mode 、G mode			
DCW	Output voltage	range	0.050kV~6.000kV			
		accuracy	±（2% read value +5V）			
		resolution	1V			
	Max output power		120W（6.000kV/20mA）		300W（6.000kV/50mA）	
	Max test current		20mA		50mA	
	Current range		2uA、20uA、200uA、2mA、20mA		2uA、20uA、200uA、2mA、20mA、50mA	
	Ripple factor		≤5%（6kV/20mA）			
	Discharge time		≤200ms			
	Maximum charge current		20mA		50mA	
	Voltage rise time		0.3s~999.9s 0= OFF			
	Test time		0.3s~999.9s 0= Continuous			
	Fall time		0.3s~999.9s 0= OFF			
	Interval time		0.0s~999.9s 0= OFF			
	Delay alarm time		0.3s~999.9s 0= OFF			
	Output mode		N mode 、G mode			
IR	Output voltage	range	0.100kV~1.000kV			
		accuracy	±（2% read value +5V）			
		resolution	1V			
	Maximum upper-limit		9.999GΩ	9.999GΩ	50.00GΩ	
	Maximum lower-limit		9.999GΩ	9.999GΩ	50.00GΩ	
	Minimum lower-limit		1MΩ	1MΩ	1MΩ	
	Voltage rise time		0.3s~999.9s 0= OFF			
	Test time		0.3s~999.9s 0= Continuous			
	Interval time		0.0s~999.9s 0= OFF			
	Auto range		ON/OFF			
Discharge time		≤200ms				
Volt meter	Range		0.050kV~6.000kV			
	Accuracy		±（2% read value +5V）			
	Resolution		1V			

	Displayed value		RMS	
Ampere meter	range	AC	0 ~ 50mA	0 ~ 100mA
		DC	0 ~ 20mA	0 ~ 50mA
	resolution	AC	200uA : 0.1uA, 2mA : 1uA, 20mA : 10uA, 100mA : 100uA	
		DC	2uA: 0.001uA, 20uA: 0.01uA, 200uA: 0.1uA, 2mA: 1uA, 20mA: 10uA	2uA: 0.001uA, 20uA: 0.01uA, 200uA: 0.1uA, 2mA: 1uA, 20mA、50mA: 10uA
	Accuracy		$\geq 2\text{mA}$ : $\pm (2\% + 5\text{counts})$ , $< 2\text{mA}$ : $\pm (3\% + 5\text{counts})$	
	OFF-SET		The current of the test leads and the accessories can be deducted.	
OHM METER	Test mode		GND: RETURN terminal connect to the outer case FLOAT: RETURN terminal do not be connected to the outer case	
	Range		1M $\Omega$ ~9999M $\Omega$	
	Resolution		1M $\Omega$ ~9.999M $\Omega$ : 0.001M $\Omega$ , 10M $\Omega$ ~99.99M $\Omega$ : 0.01M $\Omega$ , 100M $\Omega$ ~999.9M $\Omega$ : 0.1M $\Omega$ , 1000M $\Omega$ ~9999M $\Omega$ : 1M $\Omega$	
	Accuracy		0.100kV~0.200kV: 1M $\Omega$ ~999M $\Omega$ $\pm 5\%$ , 1000M $\Omega$ ~3000M $\Omega$ $\pm 10\%$ 0.201kV~0.499kV: 1M $\Omega$ ~999M $\Omega$ $\pm 5\%$ , 1000M $\Omega$ ~5000M $\Omega$ $\pm 10\%$ 0.500kV~1.000kV: 1M $\Omega$ ~999M $\Omega$ $\pm 5\%$ , 1000M $\Omega$ ~9999M $\Omega$ $\pm 10\%$ 10000M $\Omega$ ~50000M $\Omega$ $\pm 15\%$ (仅 CS9922FX)	
Timer	Range		0~999.9s	
	Resolution		0.1s	
	Accuracy		$\pm (0.1\% + 50\text{ms})$	

#### 4.2.13 CS9919AX/CS9929AX/CS9919BX/CS9929BX Technology index

Model			CS9919AX	CS9919BX	CS9929AX	CS9929BX
ACW	Output voltage	range	0.050kV~5.000kV			
		accuracy	$\pm (2\% \text{ read value} + 5\text{V})$			
		resolution	1V			
	Max output power		100VA (5.000kV/20mA)			
	Max test current		20mA			
	Low-current		0~20mA, 0=disable			
	Range		200uA、2mA、20mA			
	waveform		Sine wave			
	Distortion		$\leq 2\%$ ( Unloaded or resistance of the load )			
	Crest factor		1.3~1.5			
	Waveform mode		DDS+ Amplifier			
	Rise time		0.3s~999.9s 0=OFF			
	Test time		0.3s~999.9s 0=Continuous			

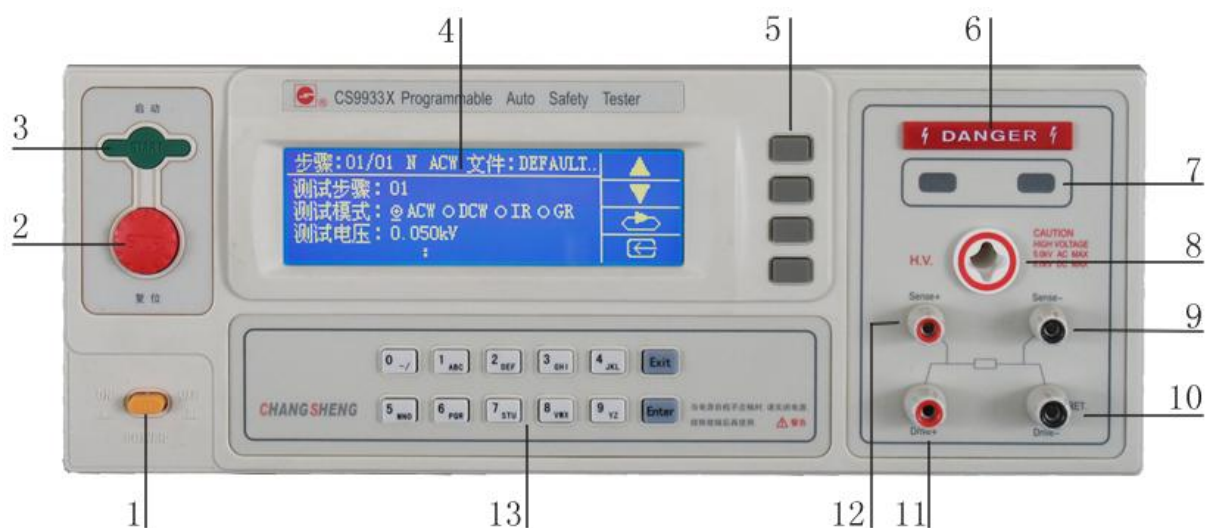
	Descend time		0.3s~999.9s 0= OFF			
	Interval time		0.0s~999.9s 0= OFF			
	Channel		8	4	8	4
	Output voltage mode		N mode、G mode			
DCW	Output voltage	range	0.050kV~6.000kV			
		accuracy	$\pm (2\% \text{ read value} + 5V)$			
		resolution	1V			
	Max output power		60W (6.000kV/10mA)			
	Max test current		10mA			
	Current range		2uA、20uA、200uA、2mA、10mA			
	Ripple factor		$\leq 5\%$ (6kV/10mA)			
	Discharge time		$\leq 200\text{ms}$			
	Maximum charge current		10mA			
	Voltage rise time		0.3s~999.9s 0= OFF			
	Test time		0.3s~999.9s 0= Continuous			
	Fall time		0.3s~999.9s 0= OFF			
	Interval time		0.0s~999.9s 0= OFF			
	Delay alarm time		0.3s~999.9s 0= OFF			
	Channel		8	4	8	4
	Output voltage mode		N mode 、G mode			
IR	Output voltage	range	-----		0.100kV~1.000kV	
		accuracy	-----		$\pm (2\% \text{ read value} + 5V)$	
		resolution	-----		1V	
	Maximum upper-limit		-----		9.999G $\Omega$	
	Maximum lower-limit		-----		9.999G $\Omega$	
	Minimum lower-limit		-----		1M $\Omega$	
	Voltage rise time		-----		0.3s~999.9s 0=OFF	
	Test time		-----		0.3s~999.9s 0= Continuous	
	Interval time		-----		0.0s~999.9s 0= OFF	
	Auto range		-----		ON/OFF	
	Discharge time		-----		$\leq 200\text{ms}$	
	Channel		8	4	8	4
Volt meter	Range		0.000kV~6.000kV			
	Accuracy		$\pm (2\% \text{ read value} + 5V)$			
	Resolution		1V			
	Displayed value		RMS			
Ampere meter	range	AC	0 ~ 20mA			
		DC	0 ~ 10mA			
	resolution	AC	200uA: 0.1uA, 2mA: 1uA, 20mA, 10uA			

		DC	2uA: 0.001uA, 20uA: 0.01uA, 200uA: 0.1uA, 2mA: 1uA, 10mA: 10uA
	accuracy		$\geq 2\text{mA}: \pm (2\%+5\text{counts})$ , $< 2\text{mA}: \pm (3\%+5\text{counts})$
	OFF-SET		The current of the test leads and the accessories can be deducted.
	Test mode		GND: RETURN terminal connect to the outer case FLOAT: RETURN terminal do not be connected to the outer case
OHM METER	Range		1M $\Omega$ ~9999M $\Omega$ (Except CS9919AX)
	Resolution		1M $\Omega$ ~9.999M $\Omega$ :0.001M $\Omega$ , 10M $\Omega$ ~99.99M $\Omega$ :0.01M $\Omega$ , 100M $\Omega$ ~999.9M $\Omega$ :0.1M $\Omega$ , 1000M $\Omega$ ~9999M $\Omega$ :1M $\Omega$ ( Except CS9919AX/CS9919BX)
	Accuracy		0.100kV~0.200kV:1M $\Omega$ ~999M $\Omega$ $\pm 5\%$ , 1000M $\Omega$ ~3000M $\Omega$ $\pm 10\%$ 0.201kV~0.499kV:1M $\Omega$ ~999M $\Omega$ $\pm 5\%$ , 1000M $\Omega$ ~5000M $\Omega$ $\pm 10\%$ 0.500kV~1.000kV:1M $\Omega$ ~999M $\Omega$ $\pm 5\%$ , 1000M $\Omega$ ~9999M $\Omega$ $\pm 10\%$ (Except CS9919AX/CS9919BX)
Timer	Range		0~999.9s
	Resolution		0.1s
	Accuracy		$\pm (0.1\%+50\text{ms})$

## Chapter 5 Front panel specification

### 5.1 Front panel specification

#### 5.1.1 CS9933X/CS9921BX/CS9933G series Front panel specification



**( 1 ) POWER SWITCH**

Press inward is ON, flick out is OFF.

**( 2 ) STOP**

In testing, press it can stop testing;

**(3) START**

After entering test menu, press it can start testing;

**(4) LCD**

320x240 LCD displays all the set parameters and test parameters;

**(5) Screen Key**

Related LCD function key or shortcut key. They are F1、F2、F3、F4;

**(6) High voltage indicator (DANGER)**

When the indicator is sparking, the tester is on the testing state. There is output voltage. Do not touch the high voltage port, high voltage leads, high voltage clip and the DUT( Device under test)

**(7) Test result Indicator lights**

A、PASS Indicator

When all the test items have been finished, it will turn bright;

B、FAIL Indicator

During test, if any test item fails the test, the light will turn bright;

**(8) High voltage output terminal, N line output of Leakage current test**

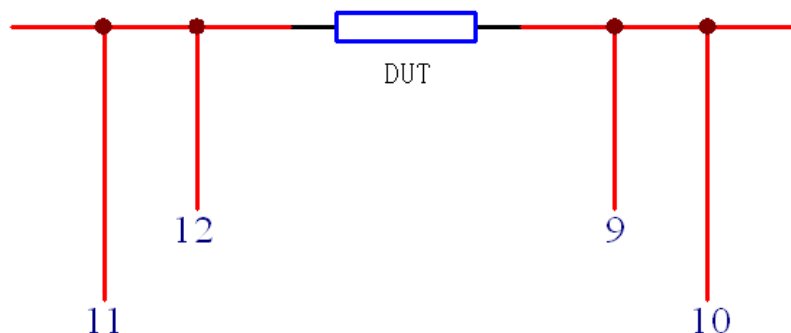
In ACW, DCW, IR test, this terminal is used for high voltage output;

**(9)、(12) Voltage sampling terminal for Ground Resistance test****(10) Current output terminal for Ground Resistance test、RETURN Port**

This port is used to output the required current when it is at GR test. While it is at high voltage test, it is used as the input port of current.

**(11) Current output terminal for Ground Resistance test**

Remark: (9)、(10)、(11)、(12)、are four ports for GR four-terminal measurement; Four-terminal measurement is adopted volt-meter inner connection methods to test.



## (10) Keyboard area

## A、Digital key 0~9

When user set parameters, pressing digital key 0~9 can change the set value; When input file name, pressing the key can input the relative letter.

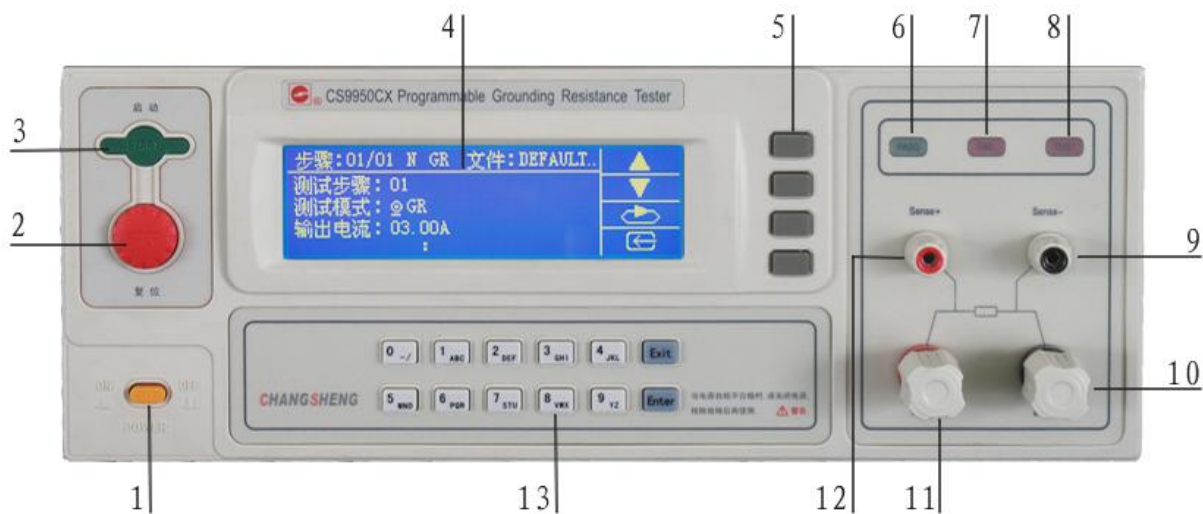
## B、Function key

Function key includes two: one is EXIT key and the other one is ENTER key;

EXIT: In arbitrary interface, pressing EXIT key can return the main interface;

ENTER: When users set parameters, pressing ENTER key can save the setting parameters to memories.

### 5.1.2 CS9950CX/CS9950DX/CS9950CG/CS9950CG-1 Front panel statement



## (1) POWER SWITCH

Press inward is ON, flick out is OFF.

## (2) STOP

In testing, press it can stop testing; when test is failed, failed light turns bright, pressing this stop key can stop warning and the tester will enter into the next waiting status.

## (3) START

After entering test menu, press it can start testing;

## (4) LCD Displayer

320x240 graphic LCD displayer display the voltage, current, time and other information;

## (5) Screen Key

Relative LCD function key or shortcut key. They are F1、F2、F3、F4;

## (6) PASS indicator light

During test, if test item pass, the pass light will turn bright; If test time is zero, tester will not judge;

**(7) FAIL indicator light**

During test, if test item fails the test, the light will turn bright

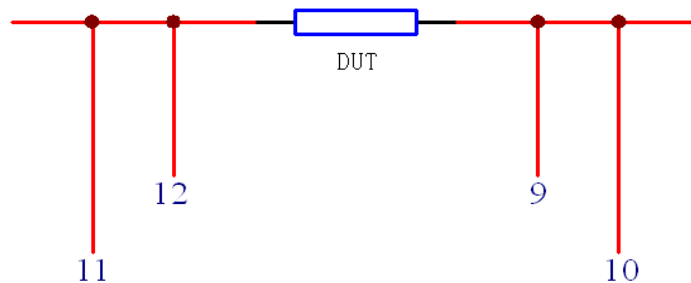
**(8) Testing light**

During test, the testing light will turn bright.

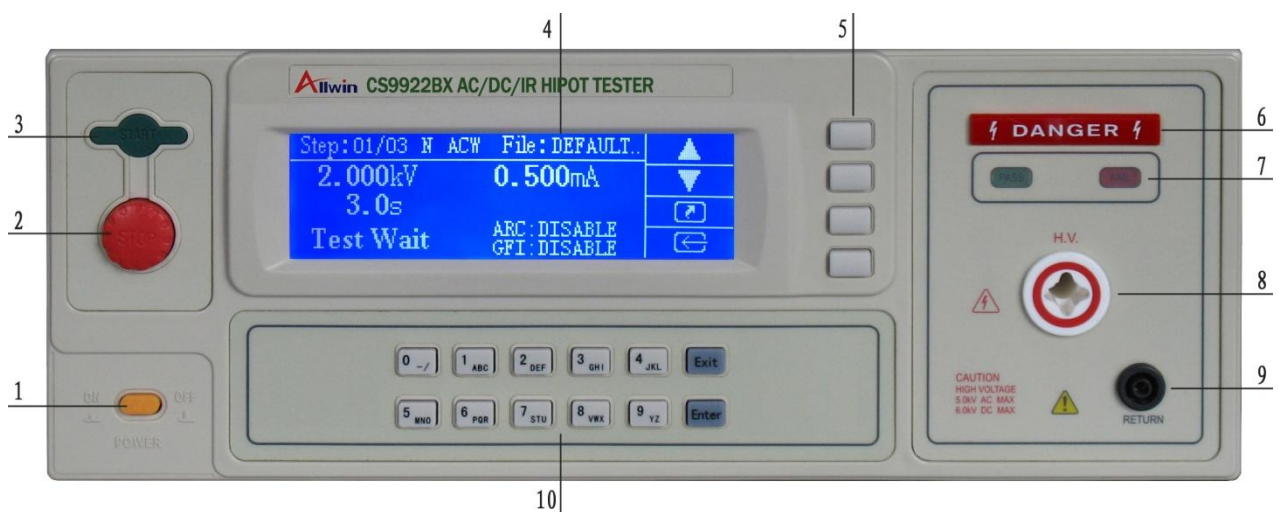
**(9)、(12) Voltage sampling terminal for Ground Resistance test****(10)、(11) Current output terminal for Ground Resistance test**

This port is used to output the required current when it is at GR test. While it is at high voltage test, it is used as the input port of current.

Remark: (9)、(10)、(11)、(12)、are four ports for GR four-terminal measurement; Four-terminal measurement is adopted volt-meter inner connection methods to test.

**5.1.3**

**CS9912AX/CS9912BX/CS9913AX/CS9913BX/CS9914AX/CS9914BX/CS9922BX/CS9922CX/CS9922DX/CS9922EX/CS9922FX/CS9922G/CS9922G-1/CS9912Y/CS9914Y/CS9914G/CS9915AX/CS9916AX/CS9916BX/CS9917AX/CS9917BX** Front panel statement

**(1) POWER SWITCH**

Pressing inward is ON, flicking out is OFF.

**(2) STOP**

While in testing, pressing it can stop testing. While DUT fails the test, the corresponding light turns bright, pressing it the tester will stop warning and enter next test.

**(3) START**

In the state of reset, pressing it will start testing.

**(4) LCD display**

**240X64graphic LCD display.** It displays voltage, current, time and test information

**(5) Screen key**

Function key or short-cut key of screen. From up go to down and one by one in order is F1、F2、F3、F4;

**(6) High voltage indicator (DANGER)**

When the high voltage indicator is twinkling, the tester is on testing. The tester outputs high voltage, do not touch the high voltage port, high voltage output wire, test leads with clip set and the DUT.

**(7) Test result indicator**

**A、PASS indicator**

When DUT is proved to be qualified, it illuminates; If test time is zero, tester will not do the PASS judgment.

**B、FAIL indicator**

When DUT is proved to be disqualified, it illuminates;

**(8) High voltage output terminal (H.V.)**

Pressing down the “START” key, it will output high voltage. do not touch the high voltage port, high voltage output wire, test leads with clip set and the DUT.

**(9) RETURN port**

It is the input terminal of measuring current.

**(10) Keyboard**

**A、numeral key: 0~9**

When users set test parameters, press the key 0~9 can change the set value; When input the name of file, press the letter on the relevant key.

**B、Function key**

Includes two keys: (EXIT) and (ENTER);

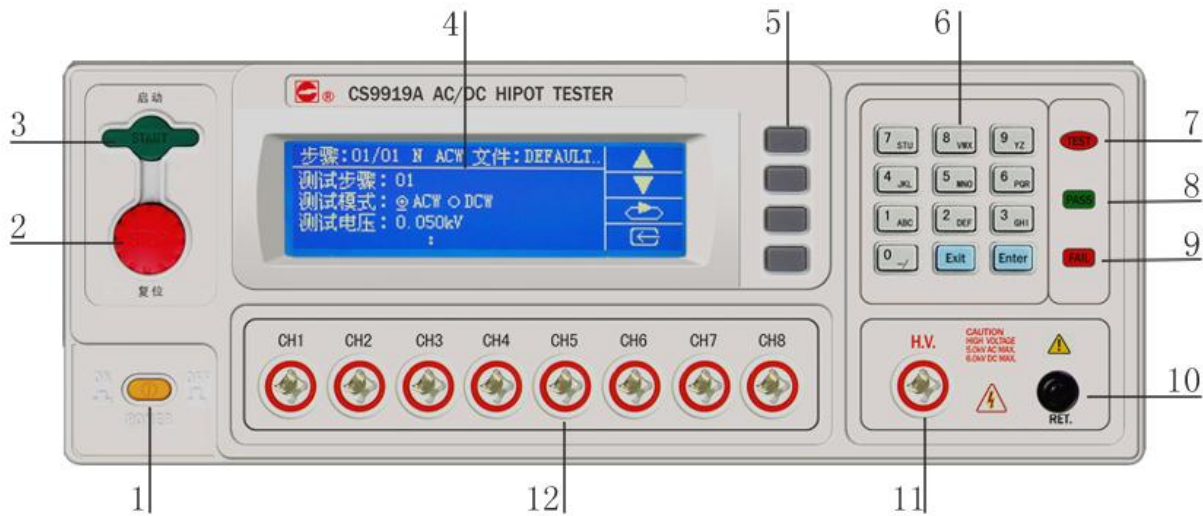
EXIT: At a random display interface, press the key EXIT to return the main interface.

ENTER: When set parameters, press the key ENTER, the tester will save the set parameters to the memory groups automatically.



### 5.1.4

#### CS9919AX/CS9929AX/CS9919BX/CS9929BX/CS9919G series Front panel specification



(1) POWER SWITCH

Pressing inward is ON, flicking out is OFF;

(2) STOP

While in testing, pressing it can stop testing. While DUT fails the test, the corresponding light turns bright, pressing it the tester will stop warning and enter next test.

(3) START

In the state of reset, pressing it will start testing.

(4) LCD display

**240X64 graphic LCD display.** It displays voltage, current, time and test information

(5) Screen key

Function key or short-cut key of screen. From up go to down and one by one in order is F1、F2、F3、F4

(6) Keyboard

A、numeral key: 0~9

When users set test parameters, press the key 0~9 can change the set value; When input the name of file, press the letter on the relevant key.

B、Function key

Includes two keys: (EXIT) and (ENTER);

EXIT: At a random display interface, press the key EXIT to return the main interface.

ENTER: When set parameters, press the key ENTER, the tester will save the set parameters to the memory groups automatically.

(7) Test indicator

When the test indicator is light, the tester is on the test status. The H.V. output terminal will output high voltage. Do not touch the high voltage port, high voltage output wire, test leads with clip set and the DUT.

(8) PASS indicator

When the indicator is light, the test is passed. If the test time is 0, the tester will not judge.

(9) FAIL indicator

When the indicator is light, the test is failed;

**(10) RETURN terminal**

It is the input terminal of measuring current.

**(11) High voltage output terminal (H.V.)**

Pressing down the “START” key, it will output high voltage. do not touch the high voltage port, high voltage output wire, test leads with clip set and the DUT.

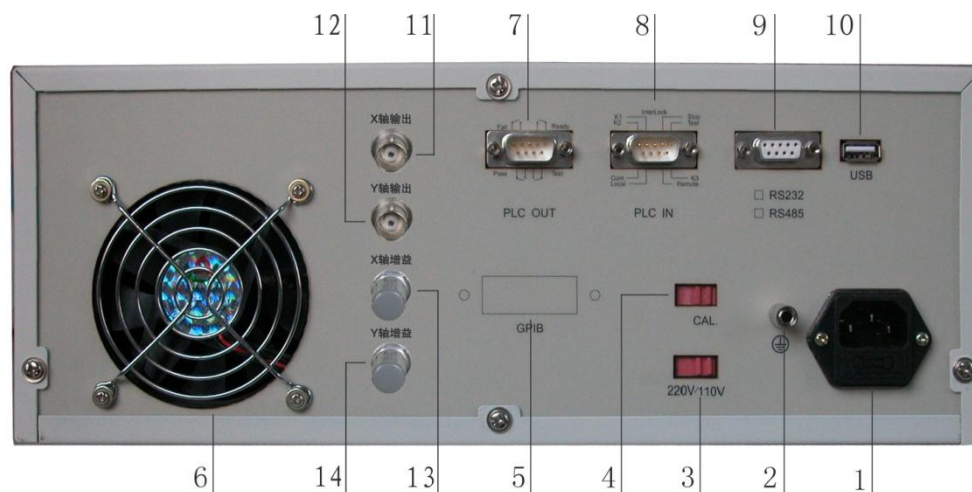
**(12) Multi channel output terminal**

CS9919AX/CS9929AX 8-channel output

CS9919BX/CS9929BX 4-channel output

The multi-channel output terminals can be programmable for H.V. output, current input and off. (three status in total)

## 5.2 Rear panel specification



### 1. Power supply socket

Three core two phase power supply socket. The inner part of the socket is with fuse. Before changing the fuse, please pull out the power line.

### 2. Protective Return terminal

To avoid electric shock, this protective earth terminal must be connected to ground credibility. Otherwise, the case of the tester may be full of high-voltage.

### 3. Input voltage selected switch

The input voltage range includes two: one is for 100V~120V and the other one is for 200V~240V; Before turn on the tester, user must confirm whether the input voltage is coincide with the selected switch.

### 4. CAL. switch

**Laypeople do not move this switch!** The switch is for calibration, while in calibrating, the tester can enter the calibration data program by pressing keys in front panel.

### 5. IEEE488 (GPIB) communication interface

User can read the communication protocol for the details.

## **6. Ventilator**

It is used for heat venting from the instrument, while operating the tester, no article is allowed to stack around it for it will block the heat expelling and damage the instrument.

## **7. PLC signal output**

PLC output signal is as following:

(10)READY: When tester is on the reset status, the two output points is connected;

(11)TEST: When tester is testing, test signal is valid; This signal can be selected as point signal or level signal; If user selects as the point signal, the two points will be connected in the test; If user selects as the level signal, the level will be 24V between the two test signal points;

(12)PASS: When the test is passed, the two output points of this signal are connected.

(13)FAIL: When the test is failed, the two output points of this signal are connected.

## **8. PLC signal input**

Please read the “PLC interface” for the details.

## **9. RS232/RS485 Communication interface (Optional)**

The standard 9PIN D type terminal socket can connect with PC forming serial port as RS232 or RS485. Please read the communication protocol for the details.

## **10. USB Communication interface (Optional)**

Please read the communication protocol for the details.

**The following 11~14 are the optional oscilloscope interface for solar safety tester and medical safety tester.**

**11. X axle output for oscilloscope interface.**

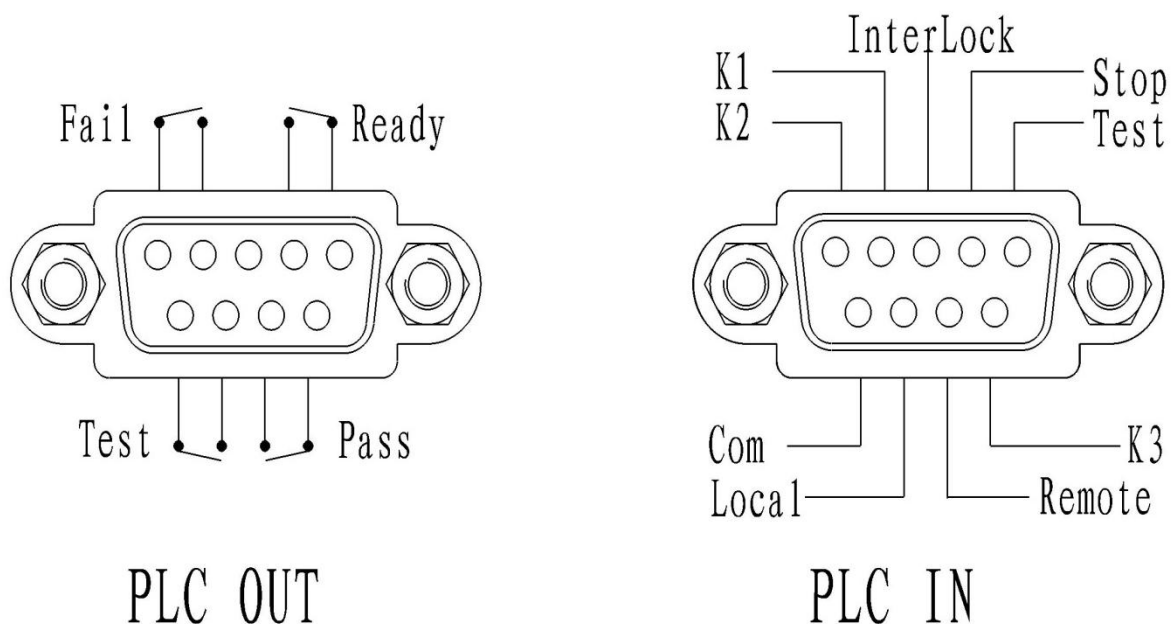
**12. Y axle output for oscilloscope interface.**

**13. X axle gain adjusted potentiometer for oscilloscope interface.**

**14. Y axle gain adjusted potentiometer for oscilloscope interface.**

## Chapter 6 Remote control I/O signal

On the rear panel of the tester, there enclosed a remote control terminal, it can be connected with remote controller to operate. The terminal is a standard 9PIN D type port seat with such signals as: connecting for test, reset, testing, test pass and test fail.



### 6.1 Connection :

TEST : Control switch is connected between PIN 1 and PIN3.

RESET : Control switch is connected between PIN 1 and PIN4.

Testing signal output : Between PIN 2 and PIN 5.

Testing FAIL signal : Between PIN 6 and PIN 7.

Testing PASS signal : Between PIN 8 and PIN 9.

### 6.2 Connection statement of remote control I/O signal

The tester has equipped with remote control contacts, with the exterior remote control device, the TEST and RESET functions are capable of being controlled. These contacts can control the power supply only with the “Instant contact” switch as the controller. **Special attention shall be paid: no power can be connected to the contacts; otherwise, the interior circuits will be spoiled.**

Output signal provides relay contact.

### 6.3 Input signal of PLC interface

Input signal of PLC interface includes: Remote、Local、InterLock、Test、Stop and file selected K3、K2、K1;

Remote: For the use of extend function

Local: For the use of extend function

InterLock: Only the interlock signal is set to 0, is TEST key valid; Otherwise, the TEST key would not be valid and the tester would not be started.

Test: Pressing this key, the tester starts to test.

Stop: Pressing this key, the tester will reset.

K3、K2、K1: not be used temporarily.

### 6.4 Output signal of PLC interface

PLC output signal is as following:

READY: When tester is on the reset status, the two output points are connected;

TEST: When tester is testing, test signal is valid; This signal can be selected as point signal or level signal; If user selects as the point signal, the two points will be connected in the test; If user selects as the level signal, the level will be 24V between the two test signal points;

PASS: When the test is passed, the two output points of this signal are connected.

FAIL: When the test is failed, the two output points of this signal are connected.

### 6.5 Connections electric performance

Output contact voltage : 24V AC/DC    Maximum current : 100mA

Input port is connected with non-voltage control contact, no connection, Voltage < 10VDC

## Chapter 7 Setting of test parameter

CS9912AX、CS9912BX、CS9913AX、CS9913BX、CS9914AX、CS9914BX、CS9915AX、CS9915BX、CS9916AX、CS9916BX、CS9917AX、CS9917BX、CS9919AX、CS9929AX、CS9929CX、CS9919BX、CS9929BX、CS9929EX、CS9922BX、CS9922CX、CS9922DX、CS9922EX、CS9922FX、CS9933X、CS9921BX、CS9950CX、CS9950DX、CS9922G、CS9933G、CS9950CG、CS9920A、CS9920B tester can enter the parameter setting mode by pressing “SET”, next setting item by Pressing “OK”, the setting value will be memorized automatically, and not be lost even if the power is cut off unless man-made revision.

During parameter setting, pressing “SET” can return to upper setting menu.





If no need to reset all the parameter, at any step pressing “EXIT” can terminating setting, for the tester can enter the “Under Test” mode and memorize the preset parameters automatically.

“OK” key is used for confirming the set parameter; pressing once will make the setting further into the next item.





### 7.1 Interface and buttons

#### 7.1.1 Overview of interface structure

Instrument interface consists of three parts in general: title area, keypad, display area three parts; it is as shown below:

Step: 01/03 N ACW File: DEFAULT..			
Step	: 01	01	
Mode	: ACW	↓	
Voltage	: 0.050kV	99	
	:		










Some interfaces may only have two parts: display and keypad area; it not have title area, as shown below:

→ Memory	Time	Lock Key	
System	Offset		
Interface	Dot Chk.		
Password	Result		

Title area is used for placing the prompt message. keypad area is used for placing the supported keyboard operation. Display area is used for the placement of interaction information with user.

### 7.1.2 Overview of frequently used function keys

Commonly used icons as shown below:

	System Icon		2/3	
	Up		Down	
	Shortcut		Cycle	
	Delete		Return	


Meaning of commonly used keys :

▲: move up an item of set parameter or the current parameters settings plus one

▼: Move down an item of set parameter or the current parameters settings minus one

: Pressing this shortcut key may appear the corresponding shortcut menu

: Rotate Right button

: Delete the character where the current cursor corresponding and behind characters will sequentially forward

More key: Pressing this key will appear corresponding shortcut menu, it places the same role with shortcut key.

: Returns to the previous screen

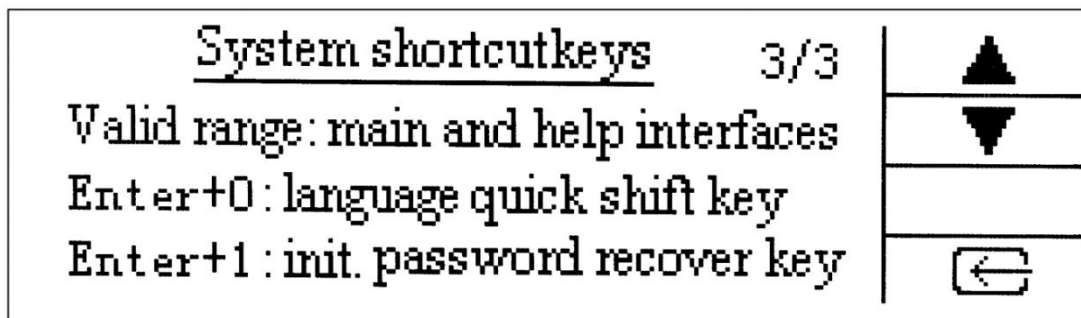
Numeric keys: the numeric keys is used to set the current parameters.

Confirm key: that is the "ENTER" key. It is used to enter a parameter setting interface or save the modified parameters

Exit: it is used to exit the current interface to the main interface

### 7.1.3 Overview of commonly used shortcuts

Commonly used shortcut keys as shown below:



The initial password is: 888888, only in the main interface and help interface, is the shortcut key effective. That is to say, in other interfaces, the shortcut key is invalid. "ENTER +0" means that pressing "ENTER" key and number keys "0" simultaneously.

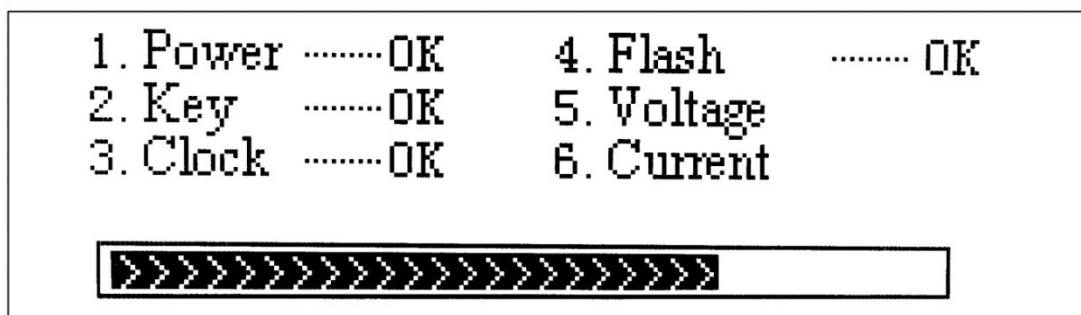
## 7.2 Power Up & Verification

### 7.2.1 Setting Power up & Self verification function

If users want to turn on the verification, he must set verification of system parameters. After this function is on, you turn on the tester every time, the tester will execute verification automatically.

### 7.2.2 Verification project

The verification display is shown below:



Verification items as follows:

Power: check whether the N, L, G of power supply is correct. If not correct, the tester may be charged.

Key: check whether there is existence of card keys. If yes, the tester button can not be correctly identified.

Clock: check the system clock chip is working properly. But it can not detect whether the system clock time is correct.

Flash: check whether parameters of internal memory are correct. If not correct, the



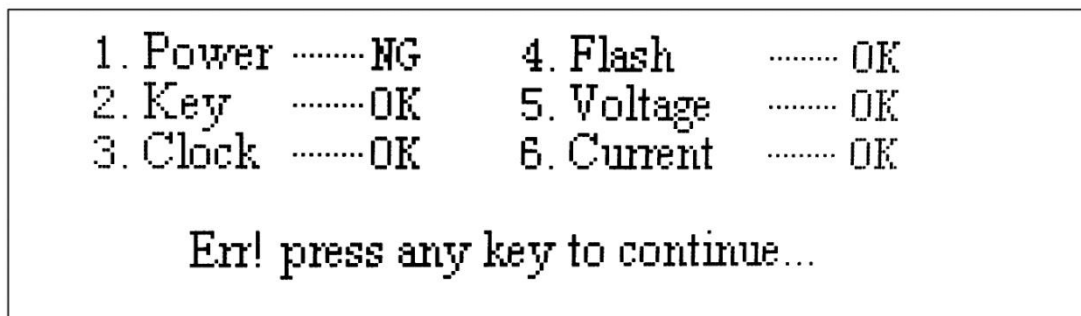
tester may not work properly, please contact with the manufacturers.

Voltage: detect whether the internal voltage sampling circuit is working properly. If not working properly, the failure may be caused by the invalid device, please contact with the manufacturers.

Current: detect whether the internal current sampling circuit is working properly. If not working properly, the failure may be caused by the invalid device, please contact with the manufacturers.

The above parameters of the test, if qualified, "OK" will display behind the parameters in the test, otherwise displayed "NG".

If the above parameters of the test are failed, assuming power is not good, after all the parameters verification, tester screen display as shown below:



In this interface, pressing any key of the front panel to enter the main interface. We recommend that after all test items are verified ok and then use the tester.

## 7.3 Environmental parameters setup

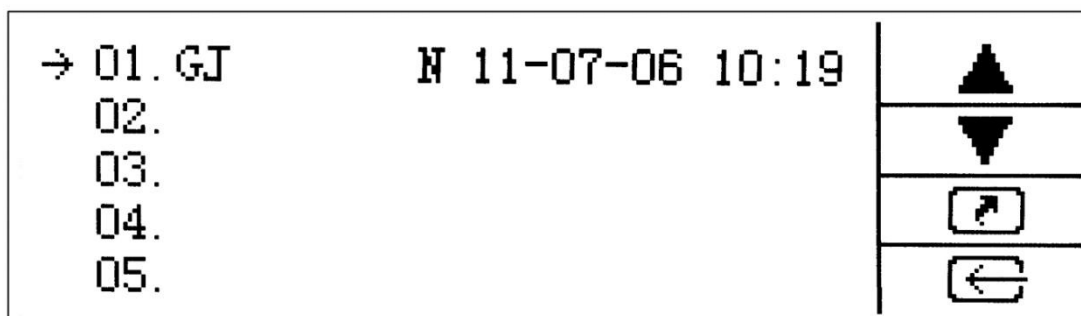
### 7.3.1 Memory parameters setup

#### 7.3.1.1 Enter into the memory interface

Pressing "ENTER" key of the "memory" option in the menu or pressing "shortcut" key then pressing "memory" key to enter the memory parameter setting interface.

#### 7.3.1.2 Memory Parameters Operation

Memory parameter setting interface is as follows:



This series of safety tester memory parameter is for test file operations, including file new, file editing, file storage, file read and file deletion.

**File new:** Increase a new test file located at a free file number. The file number range: 1 to 30. Note: if the file number exists a file, it can not execute the file increment. If the tester keyboard set to open, executing increment of file must input password at first. When a parameter setting is completed, pressing "ENTER" key to enter the next parameter setting. File New steps are as follows:

1 input file name; length of file name can not exceed 14

(2) set the working mode; set the file working mode: N (normal) mode or G (gradient) mode; As to G (gradient) mode, only set the two-step voltage, do the tester output by the gradient.

3 Set PASS signal hold time; range: 0 ~ 999.9s

4 Set PASS beep hold time; range: 0.2 ~ 999.9s

5 Set the arc detection mode; set the test file arc detection mode: current mode or level mode.

After the above steps finishing, press "ENTER" key to save the new file. The system will automatically jumps to the setup interface of the new file. File New operation make the new file becomes the currently active test file.

**Editing:** editing for a used file. If set the keyboard trivial on. Enter password at first before editing operation. When a parameter is edited, press "ENTER" key to enter the next parameter edit. File editing steps are as following:

1. Edit file name: length of file name can not exceed 14

(2) editing mode: edit the file mode for this test: N (normal) mode or G (gradient mode)

3. Edit PASS signal hold time; range: 0 ~ 999.9s

4 Editing PASS beep hold time; range: 0.2 ~ 999.9s

5 Edit the arc detection mode; edit this test file arc detection mode: current mode or level mode.

The above steps finished, press "ENTER" button to save the edited file, editing does not change the current active test file.

**File Storage:** The current activity test file save as a new test file, which is file saved for operation. File storage steps as follows:

Storage file name: file name length can not exceed 14

The above steps finished, press "ENTER" button to save the file, file storage operation does not change current activities test file.

**File read:** Read the selected test file as the currently active test file. Press "ENTER" key to finish read operation, the file be read is the current activity test file.

**File Delete:** delete the selected file or delete all the test files. If the keyboard trivial set on, enter password at first then execute the file delete operation. Press "ENTER" key to delete files, delete the file mode as follows:

Delete single file mode: when the deleted file is the currently active test file, after deletion, the system automatically reads the default test file as the currently active test file, when the deleted file is not currently active test files, deleting file does not change the current activity file.

Delete all files mode: After delete operation, the system automatically reads the default test file as the current activity file.




## 7.3.2 System parameters set up

### 7.3.2.1 Enter system parameter setup interface

Press "ENTER" key of the "System" option in the menu interface to enter into the system parameter setting interface. If keyboard trivial set on, input password firstly then enter into the system interface.

### 7.3.2.2 Operation system parameters

System parameter setting interface (1) as shown below:

Contrast	:	<u>8</u>	( 1-9 )	  
Beeper Vol.	:	8	( 0-9 )	
Remain Hint	:	0	( 0-9 )	
Result Save	:	<input checked="" type="radio"/> Yes <input type="radio"/> No		

Which contains the parameters as follows:





LCD Contrast: LCD brightness setting parameters; range: 1 to 9, 1 for the LCD brightness of the darkest, 9 is the brightest LCD brightness.

Beep Volume: Buzzer volume setting parameters; range: 0 to 9, 0 is on behalf of the beeper volume is turned off, 9 stands for maximum buzzer volume.

Margin Note: set the parameters of the results margin prompted; range: 0 to 9, 0 is on behalf of the prompt function is turned off, 1-9, said when margin of 10% to 90% prompted.

Save the results: Test results saving settings; if saving the results is off, the test results are automatically discard. The tester can save the maximum number of results for the 8000 items.

System parameter setting interface (2) as shown below:



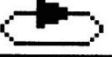

Over Cover	: <input type="radio"/> Yes	<input checked="" type="radio"/> No	   
GFI Protect	: <input type="radio"/> Yes	<input checked="" type="radio"/> No	
Def. Touch	: <input type="radio"/> Yes	<input checked="" type="radio"/> No	
Test Signal	: <input type="radio"/> Level	<input checked="" type="radio"/> Point	

Over cover: overflow cover set; if overflow cover is turned on and the storage results are greater than 9999, the tester automatically save the results from the beginning; If the overflow cover is turned off, then discard the test results.

GFI Protect: GFI protection setting; if GFI is turned on, when the case of the tester is charged, the tester automatically stops the test and suggesting GFI alarm.

(Def. Touch) Prevent electric shock: No;

Test signal: Set the test signal; PLC-TEST output settings; It can be set to level or contact signal.

Self Check	: <input checked="" type="radio"/> Yes	<input type="radio"/> No	   
CheckHint	: <input type="radio"/> Yes	<input checked="" type="radio"/> No	
Test Port	: <input type="radio"/> Gnd	<input checked="" type="radio"/> Float	
Language	: <input type="radio"/> Chinese	<input checked="" type="radio"/> English	

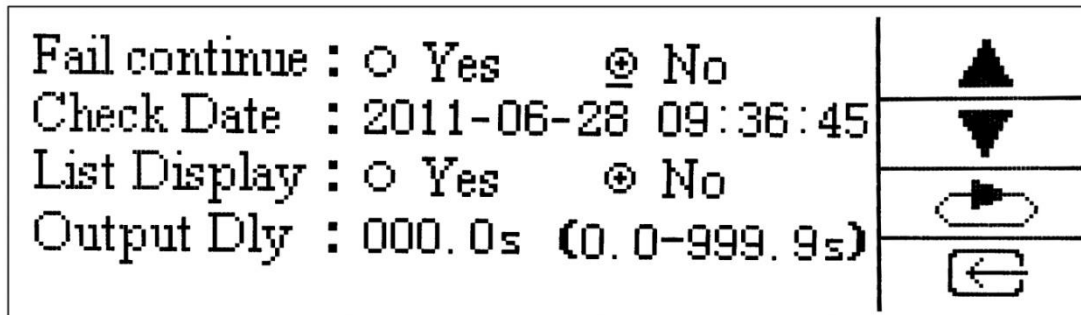
Verification allowed: set check; if the verification is turned on, then turn on the power, the tester will verify automatically.

Check Hint: Testing Tip set; if test prompts open, when the instrument used for more than two years, tester will automatically prompt "instrument calibration data has expired, please contact the manufacturer to re-calibrate" information when it is power on each time.

Test Port: port ground or floating selection. Select a different wiring method to meet the different requirements.

Language: Instrument Language selection, Chinese or English; press "ENTER +0" shortcut keys in the main interface or help interface to switch quickly.

System parameter setting interface (3) as shown below:



**Fail continue:** failed to continue set; when turned on, if test failed and set continuous function between steps is “Yes”, the tester automatically start the next test step.

Inspection dates: this parameter is not set.

**List Display:** When the list display is turned on and the number of steps are more than 2-step, the tester will display test results for each step automatically. When the list display is turned on, the instrument can not use RS232, RS485, GPIB, USB communications, only PLC can used to control.

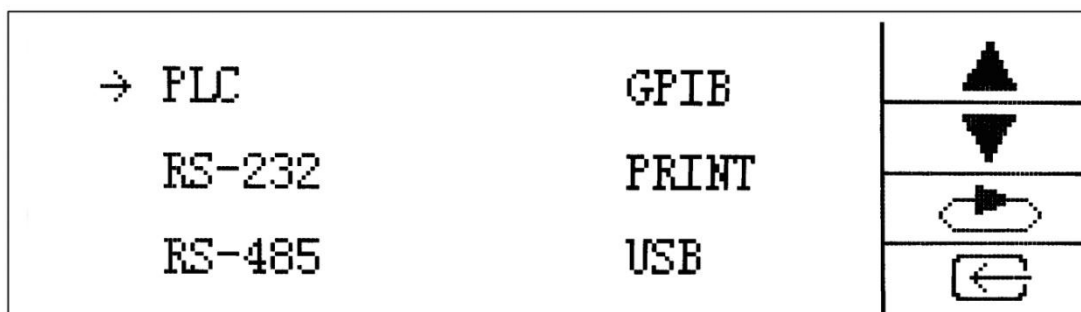
**Output delay:** set the output delay function; when the output delay time setting is not zero, only after the output delay time, is the first step started to test. When the output delay time set to zero, which is on behalf of the function disabled.

When model of the series tester are CS9950CG, CS9950CG-1, CS9950CX, CS9950DX, the GFI protection, prevent electric shock and measuring port settings are invalid.

### 7.3.3 Interface parameters setup

#### 7.3.3.1 Enter into the interface parameters

Press "ENTER" key in the menu of the "interface" option to enter the interface parameter setting. Communication Interface as shown below:



#### 7.3.3.2 Interface parameters

Tester supports with PLC interface, RS232 interface, RS485 interface, GPIB interface, USB interface. It is not supported PRINT interfaces.



Communication Mode: For RS232, RS485, USB communication, the communication mode including normal mode and broadcast mode. The normal mode are used response style communication, that is to say, when tester received a legal string instruments will return a response as the answer string; while the broadcast mode is not answered. Broadcast mode is used for multi-machine communication mode, which is applied in setting up more than tester parameters occasions. Broadcast mode can not be set in communication interface parameters, it just can set through communication command.

RS232, RS485, USB communication address range in normal mode: 1 ~ 255

RS232, RS485, USB communication address range in broadcast mode: 0





For GPIB communications, equipment does not support broadcast mode.

PLC communication interface parameter setting as shown below:

PLC	
PLC Control: <input checked="" type="radio"/> Open <input type="radio"/> Close	
Manual: When PLC is on, only the stop key is valid.	
	

If the PLC interface is enabled, all the keys are invalid except reset button .then the instrument can be tested by the PLC.

RS232 communication setting interface as shown below:

RS232	
Comm.Cont.: <input type="radio"/> Open <input checked="" type="radio"/> Close	
BaudRate: <input type="radio"/> 9600 <input type="radio"/> 14400 <input checked="" type="radio"/> 19200	
Address : 001 ( 1-255 )	
	

Which contains the parameters as follows:

Communication control: only the parameter is set to open, can RS232 communication interface be used normally.




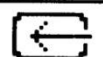
Baud rate: RS232 communication baud rate settings, the instrument supports Baud: 9600bps, 14400bps, 19200bps

Local Address: Local communications address settings for multi-machine communication, which must ensure that the local address of multi-machine

communication is various..

Native address range: 1 to 255, which only supports up to 255 units tester communication.

RS485 communication setting interface as shown below:

RS485	
Comm.Cont.: <input type="radio"/> Open <input checked="" type="radio"/> Close	
BaudRate: <input type="radio"/> 9600 <input type="radio"/> 14400 <input checked="" type="radio"/> 19200	
Address : 001 (1-255)	
	

Which contains the parameters as follows:



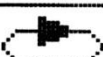
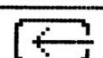
Communication control: only the parameter is set to open, can RS485 communication interface be used normally.

Baud rate: RS485 communication baud rate settings, the instrument supports Baud: 9600bps, 14400bps, 19200bps

Local Address: Local communications address settings for multi-machine communication, which must ensure that the local address of multi-machine communication is various..

Native address range: 1 to 255, which only supports up to 255 units tester communication.

GPIO communication setting interface as shown below:

GPIO	
Comm.Cont.: <input type="radio"/> Open <input checked="" type="radio"/> Close	
Address : 01 (1-30)	
	
	

Which contains the parameters as follows:

Communication control: only the parameter is set to open, can GPIO communication interface be used normally.

Local Address: Local communications address settings for multi-machine communication, which must ensure that the local address of multi-machine communication is various.

Instrument native address range: 1 to 30, which only supports up to 30 instrument communication.

USB interface parameter setting interface as shown below:

USB	
Comm.Cont.: <input type="radio"/> Open <input checked="" type="radio"/> Close	▲
BaudRate: <input type="radio"/> 9600 <input type="radio"/> 14400 <input checked="" type="radio"/> 19200	▼
Address : 001 ( 1-255 )	↻
	⬅

Equipment supported by the USB communication only refers to the using USB as a communication transmission medium, USB does not support U disk and other USB devices operation. Which contains the parameters as follows:

Communication control: only the parameter is set to open, can USB communication interface be used normally.

Baud rate: USB communication baud rate settings, the instrument supports Baud: 9600bps, 14400bps, 19200bps

Local Address: Local communications address settings for multi-machine communication, which must ensure that the local address of multi-machine communication is various..

Native address range: 1 to 255, which only supports up to 255 units tester communication.

## 7.3.4 Password parameter

### 7.3.4.1 enter the password parameter setting interface

Press "ENTER" key of the "Password" option in the menu interface to enter the password parameter setting interface.

### 7.3.4.2 Password parameter

The instrument initialization password is: 888888, Password parameter setting interface as shown below:

Old : *****	▲
New : *****	↻
Enter : *****	Del
	⬅

Instruments maximum password length is 8, all composed by the digits 0 to 9, the password parameters set as follows:



The original password: enter the original password and press "ENTER" key, if the input error, the instrument will prompt "the original password is wrong! Please re-enter" and automatically clear the wrong password. If the input is correct, it will enter the new password settings.

New password: Enter new password and press "ENTER" key to enter the password to confirm the setting.

Confirm Password: the confirmation password must be consistent with the new password, press "ENTER" key, if set up, the instrument will prompt "password is set successfully! Return to the menu interface and automatically return to the menu interface, if set fails, the instrument will prompt "Confirm password wrong! Please re-enter" error message and clear the new password and confirmed password. This time users can re-set the password.

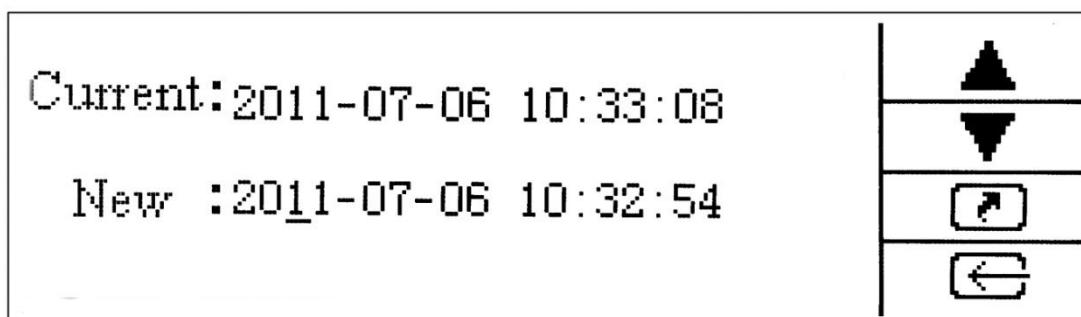
## 7.3.5 Time parameters

### 7.3.5.1 Enter time parameter setting interface

Press "ENTER" key of the "time" option in the menu interface to enter the password parameter setting interface.

### 7.3.5.2 Time parameters

Time parameter setting interface is shown below:



Which contains the parameters as follows:

Current time: this parameter is updated automatically by the instrument, no need setting.

New time: Enter the new time and press "ENTER" key, if the new time set is valid, tester is updated to the current time and automatically exit the new time parameter setting interface, if the new set time is not illegal (such as month beyond the permitted range, etc.), then the new time setting is invalid, the instrument give up the set automatically.

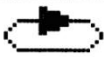

## 7.3.6 Keypad lock parameters

### 7.3.6.1 enter key lock parameter setting interface

Press "ENTER" key of the "keyboard lock" option in the menu interface to enter the keypad lock parameter setting. If the tester keyboard lock is set to open, enter the password firstly before entering into the keyboard lock interface.

### 7.3.6.2 Keyboard lock parameters

Keyboard lock parameter setting interface as shown below:

Lock key :    Ⓢ Open    ○ Close	
Manual : Lock key deciding whether	
permitting the input of pa-	
ssword.	

Need to enter a password interface are: setting interface, system interface, keyboard lock interface, new file operations, file editing and file deletion. If you close the keyboard lock, entering the above interface does not need a password. If you open the keypad lock, when you have entered a correct password, re-entering the corresponding interface do not need enter the password again.

## 7.4 Test parameters

### 7.4.1 test file and test procedures

There are 30 memory locations. In each memory location, there are 99 test steps. User can programme the test steps to achieve their desired testing.

### 7.4.2 test file mode and test step mode

test file working mode is divided into two: N (normal) mode, G (gradient) mode, N mode support ACW, DCW, IR, GR four test model, while G mode only supports ACW, DCW two test modes.

### 7.4.3 enter the test parameter setting interface

You can press the "Settings" button in the main interface or press the "shortcut" key in test interface then press "settings" to enter. If the tester is set to open the keyboard lock, enter the password then enter the set interface.

Test parameter setting interface includes the title area, display area and key area three parts, of which the title area information are: the current test step, the total test step, the test file mode, test step mode and the test file name.

#### 7.4.4 Test steps

Tester supports testing step to insert, delete, forward, backward, swap operations. Only when set test step, operation is valid. This time there is corresponding "short cut" key in the set interface. Here take ACW setting interface of GJ file for example, as shown below:

Step: 03/03 N ACW File: GJ		▲
Step : 01	01	▼
Mode : ACW	↓	↗
Voltage : 0.050kV	99	↶
:		

Press the "shortcut" key to set test step.

insert step: that is increment a new step behind the current test step. Press "page up" key or the "shortcut" key, then press the "Insert" key in the key area to insert. When the test file is the maximum total number of test step, the tester does not support the insertion operation.

Steps to delete: delete test steps. Press the "shortcut" key, then press the "delete" key in the key area to delete. After delete the test step, the behind test steps will move forward in the order counter. When the test file is for the first step, the tester does not support delete operation.

Step forward: the current test step forward one step. That is to say, exchange the current test step with the previous test step, which can be easily achieved sort step. When the test file is for the first step, the tester does not support delete operation.

Step backward: the current test step backward one step. That is to say, exchange the current test step with the behind test step, which can be easily achieved sort step.

Test step swap: exchange the current test step with the contents of appointed test step.

Step read: Step read: read the specified test step. Through the "number" keys you can read the test step number, the number of test step can not be greater than the total test step number, press "ENTER" key to read out the specified test step.

#### 7.4.5 ACW parameters

Take the following ACW parameters setting of "SAMPLE" test file as an example.

ACW test step, test mode, test voltage parameter setting interface is shown below:

Step: 03/03 N ACW File: GJ		▲
Step : 01	01	▼
Mode : ACW	↓	↗
Voltage : 0.050kV	33	↶
:		

the parameters set as follows:

Test step: The current test step number; range: 1 ~ 30. When testing step is greater than one step, you can press the "shortcut" key to insert, delete, forward, backward and exchange, specifically refer to 7.4.4 test steps.

Test mode: The current test procedure test mode; selected as ACW test mode.

Test voltage: the current test voltage;

ACW current range, current upper-limit and low-limit parameter setting interface is shown below:

Step: 01/03 N ACW File: GJ		▲
Level : ○ 200μA @ 2mA ○ 20mA		▼
High : 0.500mA		↷
Low : 0.000mA		↶
:		

Current range: the current test step current range;

Current upper-limit: current upper-limit alarm value of the test step; current upper-limit alarm range set value based on current gear. As follows:

200μA , the upper-limit: 0.1 ~ 200.0μA; 2mA , upper limit: 0.001 ~ 2.000mA; 20mA , the upper-limit: 0.01 ~ 20.00mA; 50mA , the upper-limit: 0.01 ~ 50.00mA, 100mA, the upper-limit: 0.1 ~ 999.9mA

Current low-limit: current low-limit alarm value of the test step; current low-limit alarm range: 0 to the current upper-limit alarm, when the current lower limit alarm value is set to 0, the lower limit alarm judgment is off.

ACW real current, arc detection, the output frequency parameter setting interface is shown below:

Step: 01/03 N ACW File: GJ			▲
Real	: 0.000mA	0.000mA	▼
Arc	: 00.00mA	↓	↻
Freq.	: 050.0Hz	0.500mA	↶
	:		

Real current: the real current upper limit alarm; real current upper-limit alarm range: 0 to current up-limit alarm value, when the real current upper limit alarm is set to 0, representative of the real current up-limit alarm is off.

Arc Detection: The current test step arc detection; Including two modes: current mode and level mode. Current mode parameter setting range: 0 ~ the maximum current up-limit value of maximum current range, level mode parameter setting range: 0 to 9, when the arc detection is set to 0, on behalf of the arc detection is off.

Output frequency: the output frequency; range: 40.0Hz ~ 400.0Hz

ACW rise time, testing time, fall time parameter setting interface is shown below:

Step: 01/03 N ACW File: GJ			▲
Ramp	: 000.0s	0, 0.3s	▼
Test	: 003.0s	↓	↻
Fall	: 000.0s	999.9s	↶
	:		

Rise time: the current test step rise time; range: 0, 0.3 s ~ 999.9s, when the rise time is set to 0s, on behalf of the rise time is off.

Testing time: the current test time of test step; Range: 0, 0.3 s ~ 999.9s, when the test time is set to 0s, representative test time is infinite; the tester is always in testing state, that is, when test time is to 999.9s, the tester will start cycle from 0s.

Fall Time: The current fall time of test step; range: 0,0.3 s ~ 999.9s, when the fall time is set to 0s, on behalf of fall time is off.

ACW interval time, PASS signal between steps, continuous between steps parameter setting interface as shown below:

Step: 01/03 N ACW File: GJ		▲
Interval : 000.0s		▼
Step pass : <input checked="" type="radio"/> Yes <input type="radio"/> No	000.0s	↻
Step series: <input type="radio"/> Yes <input checked="" type="radio"/> No	↓ 999.9s	⏪

Interval: interval time between the current test step; Range: 0s ~ 999.9s, when the interval is set to 0s, a representative interval is off.

PASS signal between steps: This parameter determines whether output pass signal between steps in a multi-step.

Continuous between steps: This parameter determines whether it is continuous between steps in a multi-step.

ACW test port parameter settings interface is shown below:

Step: 02/03 N ACW File: DEFAULT..		▲
Test Port :		▼
<u>X</u> X X X X X X X	0 - X	↻
1 2 3 4 5 6 7 8	1 - L	⏪
	2 - H	⏩

Step: 02/03 N ACW File: DEFAULT..		▲
Test Port :		▼
<u>X</u> X X X	0 - X	↻
1 2 3 4	1 - L	⏪
	2 - H	⏩

Step: 01/02 N ACW File: DEFAULT..		▲
Test Port :		▼
01-08: <u>X</u> X X X X X X X	0 - X	↻
09-14: X X X X X X X	1 - L	⏪
	2 - H	⏩

Test port: test port of the current test step; when the instrument model is CS9919AX,

CS9929AX, CS9929CX, CS9919G, the tester has eight test ports. When the instrument model is CS9919BX, CS9929BX, the tester has four test ports. When the instrument model CS9929EX, the tester has 14 test ports. Test port range: X - high impedance state, L - low level state, H - high level state.

### 7.4.6 DCW parameters

Here take the following "SAMPLE" file as an example for DCW parameter settings. DCW test steps, test mode, test voltage parameter setting interface is shown below:

Step: 02/03 N DCW File: DEFAULT..		▲
Step : 02	01 ↓ 30	▼
Mode : DCW		↻
Voltage : 0.050kV :		⏪

the parameters set as follows:

Test step: The current test step number; range: 1 ~ 99. When testing step is greater than one step, you can press the "shortcut" key for insert, delete, forward, backward, exchange, specifically refer to 7.4.4 test steps.

Test mode: The current test mode; choose DCW test mode.

Test voltage: the current test voltage;

DCW current range, current upper-limit, current low-limit parameter setting interface is shown below:

Step: 02/03 N DCW File: DEFAULT..		▲
Level : @2mA ○10mA	▼ ↻ ⏪	
High : 0.500mA		
Low : 0.000mA :		

Current range: the current test step current range;

Current upper-limit: upper-limit alarm value of the test step; current upper-limit alarm range set value based on current gear. As follows:

2μA, the current upper limit: 0.001 ~ 2.000μA; 20μA, the current upper limit: 0.01 ~ 20.00μA; 200μA, the current upper limit: 0.1 ~ 200.0μA; 2mA, the current upper limit: 0.001 ~ 2.000mA; 10mA, the current upper limit: 0.01 ~ 10.00mA; 20mA, the current upper limit: 0.01 ~ 20.00mA; 50mA, the current upper limit: 0.01 ~ 50.00mA;

Current low-limit: current low-limit alarm value of the test step; current limit alarm

range: 0 to the current upper-limit alarm, when the lower-limit alarm is set to 0, on behalf of the current lower limit alarm judgment is off.

DCW charging current, arc detection, the delay time parameter setting interface is shown below:

Step: 02/03 N DCW File: DEFAULT..		▲
Charge : 0.000mA	0.000mA	▼
Arc : 00.00mA	↓	↺
Delay : 000.0s	0.500mA	↻
:		⏪

Charging current: Charging current upper limit alarm range: 0 to the current upper-limit alarm value, when the charge current upper-limit alarm value is set to 0, on behalf of the charging current upper limit alarm judgment is off.

Arc Detection: arc detect including two modes: current mode and level mode. Current mode parameter setting range: 0 ~ The maximum current upper-limit value of maximum current range, level mode parameter setting range: 0 to 9, when the arc detection is set to 0, on behalf of the arc detection is off.

Delay time: delay time range: 0, 0.3 s ~ 999.9s, when the delay time is set to 0, on behalf of the delay time is off.

DCW rise time, testing time, fall time parameter setting interface is shown below:

Step: 02/03 N DCW File: DEFAULT..		▲
Ramp : 000.0s	0, 0.3s	▼
Test : 003.0s	↓	↺
Fall : 000.0s	999.9s	↻
:		⏪

Rise time: Range: 0,0.3 s ~ 999.9s, when the rise time is set to 0s, on behalf of the rise time is off.

Test time: Range: 0,0.3 s ~ 999.9s, when the test time is set to 0s, representative test time is infinite, tester is always in testing state, that is, when test time is up to 999.9s, it will start cycle from the beginning 0s.

Fall Time: Range: 0, 0.3 s ~ 999.9s, when the fall time is set to 0s, on behalf of fall time is off.

DCW interval, PASS signal between steps, Continuous between steps parameter



setting interface as shown below:

Step: 02/03 N DCW File: DEFAULT..	▲
Interval : 000.0s	▼
Step pass : <input checked="" type="radio"/> Yes <input type="radio"/> No	↻
Step series: <input type="radio"/> Yes <input checked="" type="radio"/> No	↶
:	

Interval: interval time between the current test step; Range: 0s ~ 999.9s, when the interval is set to 0s, a representative interval is off.

PASS signal between steps: This parameter determines whether output pass signal between steps in a multi-step.

Continuous between steps: This parameter determines whether it is continuous between steps in a multi-step.

DCW test port parameter settings interface is shown below:

Step: 02/03 N DCW File: DEFAULT..	▲
Test Port :	▼
<u>X</u> X X X X X X X   0 - X	↻
1 2 3 4 5 6 7 8   1 - L	↶
	↶

Step: 02/03 N DCW File: DEFAULT..	▲
Test Port :	▼
<u>X</u> X X X   0 - X	↻
1 2 3 4   1 - L	↶
	↶

Test port: When the instrument model is CS9919AX, CS9929AX, CS9929CX, CS9919G, the tester has eight test ports. When the instrument model is CS9919BX,

CS9929BX, the tester has four test ports. When the instrument model is CS9929EX, the tester has 14 test ports. Test port range: X - high impedance state, L - low level state, H - high level state.

### 7.4.7 IR parameters

Here take the following "SAMPLE" test file as an example for parameters setting. IR test steps, test mode, test voltage parameter setting interface is shown below:

Step: 01/03 N IR		File: DEFAULT..	
Step	: 01	01	▲
Mode	: IR	↓	▼
Voltage	: 0.050kV	33	↻
	:		↶

Which contains the parameters set as follows:

Test step: Test step number range: 1 ~ 30. When testing step is greater than one step, you can press the "shortcut" key for insert, delete, forward, backward, exchange, specifically refer to 7.4.4 test steps.

Test mode: The current test mode; selected for IR mode.

Test voltage: Test voltage range: 0.050 ~ 1.000kV.

IR automatic range, upper-limit resistance, low-limit resistance parameter setting interface as shown below:

Step: 01/03 N IR		File: DEFAULT..	
Auto.Lev.	: @Yes ○No		▲
High	: 00000MΩ		▼
Low	: 00001MΩ		↻
	:		↶

Automatic range: automatic range settings; This setting determines whether auto IR range in the testing process, if set on, auto range is on; if set No, then automatically shift IR range is off. Use IR low-limit value to determine range in testing process. Resistance up-Limit: When insulation resistance up-limit value is set to 0MΩ, on behalf of insulation resistance up-limit alarm is off.

Resistance low-limit: IR low-alarm value, range: 1 to IR up-limit value.

IR rise time, testing time, delay time parameter setting interface is shown below:

Step: 01/03 N IR		File: DEFAULT..	▲
Ramp	: 000.0s	0, 0.3s ↓ 999.9s	▼
Test	: 001.0s		↻
Delay	: 000.0s		←

Rise time: Rise time range: 0, 0.3 s ~ 999.9s, when the rise time is set to 0s, on behalf of the rise time is off.

Test time: Test time range: 0, 0.3 s ~ 999.9s, when the test time is set to 0s, representative test time is infinite, the tester is always in testing state, that is, when test time is up to 999.9s, it will start cycle from the beginning 0s.

Fall Time: Fall time range: 0, 0.3 s ~ 999.9s, when the fall time is set to 0s, on behalf of fall time is off.

IR interval, PASS signal between steps, Continuous between steps parameter setting interface as shown below:

Step: 01/03 N IR		File: DEFAULT..	▲
Interval	: 001.0s	000.0s ↓ 999.9s	▼
Step pass	: ☉Yes ○No		↻
Step series	: ☉Yes ○No		←

Interval time: interval time between the current test step; Range: 0s ~ 999.9s, when the interval is set to 0s, a representative interval is off.

PASS signal between steps: This parameter determines whether output pass signal between steps in a multi-step.

Continuous between steps: This parameter determines whether it is continuous between steps in a multi-step.

IR test port parameter setting interface is shown below:

Step:03/04 N IR File:DEFAULT..										▲
Test Port :										▼
<u>X</u> X X X X X X X							0 - X			↻
1 2 3 4 5 6 7 8							1 - L			↻
							2 - H			↶

Step:03/04 N IR File:DEFAULT..										▲
Test Port :										▼
<u>X</u> X X X						0 - X				↻
1 2 3 4						1 - L				↻
						2 - H				↶

Step:02/03 N IR File:DEFAULT..										▲
Test Port :										▼
01-08: <u>X</u> X X X X X X X							0 - X			↻
09-14: X X X X X X X							1 - L			↻
							2 - H			↶

Test port: When the instrument model is CS9919AX, CS9929AX, CS9929CX, CS9919G, the tester has eight test ports. When the instrument model is CS9919BX, CS9929BX, the tester has four test ports. When the instrument model is CS9929EX, the tester has 14 test ports. Test port range: X - high impedance state, L – low level state, H - high level state.

#### 7.4.8 GR parameters

Here take the following "SAMPLE" test file as an example for GR parameters setting. GR test steps, test mode, the output current parameter setting interface is shown below:

Step: 04/04 N GR		File: DEFAULT..	▲
Step	: 04	01.00A	▼
Mode	: GR	↓	↻
Current	: 03.00A	30.00A	↶
	:		

Parameters set as follows:

Test step: Test step number; range: 1 ~ 99. When testing step is greater than one step, you can press the "shortcut" key for insert, delete, forward, backward, exchange, specifically refer to 7.4.4 test steps.

Test mode: Selected as the GR mode.

Output current: When the instrument model is CS9933X, CS9921BX, CS9933G, CS9950X, CS9950CG, the output current range: 1.00 ~ 30.00A.

When the instrument model is CS9950CX, CS9950CG-1, the output current range: 1.00 ~ 40.00A.

When the instrument model is CS9950DX, the output current range: 1.00 ~ 60.00A

GR upper-limit, low-limit and test time parameter setting interface is shown below:

Step: 04/04 N GR		File: DEFAULT..	▲
High	: 100.0Ω	001.0mΩ	▼
Low	: 000.0Ω	↓	↻
Test	: 003.0s	510.0mΩ	↶
	:		

GR upper-Limit: upper-limit alarm value, range: 001.0 ~ Min (1500 \* I<sub>max</sub>/100 \* I<sub>set</sub>, 510.0)

When the instrument model is CS9933X, CS9921BX, CS9933G, CS9950X, CS9950CG time, I<sub>max</sub>: 30.00A.

When the instrument model is CS9950CX, CS9950CG-1, I<sub>max</sub>: 40.00A.

When the instrument model is CS9950DX, I<sub>max</sub>: 60.00A. Min is the minimum data of the two data.

GR low-limit: Range: 0 to upper-limit ground resistance.

Test time: test time range: 0,0.3 s ~ 999.9s, when the test time is set to 0s, a representative test time is infinite, the tester is always in testing state, that is, when test time is up to 999.9s, it will start cycle from begin of 0s.

GR interval, PASS signal between steps, Continuous between steps parameter setting interface as shown below:

Step: 04/04 N GR File: DEFAULT..		▲
Interval : 000.0s	000.0s	▼
Step pass : ☉ Yes ○ No	↓	↻
Step series: ○ Yes ☉ No	999.9s	⬅

Interval time: interval time between the current test step; Range: 0s ~ 999.9s, when the interval is set to 0s, a representative interval is off.

PASS signal between steps: This parameter determines whether output pass signal between steps in a multi-step.

Continuous between steps: This parameter determines whether it is continuous between steps in a multi-step.

GR output frequency parameter setting interface as shown below:

Step: 04/04 N GR File: DEFAULT..		▲
Freq. : 050.0Hz	40.0Hz	▼
	↓	↻
	400.0Hz	⬅

Output frequency: the current test step output frequency; range: 40.0Hz ~ 400.0Hz

## Chapter 8 Test function

### 8.1 Test

#### 8.1.1 Enter into test interface

In the main interface, pressing “TEST” key can enter into test interface.

#### 8.1.2 Start and reset test

Only in the following figure, is start and reset test valid.

步骤: 01/04 N ACW 文件: SAMPLE		▲
0.050kV	0.500mA	▼
3.0s	0.500mA	↺
等待测试	ARC: DISABLE GFI: ENABLE	↻

“START”: Press the start key to do the test. During testing, press ”RESET” key to reset it.

“RESET”: If the tester is in testing status, press it to make the tester stop. Otherwise, press this key will return to the waiting interface.

Remark: While the test interface is in other keyboard area,( That is pressing shortcut key appear), both start and reset are not valid.

## Chapter 9 The Initial Value of the parameters

### 9.1 The initial test parameters

#### 9.1.1 ACW

Test voltage	: 0.050kV
Current range	: 2.000mA
Upper-limit	: 0.500mA
Lower-limit	: 0.000mA
Real current	: 0.000mA
ARC detection (current mode)	: 0.000mA
ARC detection (Grade mode)	: 0
Output frequency	: 50.0Hz
Rise time	: 0.0s
Test time	: 3.0s
Fall time	: 0.0s
Interval time (N mode)	: 0.0s
Varied time (G mode)	: 0.0s
PASS	: yes
Continue	: no
Test port	: High impedance

#### 9.1.2 DCW

Test voltage	: 0.050kV
Current range	: 2.000mA
Upper-limit	: 0.500mA
Lower-limit	: 0.000mA
Charge current	: 0.000mA
ARC detection (current mode)	: 0.000mA
ARC detection (Grade mode)	: 0
Delay time	: 0.0s
Rise time	: 0.0s
Test time	: 3.0s
Fall time	: 0.0s
Interval time (N mode)	: 0.0s
Varied time (G mode)	: 0.0s
PASS	: yes
Continue	: no
Test port	: High impedance



**9.1.3 IR**

Test voltage	: 0.050kV
Auto range	: yes
Upper-limit of IR	: 0MΩ
Lower-limit of IR	: 1MΩ
Rise time	: 0.0s
Test time	: 3.0s
Delay time	: 0.0s
Interval time	: 0.0s
PASS	: YES
Continue	: NO
Test port	: High impedance

**9.1.4 GR**

Output current	: 3.00A
Upper-limit of GR	: 100.0mΩ
Lower-limit of GR	: 0mΩ
Test time	: 3.0s
Interval time	: 0.0s
PASS	: YES
Continue	: NO

**9.2 The initial environment parameters****9.2.1 System parameters**

LCD contrast ratio	: 8
Beep volume	: 0
Remain prompt	: 0
Result save	: NO
Overflow cover	: NO
GFI	: NO
Prevent electric shock	: NO
Test signal	: contact signal
Self-check	: NO
Check prompt	: NO
Test port	: Float
Language	: Chinese
Failed continue	: NO
Check date	: check date
List display	: NO
Output delay	: 0.0s
Number rule	: 0

### 9.2.2 Interface

PLC	:	OFF
RS-232	:	OFF
RS-485	:	OFF
USB	:	OFF
Baud rate	:	19200bps
Test address	:	1
GPIB	:	OFF
GPIB address	:	1

### 9.2.3 PASSWORD

Test password	:	888888
---------------	---	--------

### 9.2.4 Keyboard lock

Keyboard lock	:	OFF
---------------	---	-----

## Chapter 10 Test process and steps

### 9.1 Selection of test mode

(1) CS9912AX、CS9913AX、CS9914AX、CS9915AX、CS9916AX、CS9917AX ACW test mode only

(2) CS9912BX、CS9913BX、CS9914BX、CS9916BX、CS9917BX have four test modes such as ACW、DCW、ACW-DCW、DCW-ACW.

(3) CS9922CX have four test modes such as ACW、IR、ACW-IR、IR-ACW.

(4) CS9922BX、CS9922DX、CS9922EX、CS9922FX、CS9922G、CS9922G-1 have 15 test modes such as ACW、DCW、IR、ACW-DCW、DCW-ACW、ACW-IR、IR-ACW、DCW-IR、IR-DCW、ACW-DCW-IR、ACW-IR-DCW、DCW-ACW-IR、DCW-IR-ACW、IR-ACW-DCW、IR-DCW-ACW.

Users can select proper test mode according to the tester type.

### 9.2 Set required parameter

Please refer to “Parameter setting”.

### 9.3 Connection between tester and DUT

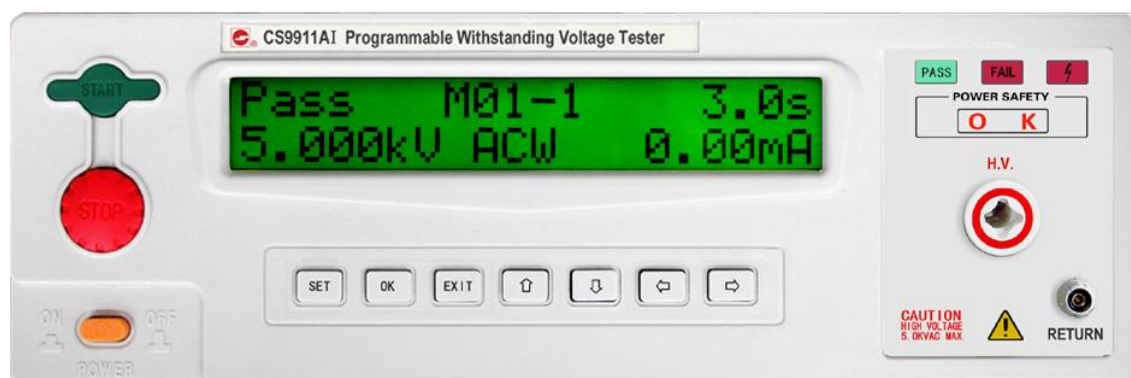
Firstly press “STOP” and be sure that no high voltage is outputting, high voltage indicator light is gone out and displaying value isn’t jumping, and then connect the test black wire used in low potential with RETURN terminal on tester and secure it. Insert the red high voltage wire into high voltage output terminal when no high voltage output is confirmed, and joint the low potential wire and high voltage test wire in sequence to the DUT.

### 9.4 Press “START” to begin testing

When this key pressed, tester begins testing, high voltage terminal outputs voltage, test light shines, display shows “TEST”, and the test voltage value is showed in the left-lower corner of the display, test current value is showed in the right-lower corner of the display, timing circumstance of timer’s positive direction counting is showed in the right-upper corner of the display.

### 9.5 Quality goods judgment

When all the test items have been finished, if the display shows “Pass” and rear board outputs “Pass” signal with buzzer sounds, the DUT is quality goods.



### 9.6 Inferior goods judgment

In testing, if the “FAIL” light shines, the tester will comment the DUT as inferior goods

and cut off the high voltage output, while the rear board outputs “FAIL” signal with buzzer sounds until pressed “STOP”.

Inferior state table :

<b>Result display</b>	<b>Meaning</b>	<b>Buzzer</b>
High	Testing current/resistance value excess upper limit	Lasting sound
Low	Testing current/resistance value excess lower limit	Lasting sound
Arc	Arc detect alert	Continuous short sound
Short	DUT circuit short	Lasting sound
AMP	The temperature of power amplifier is over high	Long sound

# Chapter 11 Test specification

## 10.1 How to test the capacitive load

While testing capacitive load (such as high voltage capacitance, switch power supply and power filter etc.), commonly DC voltage is used. If it is polar capacitive load, please differ the positive and cathode polar, and test as following steps:

### 10.1.1 Connection between tester and the under test capacitive load

The DC voltage output of the series tester is positive voltage output, what the high voltage output port outputs as well. When connecting the tester with the capacitive load, connect the black clip of the RETURN with the capacitive load's cathode polar ( – pole ), high voltage clip of the high voltage port with its positive polar ( + pole ) .

### 10.1.2 Parameter setting

For the DUT is a capacitance, while setting parameter, please be sure to set the voltage rise time (Ramp Time) differently according to the volume of the capacitive load; the greater the capacitive load, the longer the voltage rise time, vise versa. If the voltage rise time has not been set, the tester will give a distorting alert at the beginning instance due to the charging current of the capacitance is possible to excess the set upper limit current.

### 10.1.3 PASS and FAIL judgments

Press “START” to begin testing. During the process, if the testing current is greater than the set current, the tester will alert and cut off the output voltage automatically. If the test does not alert in the test time, it will show PASS signal as the test time over.

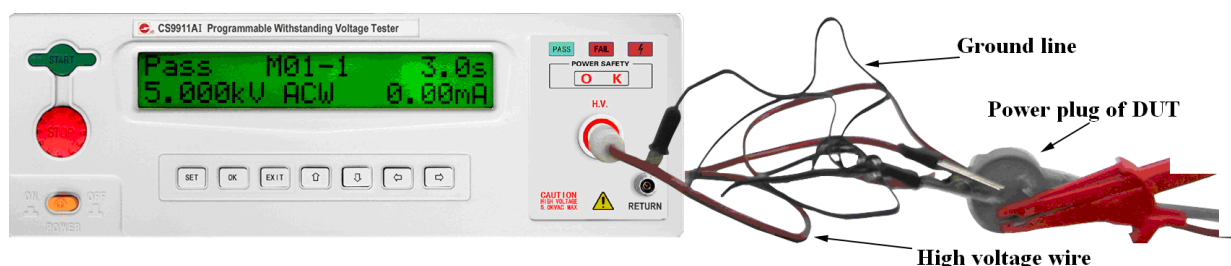
### 10.1.4 Confirmation of finishing

Do not touch the capacitance of the DUT immediately as the test time over, until the electricity has been discharged fully otherwise it will result in electrical shock.

## 10.2 How to test the three-phase socket electrical machines (Such as air-conditioning, washing machine, refrigerator and microwave oven etc.)

### 10.2.1 How to connect

Firstly, open the power supply switch of the DUT, and then connect the black test clip at the RETURN end to the power supply port (G) of the DUT's three-phase socket, high voltage test clip at the high voltage port to N or L of the DUT's three-phase socket.



### **10.2.2 Parameter setting**

Please refer to the “Parameter setting”.

### **10.2.3 PASS and FAIL judgments**

Press “START” to begin testing. During the process, if the testing current is greater than the set current, the tester will alert and cut off the output voltage automatically. If the test does not alert in the test time, it will show PASS signal when the test time over.

### **10.2.4 Confirmation of finishing**

**Do not touch the DUT immediately when the test time over, unless the test light confirmed to be gone out, test voltage numbers on LCD not jumping and high voltage not outputting, then the DUT can be replaced.**

## Chapter 12 Accessories and Maintenance

### Accessories :

- |                          |       |
|--------------------------|-------|
| 1. Power supply line     | 1pc   |
| 2. Test accessories      | 1set  |
| 3. Operation manual      | 1copy |
| 4. Warranty              | 1copy |
| 5. Product certification | 1copy |

As received the instrument, please open the box and check with above contents. If any lack, please contact with Allwin Instrument or its distributors.

### Maintenance :

6. Warranty period : The instrument is warranted to be free from use for a period of 12 months from the date of shipment to the original end users in different sales spots.
7. Maintenance: Please bring forth the warranty card while maintaining. The company provides lift-long maintenance service to all the shipped instruments.
8. In this period, consumer is responsible for the maintaining fee if the instrument is damaged by improper operation.

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Truda\_mao

Company: NANJING ALLWIN INSTRUMENT SCIENCE & TECHNOLOGY CO.,LTD

Address: NO.08 Feiying Road ,Jiangning Binjiang Economical Development Zone,  
Nanjing, 211178 China

Cel:+86 13770792419

Tel:+86-25-68132218

Fax:+86(25)52101482

Skype: trudamao

MSN:cy.mao@hotmail.com

Email: [trudamao@allwin-instruments.net.cn](mailto:trudamao@allwin-instruments.net.cn)

[njmaocuiyun@163.com](mailto:njmaocuiyun@163.com)

[cswangyi@163.com](mailto:cswangyi@163.com)

Website: [www.csallwin.com](http://www.csallwin.com)