Programmable DC power supply

USERS MANUAL

HT661X SERIES

June, 2021

Rev2.1

Introduction

Thank you for purchasing 661X series programmable DC power supply. To obtain maximum performance from the product, please read this manual first, and keep it handy for future reference.

Registered trademarks

Windows and Excel are registered trademarks of Microsoft Corporation in the United States and/or other countries.

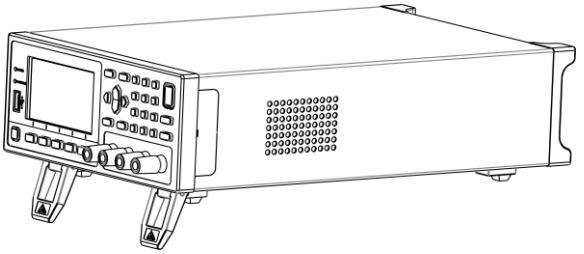
Checking Package Contents

When you receive the instrument, inspect it carefully to ensure that no damage occurred during shipping. In particular, check the accessories, panel switches, and connectors. If damage is evident, or if it fails to operate according to the specifications, contact your authorized distributor or reseller.

To transport this instrument, use the original packaging and wrap it in a double carton. Damage in transit is not warranty.

Check the package contents as follows:

No.	Item	Quantity
1	Programmable DC power supply	1
2	Power cord	1
3	USB flash disk	1



Security information

The instrument is designed to conform to IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, if it is used improperly, it may cause injury or death and damage the instrument. Be sure to read through this manual and its precautions before use. Our company does not assume any responsibility for accidents and injuries not caused by defects in the instrument itself.

Safety Symbols

This manual contains information and warnings essential for safe operation of the instrument and for maintaining it in safe operating condition. Before using the instrument, be certain to read the following safety notes carefully.

	Indicates very important message in this manual. When the symbol is printed on the instrument, refer to a corresponding topic in the Instruction Manual.
	Indicates DC (direct current)
	Indicates a fuse
	Indicates earth terminal

In this manual, the risk seriousness and the hazard levels are classified as follows:

	Indicates an imminently hazardous situation that will result in death or serious injury to the operator.
	Indicates a potentially hazardous situation that will result in death or serious injury to the operator.
	Indicates a potentially hazardous situation that may result in minor or moderate injury to the operator or damage to the instrument or malfunction.
	Indicates functions of the instrument or relative suggestion of a correct operation.

Accuracy

We define measurement tolerances in terms of f.s. (full scale), rdg. (reading) and dgt. (digit) values, with the following meanings:

f.s. (Maximum display value)

This is usually the maximum display value. In the instrument, this indicates the currently used range.

rdg. (Reading or displayed value)

The value currently being measured and indicated on the measuring instrument.

dgt. (Resolution)

The smallest displayable unit on a digital measuring instrument, i.e., the input value that causes the digital display to show a “1”.

Usage Notes

Installation environment

Operating temperature and humidity range:
0°C to 40°C, 80%RH or less (no condensation)
Ideal working temperature and humidity range:
23 ± 5°C, 80%RH or less (no condensation)

To avoid failure or damage to the instrument, do not place the tester in the following places:

- Places exposed to direct sunlight or high temperatures
- Places exposed to high humidity or condensation
- Places exposed to large amounts of dust particles
- Places exposed to water, oil, chemicals or solvents
- Places exposed to corrosive or combustible gases
- Places with strong electromagnetic fields or electromagnetic radiation
- Places where mechanical vibration is frequent

Checking before use

Before using the instrument the first time, verify that it operates normally to ensure that no damage occurred during storage or shipping. If you find any damage, please contact us.

	The 661X series power supply supports either 110V or 220V AC input by switching. Before using the instrument, check that the coating of the test leads or cables are not torn and that no metal parts are exposed. Using the instrument under such conditions

	could result in electrocution. The power supply is supplied with a three-core power cord. Your power supply should be connected to a three-core junction box. Before operating the power supply, you should first make sure that the power supply is well grounded. Using wires with an appropriate rated output, the capacity of all power lines must be able to withstand the maximum short-circuit output current of the power supply without overheating. If there are more than one power supply, each pair of power supply wires must be able to safely carry the power supply's full load rated short-circuit output current. To reduce the risk of fire and electric shock, please ensure that the voltage fluctuation of the mains supply does not exceed 10% of the operating voltage range. It is strictly prohibited to use this equipment on life support system or any other equipment with safety requirement.

Use of instruments

	To avoid electric shock, do not disassemble the instrument electronic enclosure. There are high pressure

	and high temperature parts inside the instrument during operation.
	To avoid any damage to the instrument, avoid any vibration or shock during transport or handling. Pay particular attention to avoid collision caused by falling.
	Be sure to turn the power off after using it.

Measurement precautions

	To avoid electric shocks and short circuits, the following procedures must be followed: Do not allow the instrument to get wet, and do not use it with wet hands. This may cause electric shock accident. Do not modify, disassemble, or repair the instrument. This may result in fire, electric shock accident, or injury.
	Do not place the instrument on an unstable or slanted surface. It may drop or fall, causing injury or instrument failure. To avoid any damage to the instrument, do not input voltage or current to any measuring terminal, TC terminal, or External I/O terminal.

Use of test leads and cables

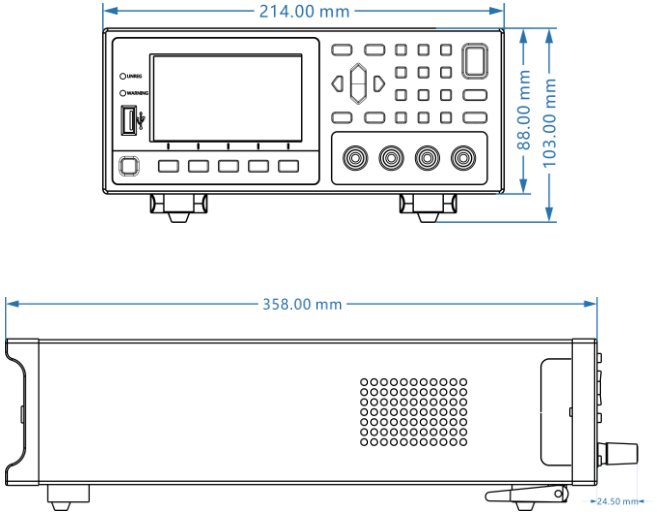
	To avoid electrical shock accident, do not short test leads where voltage is applied.
	Do not use any test lead or temperature sensor other than the ones specified by our company. It may result in inaccurate measurement due to poor contact or other reasons. To avoid damaging the cables, do not bend or pull the base of cables and the leads. To avoid damage to the test leads, when plug/pull the test line, don't hold the cable but connector.

Chapter I Power supply dimensions and installation

The instrument should be installed in a well ventilated and reasonably sized space. Please select the suitable space installation according to the following power supply dimensions.

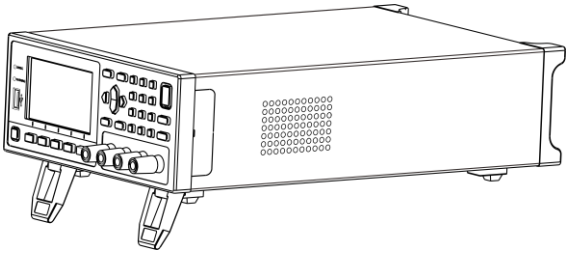
1.1 Power Supply Dimension

Detail dimensions of 661X series power supply instruments:

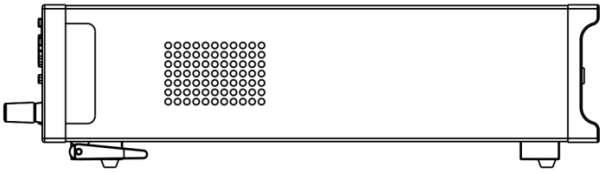


1.2 Adjust the power angle

The angle of power supply can be adjusted, which is convenient for users to place.

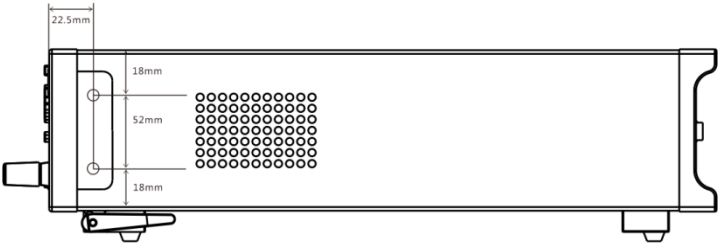


Brace off



Stent closure

1.3 Install the power supply

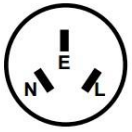


The machine provides the cabinet mounting hole, the two sides of the power supply Shell and the panel connection place, after disassembling along the gap, can see up and down each two screw positions, after disassembling, can use for the cabinet mounting positioning.

1.4 Install the power cord

Connect the standard accessory power cord to ensure that the power supply has been properly supplied.

From the power cord specification table below, select the type of power cord that is appropriate for the voltage in your area. If the purchase model does not meet the voltage requirements of the region, please contact the dealer or manufacturer for replacement.

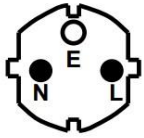


CHINA

IT-E171

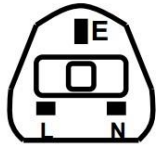
UNITED STATES,CANADA

IT-E172



EUROPE

IT-E173

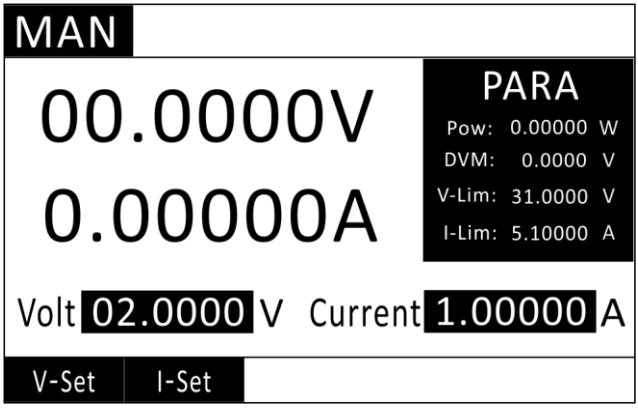


UNITED KINGDOM

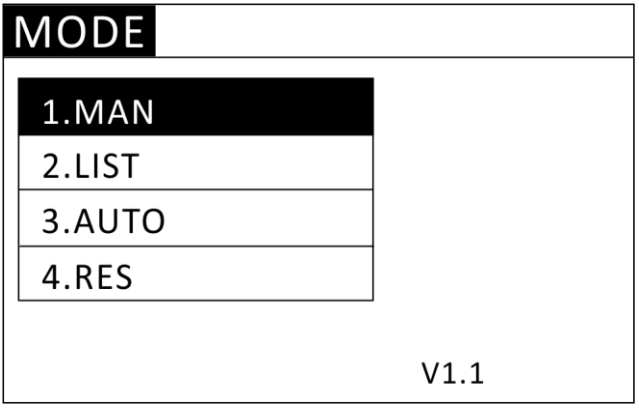
IT-E174

1.5 Page composition

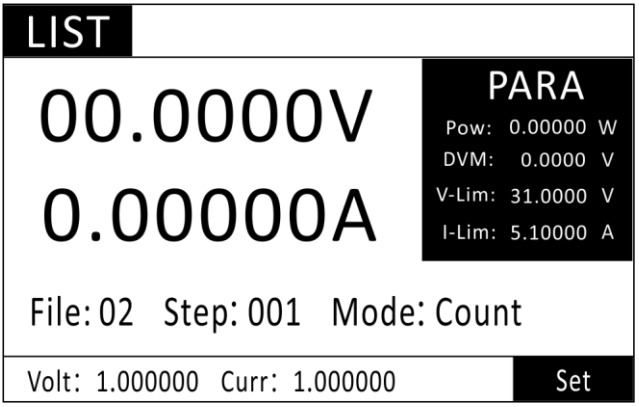
Man Mode measurement page



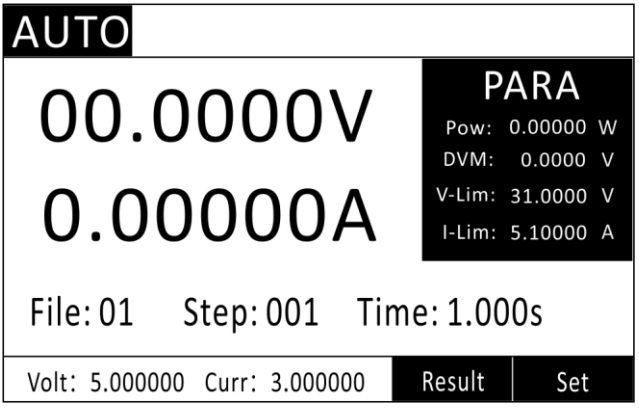
Mode page



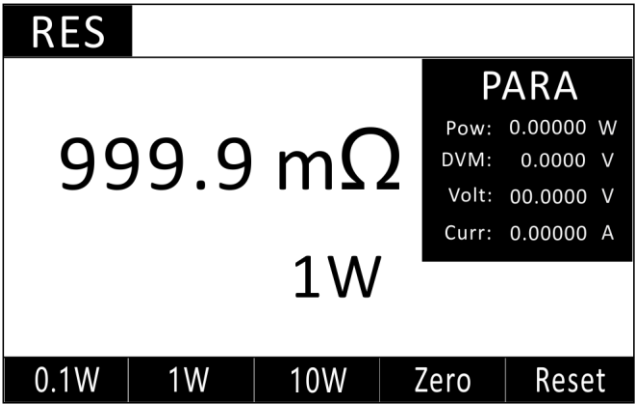
The LIST pattern measures the page



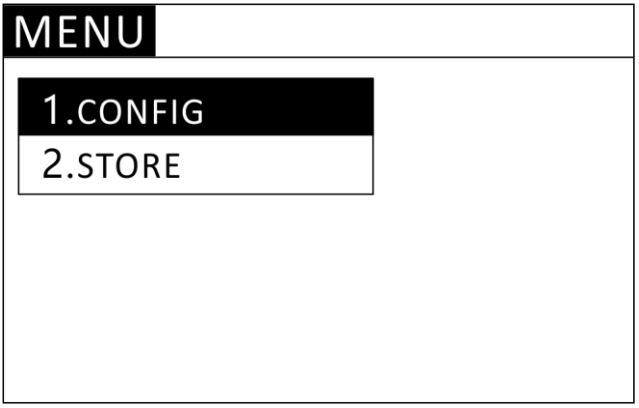
Auto mode measurement page



Res Mode Measurement page



Menu page



Chapter II Quick start

This chapter will introduce the series of power-on check steps to ensure that the power in the initial state can be normal start-up and use. The front panel, the back panel, the keyboard key function and the LCD display function of the power supply ensure that before operating the power supply, quickly understand the appearance, structure and key function of the power supply to help you better use the power supply.

2.1 Product description

This series of programmable DC power supply is a new generation of products designed on the basis of programmable power supply in general laboratory. The product is equipped with communication interface, with ultra-fast rising speed (6611 power can be less than 10mS rising speed).

This series of power supply has the characteristics of both desktop and system. It can be combined with other instruments and integrated into a special function test system to fulfill the measurement requirements under different occasions. With the function of voltmeter and ohmmeter, it is convenient for users to use. It is a new generation of ordinary programmable power supply and has the advantage of high performance-price ratio.

This series of power supply has high-speed dynamic programming output (voltage 0-30V, 1mS climb time) , current full range very high precision (0.001Ma Resolution) very low internal resistance design, to meet the special requirements of special occasions. The power supply is the best choice for Mobile Phone R & D, Microelectronics Laboratory, Research Institute, small current and high precision application.

This series of power supply can support RS232, RS485 communication interface and Lan communication, according to

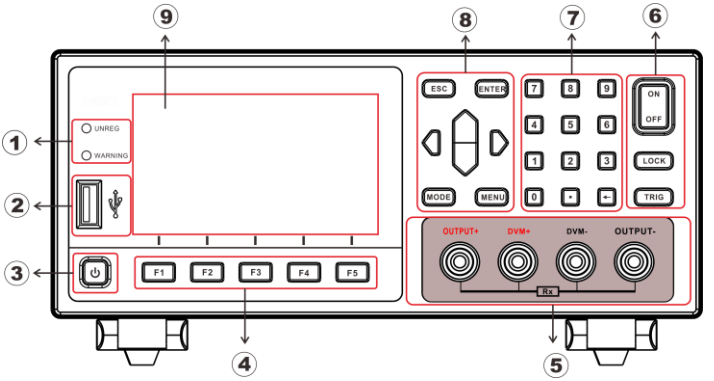
your design and test requirements can provide a multi-purpose solution.

2.2 Product characteristics

- ✧ 24 Bit true Color Liquid Crystal Display, Gui Interface;
- ✧ Auto Test Mode ;
- ✧ List mode, can simulate a variety of loaded state changes;
- ✧ The shortcut mode supports the storage and reading of 10 sets of global data;
- ✧ Remote measurement mode;
- ✧ Data storage capacity of up to 200 * 8 groups;
- ✧ According to the temperature change, stepless Servo, intelligent fan system;
- ✧ BUILT-IN BUZZER alerts;
- ✧ Memory function after power failure;
- ✧ USB INTERFACE UPGRADE program;
- ✧ Electrical isolated communication i/o interface, RS232/485, NET interface.

2.3 Introduction of front panel

Power Front panel diagram and key function diagram.



①Led Lights (UNREG: Can Not output to the set value, WARNING: Alarm Tips) ;

②USB data transfer interface;

③Power Button soft start;

④Function shortcut key;

⑤ Front input terminal, OUTPUT + and OUTPUT-for voltage OUTPUT, DVM + and DVM-for external input port, for four-wire resistance measurement;

⑥Start and stop buttons;

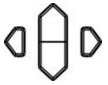
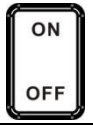
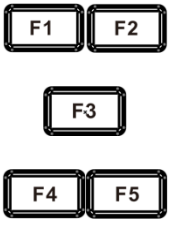
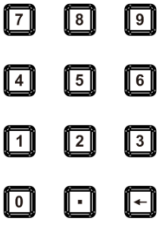
⑦Numeric keypad;

⑧Direction key;

⑨LCD display panel.

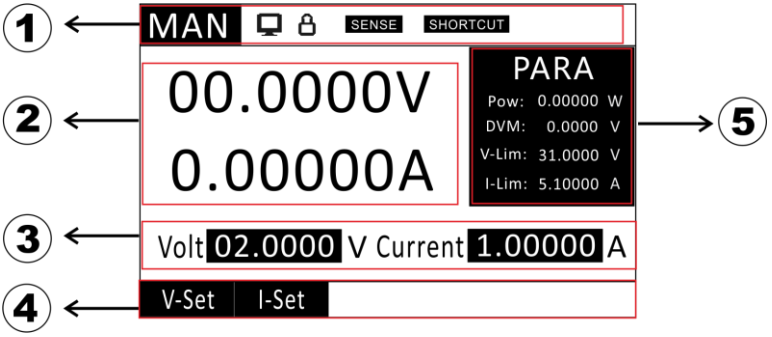
Button Instruction Sheet:

	Power soft switch (long press) , the instrument off state red, open state green.
	Long press to open/close the keypad lock. When the status bar icon is  , all keys except  are invalid.
	When the instrument is in working mode, press the select button and select the corresponding working mode.
	Instrument in working mode, press down the MENU system configuration interface, you can choose parameters to set the

	interface, access the interface operation.
	In the working mode interface, adjust the cursor position, and load the value of the fine-tuning. Move the status bar from one screen to another.
	In the corresponding mode of operation, trigger instrument operation.
	Use to confirm settings.
	Used to cancel user's settings, edit bar number to cancel and back to the test interface.
	The output switch that controls the power supply.
	Function Button, corresponding to the bottom of the screen to set the function of the button.
	0 ~ 9 is the number input key.  is the backspace key to delete.

2.4 LCD Status Bar function description

Power LCD display interface, the status bar for the top row of icon mark.



①Instrument mode and status Bar (as described in the following table);

②Instrument readback value display;

③Edit box for current output value of instrument;

④Instrument output voltage and current settings;

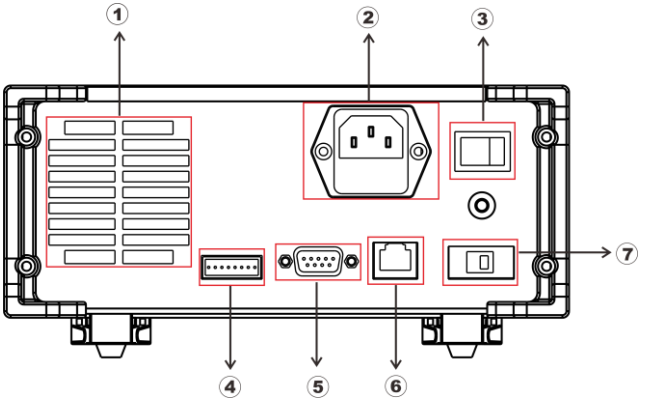
⑤Instrument parameter display

Status Bar icon description:

SENSE	The remote compensation function is turned on, and the output voltage is collected through the SENSE port at the tail of the machine to compensate the loss voltage of the connection line.
SHORTCUT	Keyboard shortcut mode on.
🔒	Keyboard lock, display this icon, the keyboard lock, long press LOCK, unlock.

	When this icon is displayed, the power is connected to the PC and a command is sent to the PC for power-related operation.

Back Panel Diagram and key function diagram:



① Instrument vent;

② Power socket (AC 100 ~ 240V);

③ Hardware Power key;

④ Trigger input and output interface, EOC output interface, external power interface;

⑤ DB9 serial communication interface, RS232/485;

⑥ Lan Communication interface;

⑦110/220V power selector switch.

2.5 Start-up self-check

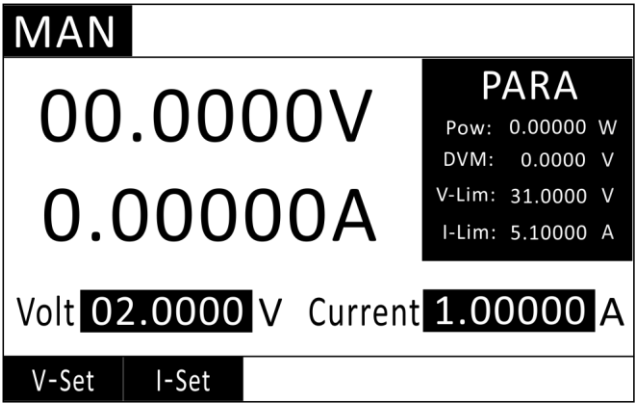
The successful self-checking process shows that the power supply products purchased by the user meet the ex-factory Standard and

can be used normally by the user. Before operating the power supply, make sure you understand the safety instructions.

	Please be sure to turn on the power supply voltage and power supply voltage is consistent, otherwise it will burn out the power supply; Please be sure to connect the main power plug to the power socket with protective grounding. Do not use the connection board without protective grounding. Before operating the power supply, you should first make sure that the power supply is well grounded; Please pay attention to the positive and negative signs before wiring the power supply, or it will burn out.

2.5.1 Self checking procedure

Power Normal self-check process is as follows: connect the power cord correctly, first open the back power hardware switch, then the front power soft switch button light red light, then press the power soft switch instrument to power; power initialization is completed, the LCD display displays the working mode information.



2.5.2 Exception handling

When starting the power supply, the power supply can not be started properly, please see the following steps for checking and processing.

1) check that the power cord is properly connected and that the power supply is in the supplied state,
   Power cord access looks good -- Step 2;
   Power access error -- please reconnect the power line to see if the exception is cleared.
2) Power hardware is on, Power key is on, front panel Power soft switch  is red.
   Yes -- step 3
   Otherwise, press the Power key to Power on and see if the exception is cleared.
3) Check if the power supply voltage setting is greater than the power supply voltage.

Chapter III Functions and features

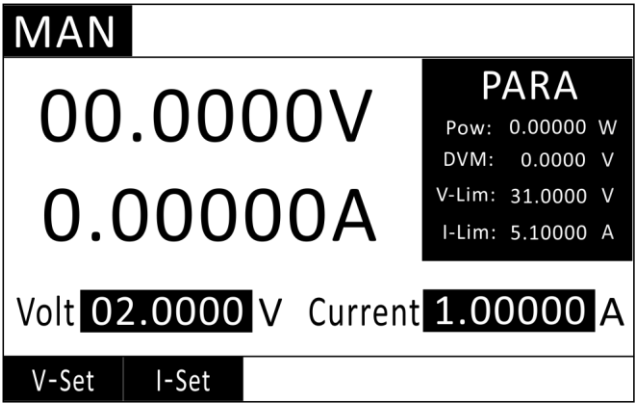
This chapter will describe the functions and characteristics of the power supply in detail. It is divided into the following parts:

1) Man Steady state output function;
2) List sequence function;
3) Automatic Test Function;
4) Resistance Measurement Function.

3.1 Man Steady state output function

The power supply can work in the state of constant voltage or constant current, according to the set voltage, current output corresponding value. After selecting voltage and current, manually adjusting up and down key can change the output voltage and current value.

The voltage and current setting ranges from 0 to the maximum setting. You can set the output voltage and current through the front panel in the following two ways.



In Man Mode, the power supply provides two ways to set the voltage and current values.

If not in MAN MODE, press the MODE key first, select MAN MODE, and press ENTER to ENTER.

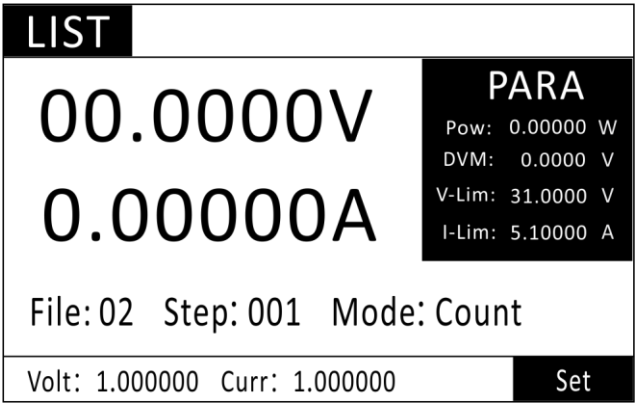
1) in MAN mode, press F1 for the voltage or F2 for the current to switch the cursor position, and press F1 to set the power output voltage when cursor is below the voltage.
2) there are two ways to set it up:

   The first is to directly use the digital key input required voltage value, press the ENTER key to confirm.

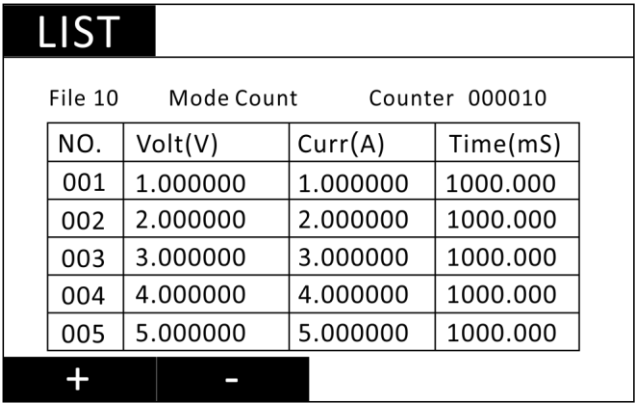
   The second is to use the left and right keys to move cursor, press up and down to add or subtract numbers, and press ENTER to confirm.
3) after setting the voltage, the current value can be set by moving the F2 cursor to the current position. The current value setting method is consistent with the voltage setting method.
4) when the voltage and current are set, press ON OFF to turn the power output on/off.
5) the power supply in the output process, you can also change the voltage and current output as described in step 2.
6) the power supply also provides step voltage setting (see chapter 4.1) , that is, according to the set step voltage to increase or decrease the voltage method, in MAN mode, in the absence of the cursor directly using the up and down keys can be set in accordance with the system parameters set step voltage to increase or decrease the voltage. Press the ESC key to cancel the cursor if it exists.

3.2 Sequential Operation (List) function

List mode can accurately and quickly complete any complex voltage, current output state changes, and this change mode with internal or external signal synchronization, multi-precision output testing. Can help customers to save a lot of costs.



In the case of choosing different trigger sources, by editing the output value and time of each step, the LIST function generates a variety of complex sequences to meet the complex test requirements. Power support up to 10 files, each file support up to 200 steps, each step can be set single time (50ms ~ 50s) and voltage, current settings. Sequential files can be stored in nonvolatile memory for quick retrieval when in use. In the List Action Screen Press [F 5] settings, enter the LIST parameter editing interface.



List parameter LIST:

Go to LIST working MODE: press the MODE key → select LIST or press ESC on the LIST parameter edit screen to go back to work.		
List File Selection: List parameter editing interface → file → +/-		
Parameters	Account for	Unit
voltage	Output Voltage	V
current	Output Current	A
Time	Duration, set range 50ms ~ 50s	ms
List working mode settings: List test interface → settings		
Continuous	Continuous mode, continuous cycle power output.	
Count	Counting mode, each received a trigger signal, power sequence pull-off, and repeat the "count value" cycle, the end of the output. The count value parameter can be set to range from 1 to 9999999.	
Step	Single-step mode, each received a trigger signal, the power supply in accordance with the next set of parameters in the file with load.	
To set parameters, press Add to ADD a step, press Del to delete a step, Page - to turn up one PAGE, Page to turn down one PAGE.		

Users can edit up to 10 sets of sequential files.

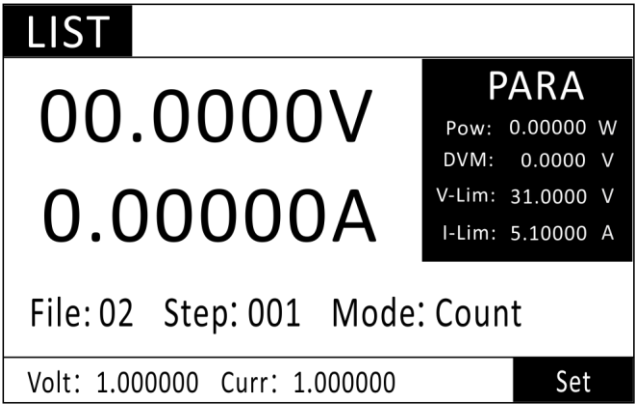
When the power operation mode is sequential operation, when ON/OFF is pressed, the power supply will start sequential operation until the sequential operation is completed or the power supply stops working after ON/OFF is pressed again.

Test Case: Resistance 10, apply different voltage and current.

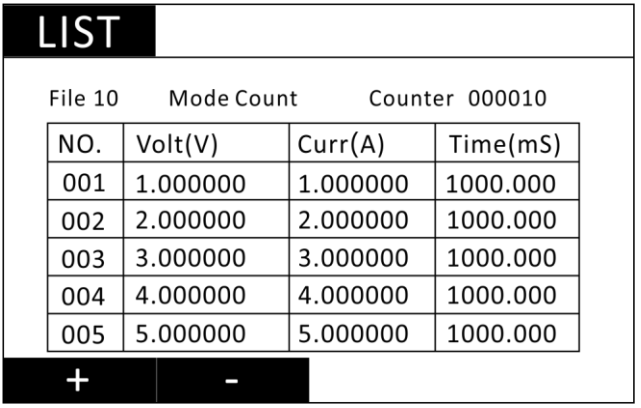
Test: current output at 1V, 2V, 3V, 4V, 5V.

SETUP STEPS:

1. Press the MODE key to ENTER the MODE selection page, the up and down keys to select LIST, and the ENTER key to ENTER the LIST test screen.

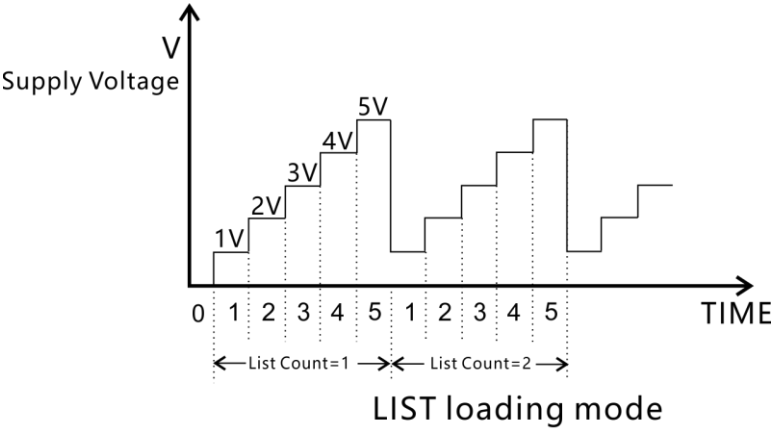


2. On the list screen, press [F5] to enter the settings screen.



3. Use the add [F1] , subtract [F2] buttons at the bottom left to select the desired file number of 1.
4. Select the mode Continuous by using the UP, down, left, and right Arrow keys (the Count function is only valid in Count mode) .
5. Use the Arrow keys to select settings, digital key set the first step voltage is 1V, current is 5A load time is 1000ms.
6. Press add to increase the number of steps and set the parameters for each step.

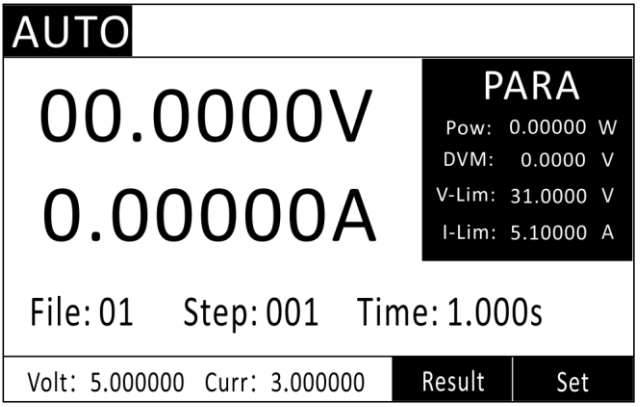
7. When you are done, press the ESC key to back up to the list test interface, and the ON/OFF key to start and close the output. The test waveform is shown below.

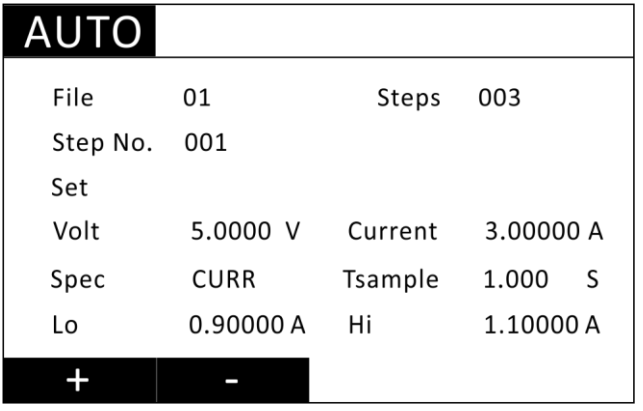


LIST loading mode

3.3 Automatic test function

The automatic test function is used for the product inspection of the production line. The power supply carries out the output and test in order according to the steps of editing in the file, and automatically determines whether it is qualified or not. Power support up to 10 files, each file supports up to 50-step test, each test can set the output conditions (voltage, current value) , comparison type (SPEC) and test Delay (Delay) . The delay time can be anywhere from 0.5 s to 30.000 S. See The table below for details. The loaded parameters for each mode are also different. See the corresponding sections for each mode.





Automatic test editing interface

Auto test file table:

AUTO SETTINGS:	
File	FILES CAN BE 1 ~ 10 files
Steps	Each file can be set to 0 ~ 50 steps
Step No.	Select the specified step for parameter setting
Volt	The test can set the output voltage value according to the situation
Current	The test can set the output current value according to the situation

Hi	Upper limit of acceptable range
Lo	Lower limit setting of eligible range
Tsample	Test Range of 0.5 ~ 30s
COMPARISON TYPE SETTING: Auto parameter edit interface → comparison type	
Voltage	Output voltage value
Current	Output current value
Voltmeter	DC voltmeter
TRIGGER OUTPUT AND TEST PROCESS SETTINGS: Test interface → press MENU key → parameter setting → press Enter key → press up and down key to select, output mode	
Output Mode:	
Level	Level trigger (effective at low level)
Pulse	Pulse trigger (qualified 5ms, UNQUALIFIED 10ms)
Output criteria:	
Pass	When the test passes, start the trigger output (Tro)
Fail	When the test fails, start the trigger output (Tro)
Disable	Disable trigger output
Failed Action:	
Cont	Continue to complete all measurements when the one-step test item is determined to be nonconforming
Abort	When the one-step test item is found to be not up to standard, the automatic test is terminated immediately

Test Case: use 3 kinds of voltage to charge the battery, test whether the charging current is within the design range.

Test: Battery Charge test.

1. First step output voltage 5V, current 3A, charge the battery, compare the output current is in the range of 0.9 ~ 1.1 A.
2. The second step is to charge the battery with an output voltage of 9V and current of 3A and compare the output current in the range of 1.9 ~ 2.1 A.
3. The second step output voltage 12V, current 3A, to charge the battery, compare the output current in the range of 1.4 ~ 1.6 A.
4. Judgment qualified: In the test is not qualified, the instrument TRO output low-level signal.

SETUP STEPS:

1. Press the MODE key to ENTER the MODE selection page, the up and down keys to select AUTO, and the ENTER keys to ENTER the AUTO test interface.
2. Under the AUTO test screen, press F5 to enter the settings screen.
3. Click the next key to select a file 1 items (by the lower left-hand corner of the addition and subtraction button can choose different files) , set the number of steps 3.
4. Select Step N, number key input set step, first set the first step.
5. Output Setting, set voltage value 5V, current value 3A.
6. Compare type select compare current, lower limit set 0.9 A, upper limit set 1.1 A.
7. Test Delay Setting 1s, that is, the output wait 1s to determine whether qualified, and skip to the next step.
8. Select Step N, number key input set step, set the second step.
9. Output Setting, set voltage value 9V, current value 3A.
10. Compare type select compare Curr, lower limit set 1.9A, upper

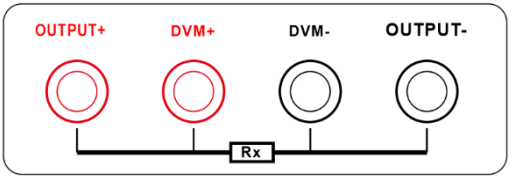
limit set 2.1A.

11. Test Delay Setting 1s, that is, the output wait 1s to determine whether qualified, and skip to the next step.
12. Select Step N, number key input set step, set step 3.
13. Output Setting, set voltage value 12V, current value 3A.
14. Comparison type selection comparison Curr, lower limit set 1.4 A, upper limit set 1.6 A.
15. Test Delay Setting 1s, that is, the output wait 1s to determine whether qualified, and skip to the next step.
16. 3 Test steps setup complete, press ESC key to return to the test interface.
17. Nonconforming output level signal. Test interface → press MENU key → parameter setting → press ENTER key → press up and down key to select, output mode. Detailed settings refer to chapter 4.1 parameter settings.
18. Set the output mode to level, the output condition to fail, and the failed action to terminate. That is, when the test is not qualified, the Tro port output low-level signal. Stop the test follow-up steps when one test fails.
19. PRESS ESC to return to the test interface, then press the ON OFF key to start the test.
20. After the test is finished, you can switch the test data detailed interface by the [F4] result, function key in the lower right corner of the test interface. Observe nonconforming items and specific test data.

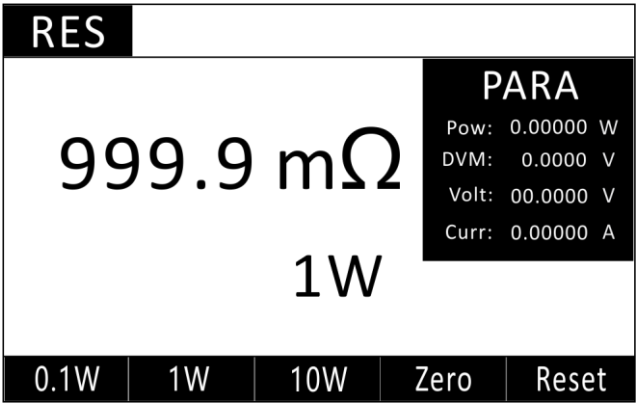
3.4 Resistance Test (RES) function

The series of programmable power supply provides four-wire resistance measurement method, as shown below, can accurately measure the resistance value of small resistance, the maximum resistance value of 10. In order to avoid damage to the resistance

to be measured, the resistance to be measured should be selected before measuring the resistance power range.



There are three ranges for resistance testing: 0.1 W, 1w, and 10W. The corresponding test current is 0.1 a, 0.3 A, 1A, and the open circuit voltage is 1V, 3.3 v, 10V respectively.



Resistance Test Interface

Test Case: Test 10mΩ resistance

Test: the exact resistance of a resistor with a resistance value of 10mΩ and a power of 2W.

SETUP STEPS:

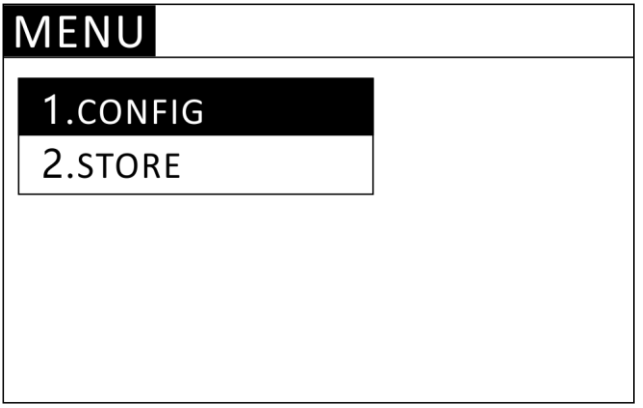
1. Connect the test wire with the four-wire resistance method.
2. Press the MODE key to ENTER the MODE selection page, the up and down keys to select RES, and the ENTER keys to ENTER the Res Test Interface.
3. Press F2 to select a 1W range, and DD to start or finish the test.

3.5 Measurement term

The series power supply can measure output voltage V, current I, power POW, resistance RES, external voltage DVM. The maximum DC voltage of 30V can be measured with DVM terminal.

Chapter IV System parameter setting and access operation

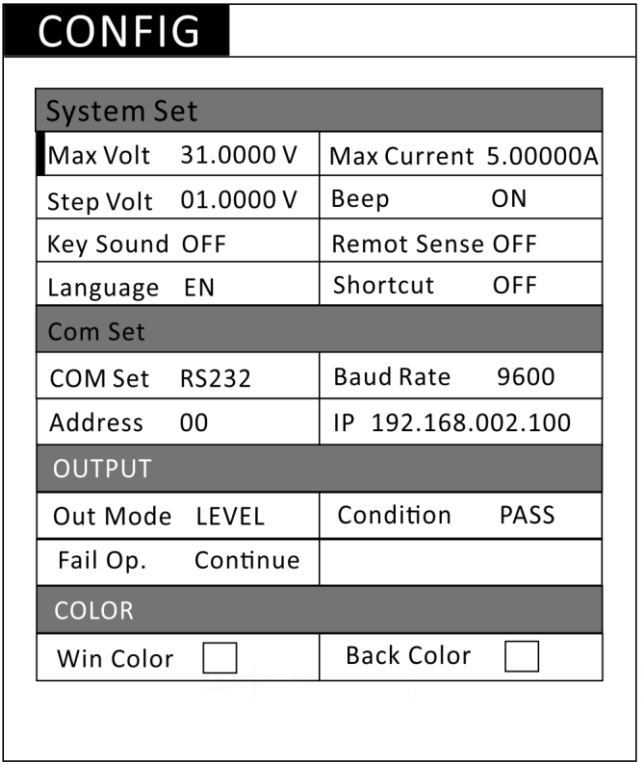
Test interface press MENU key to access system parameters and access the operation interface, as follows:



Parameter setting mainly sets the basic test parameters of power supply, such as voltage, current maximum value, step voltage, man-machine interaction of power supply, communication and output interface signal, etc. . The access operation mainly stores and calls the common function interface and sets the quick call function.

4.1 Parameter setting

From the MENU interface, select CONFIG and press the ENTER key to enter the system settings interface as shown below:



Parameter setting table:

Parameter Setting (CONFIG)		
System setup		
Max Volt	0 ~ rated voltage	Maximum setting and output voltage value
Max Current	0 ~ rated current	Maximum setting and output current value
Step Volt	0 ~ rated voltage	Up and down key control step adjustment voltage value
Beep	OFF	Close qualified/unqualified alarm
	ON	Open qualified/unqualified alarm

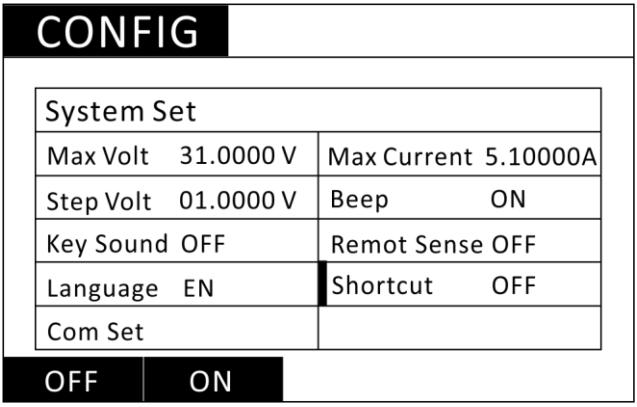
Remote Sense	OFF	Voltage remote compensation off
	ON	Voltage remote compensation on
Key Sound	OFF	Key sound off
	ON	Key sound on
Language	EN	English display
	CN	Chinese display
Shortcut	OFF	Quick call off
	ON	Quick call on
Com Set		
Com Mode	RS232	RS232 communication
	RS485	RS485 communication
	TCP	LAN communication
Baud Rate	9600	
	19200	
	38400	
	57600	
Address	Address Range (1 ~ 99)	
Ip Address	On: An interface plus address bit controls multiple machines	
	Off: multiple interfaces to control multiple machines	
OUTPUT		
Out Mode	LEVEL: Normal high level with output time-varying low level	
	PLUSE： Normal high level, qualified output 5mS pulse when output, unqualified output 10mS pulse	
Output Condition	Qualified: Test qualified output	
	Failure: Test nonconforming output	

	End: End of test output
	Turn off: no output
Fail motion (Fail Op.)	Continue: continue testing if you fail
	Stop: Stop the test if it fails
COLOR	
Window color (WIN Color)	Green: Green Font frame
	Yellow: Yellow Font frame
	Blue: Blue Font frame
Background color (Back Color)	Light Grey: Light Grey background
	Dark Grey: Dark Grey background
	Solid Black: solid black background

4.1.1 Remote compensation mode

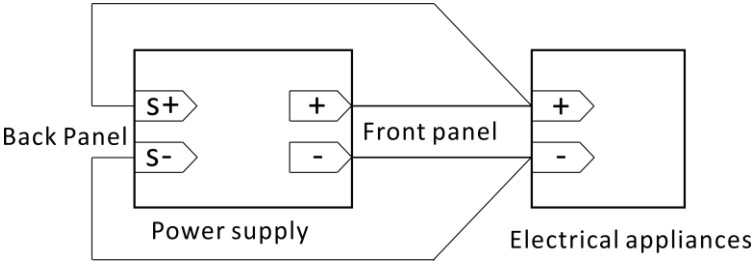
When the power supply outputs a large current, a voltage drop will occur on the test connection line, which causes the voltage at both ends of the appliance to be smaller than the output voltage of the power supply. OPERATIONAL STEPS FOR REMOTE MEASUREMENT:

1. PRESS MENU key to enter, parameter setting, interface;
2. Move cursor to the test setting -- remote compensation position;
3. Press ON/OFF to turn ON/OFF remote compensation, and to turn ON remote compensation to return to test status bar to display Sense.



Remote measurement access, detailed wiring as shown in figure below.

Here is how it works:



NOTE	If the remote compensation is turned on, the wiring must be the same as the diagram above, otherwise the voltage compensation will be lost. And the screen status bar displays SENSE prompts.

4.1.2 Shortcut Call Mode

The power supply provides a Shortcut Call function. When the function is turned on, users can quickly Call 10 sets of settings stored under SAVE (see chapter 4.2) by pressing the 0-9 number

key directly.

	If a quick call is started, the number Button 0 ~ 9 loses the input function, only the call function is retained, and the display screen status bar will show SHORTCUT, closed, the number key back to normal.

4.1.3 Trigger output setting

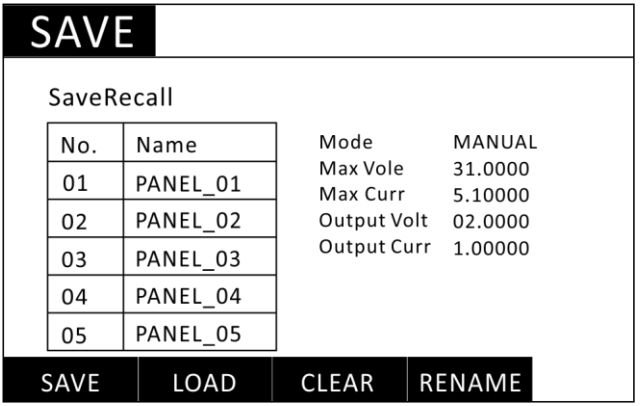
The power panel has the TRO signal output port, in the automatic test mode, over-current protection mode, when you need to output signal, you can set the output signal, output conditions and action after test failure.

For example, set output mode to level, output condition to pass, failure action to stop will be qualified in the case of the Tro port level from high to low, and maintain until the next test start. Always output a high level and stop the test in case of failure.

For more details, see chapter 4.1 parameter settings table —— Output Field and chapter 5 I/O port settings.

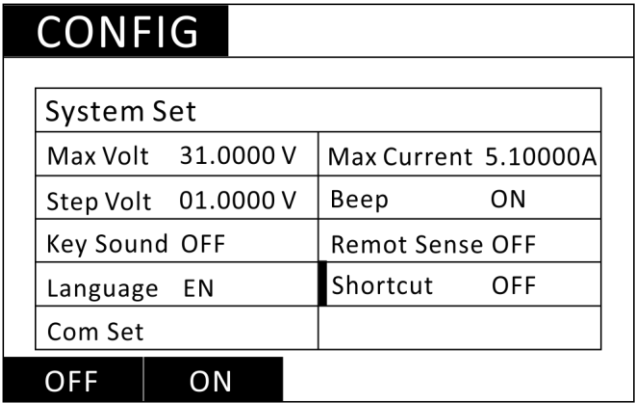
4.2 Access operation

Power supply provides 10 sets of global data quick access function, including system settings parameters and working mode, user-friendly. For example: first in the normal mode interface set loaded parameters, in the MENU set range, go to SAVE interface storage, access interface as follows:



Press the [F1] save key to save the above-set mode to the cursor location in the file, as needed can be renamed. There are two ways to invoke a saved test mode:

1. Press the MENU key to enter the settings interface and select the access operation, then select the required file, press the download key to invoke the stored test mode.
2. 2. The power supply provides a quick call function, namely in the MENU settings interface, select the parameter settings (COMFIG) interface test settings as follows 4.8, open the shortcut call can be directly used 0 ~ 9 number keys, call the test solution saved in SAVE, 1 ~ 9 corresponds to 1 ~ 9 files, 0 corresponds to 10 files. At this point the number key only quick call function, no data input function, if you need to restore data input function, turn off the quick call. Here is the chart:

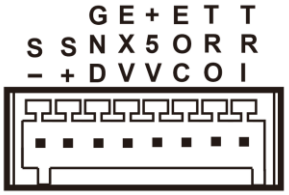

CONFIG
System Set
Max Volt 31.0000 V
Max Current 5.10000A
Step Volt 01.0000 V
Beep ON
Key Sound OFF
Remot Sense OFF
Language EN
Shortcut OFF
Com Set
OFF
ON

Chapter V I/O interface function

The power supply provides the I/O interface function, which is convenient for the user to connect the control signal output and other control units to complete the automatic test.

5.1 Introduction to I/O port

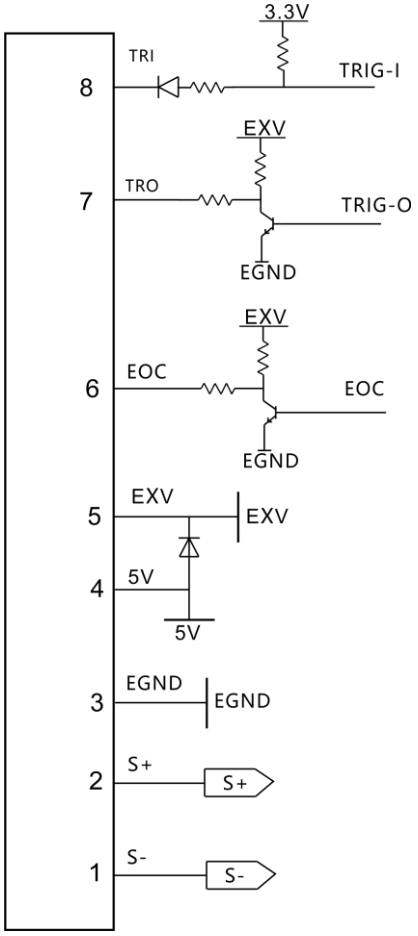
I/O PORT ICON:



1. TRI: The trigger signal input port
2. TRO: trigger signal output port
3. EOC: Test completed signal output
4. +5V: output 5V, maximum 100Ma
5. EXV: External Power Interface
6. GND: Earthing
7. S+: The far end compensates the positive end
8. S-: Far-end compensating negative

5.2 I/O Port function

I/O PORT CIRCUIT DIAGRAM:



1. The EXV interface is an external power input port that can be accessed when a user-specified voltage is required, and provides an internal isolation of 5V when no external voltage is applied.
2. GND is an isolated power source.
3. The EOC interface is a test completion signal, at a high level during and waiting for the test, and at a low level of the test completion output.

4. The TRO interface is a trigger output interface, which can be set to output signals for users to connect to other devices when there is a decision mode in AUTO, LIST, etc. You can set it up as a parameter in chapter 4.2 -- the output field.
5. The Tri interface is the trigger input interface that starts or ends the test when the TRI port is connected at a low level (short to the GND). The Tri port functions as the key TRIG in both single-step and continuous modes of the LIST.
6. 5V Terminal for the output 5V voltage, maximum current 100mA.
7. S+, S-, are remote measuring terminals used to compensate the pressure drop on the test line.

Chapter VI Technical Specification

We are going with F. S. (full range) to define the measurement tolerance, which means:
F. S. (maximum display value or measurement range): maximum display value or measurement range.

Main technical parameters

Model number		HT6611	HT6612	HT6613
Rated output	Voltage	0-30V	0-75V	0-150V
	Current	0-5A	0-2A	0-1A
Load regulation	Voltage	<0.01%+0.5 mV	<0.01%+0.5 mV	<0.01%+0.5 mV
	Current	<0.01%+0.1 mA	<0.01%+0.1 mA	<0.01%+0.1 mA
Set Value Resolution	Voltage	0.5mV	1mV	2mV
	Current	0.1mA	0.05mA	0.01mA
Readback resolution	Voltage	0.1mV	0.1mV	1mV
	Current	0.01mA	0.01mA	0.01mA
Set value precision	Voltage	0.01%+0.01%FS		
	Current	0.05%+0.02%FS		
Readback	Voltage	0.02%+0.02%FS		

accuracy	Current	0.1%+0.1%FS		
Ripple	Voltage	3mvp-p	5mvp-p	10mvp-p
	Current	2mA rms	1mA rms	0.5mA rms
Voltmeter accuracy		0-12V precision：0.02%+0.02%FS 0-58V precision：0.02%+0.02%FS		
Milliohmmeter accuracy		0-1000mΩ precision：0.2%+0.3%FS； 1000-10000mΩ precision：0.2%+0.1%FS		
Working Environment		0-40℃；0-90%RH		
Use The power		AC 120V/220V±10%； 50/60HZ		
Weight		6.5KG		
Dimensions		358mm*214mm*104mm		

Chapter VII Communication interface

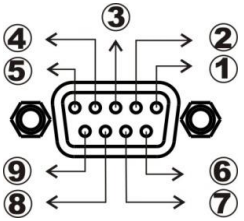
This chapter mainly introduces the instrument's communication mode, communication method, and communication protocol

7.1 Brief introduction of communication module

Power back panel of DB9 for RS232 interface and RS485 interface, and network interface NET, choose what communication mode can be selected through the system parameter interface.

1. Press the MENU key to enter the parameter setting interface in any working interface;
2. Press the left and right keys to move the cursor to the communication mode box under the communication settings bar;
3. Select the RS232/RS485/LAN communication mode for the configuration page.

7.2 Definition of communication port DB9



①.GND

②.RS232-TXD

③.RS232-RXD

④.NC

⑤.GND

⑥.NC

⑦.NC

⑧.485A

⑨.485B

7.3 Communication Protocol

Power Support SCPI application protocol. The data frame structure consists of four parts:

Select Communication Baud rate

1. Press the MENU key to enter the parameter setting interface in any working interface;
2. Press left or right to move the cursor to the baud rate box under the communications settings bar;
3. Choose the Baud rate you want. At present, power only support, 9600,19200,38400,57600, a total of 4 Baud rate options.

Prior to the communication operation, the instrument and control mainframe are first matched with the following parameters:

1. Baud rate: 9600(19200,38400,57600) . Through the panel settings.
2. Test bit: None
3. Data bit: 8 Bit, Stop Bit: 1 Bit.

7.4 SCPI communication instruction

1. *IDN?

Query for version number, back 6611, V1.0

Example: Query for version number

Sent: *IDN?

Back: 6611, V1.0

2. *TRG,
Trigger test, no return
Example: Trigger test
Sent: *TRG
Back: None

3. OUTPut
Output ON or OFF
Example: Output on
Sent: OUTPut ON
Back: None

4. CURRent:PROTection
Set current protection value
Example: Set current protection value to 3A
Sent: CURRent:PROTection 3
Back: None

5. VOLTage:PROTection
Set the voltage protection value
Example: Set The power protection value to 1V
Sent: VOLTage:PROTection 1
Back: None

6. VOLTage: STEP
Set step voltage value
Example: Set step voltage value to 1V
Sent: VOLTage:STEP 1
Back: None

7. SYSTem:SENSe

Set Remote compensation to open or close

Example: Set off remote compensation

Sent: SYSTem:SENSe OFF

Back: None

8. MODE

Set working mode

Example: Set working mode to normal mode

Sent: MODE MAN

Back: None

Parameters	Mode of operation
MAN	Normal mode of operation
LIST	List test mode of operation
AUTO	Automatic test mode
RES	Resistance Test Mode

9. CURRent

Set current value in normal mode

Example: Set the normal operating mode current to 1A

Sent: CURRent 1

Back: None

10. VOLTage

Set the voltage value in normal mode

Example: Set the normal mode voltage to 10V

Sent: VOLTage 10
Back: None

11. MEASure:VOLTage?

Read test voltage value
Example: Read test voltage value

Sent: MEASure:VOLTage?

Back: 00.0000

12. MEASure:CURRent?

Read test current value
Example: Read test current value

Sent: MEASure: CURRent?

Back: 0.00000

13. MEASure:DVM?
Read the voltage value under the function of multimeter
Example: Read voltage value

Sent: MEASure: DVM?

Back: 00.0000

14. CURRent:PROTection?
Read current protection value
Example: Read current protection value

Sent: CURRent:PROTection?
Back: 0.00000

15. VOLTage:PROTection?
Read the voltage protection value
Example: Read the voltage protection value
Sent: VOLTage:PROTection?
Back: 00.0000

16. VOLTage: STEP?
Read step voltage value
Example: Read the step voltage value set

Sent: VOLTage:STEP ?

Back: 00.0000

17. SYSTem:SENSe?
The query remote compensation function is turned on or off
Example: Query for remote compensation status
Sent: SYSTem:SENSe?
Back: OFF