OPERATION MANUAL

TH8200 Series

DC Electronic Load

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Contents

Announcement

The description of the manual may not cover all contents of the instrument, and our company is subject to change and to improve the performance, function, inner structure, appearance, accessory and package of the instrument without notice. If there is puzzle caused by inconsistency of manual and instrument, then you can contact with our company by the address on the cover.

Chapter 1 Introduction to the instrument and unpacking installation

Thank you for purchasing and using our products! This chapter introduces you to the basic performance of the instrument, and then talks about some checks that must be performed when you receive the instrument and you must understand the conditions that the instrument has before installing and using it.

1.1 Introduction

TH8200 DC electronic load series products adopt linux operating system, and adopt high-definition color liquid crystal display (LCD) to make it have excellent operability. The maximum operating voltage is 150V, and the minimum operating voltage is 1V. In addition to the basic operation modes such as constant current, constant resistance, constant voltage and constant power, this series of products are high-performance DC electronic load devices, for input voltage, the arbitrary IV characteristics (ARB) mode of the current can be set freely.

Dual-core (ARM+DSP) automatic control hardware circuit architecture makes the system run super stable and reliable; complete hardware protection (OVP, OCP, OPP, OHP, REV, UVP) circuit functions, comprehensive protection of the instrument itself and the measured object; High-speed, safe and reliable 16-bit sampling chip is adopted to ensure the sampling accuracy and resolution. The voltage and current value can be refreshed simultaneously in a single sampling; 100K true sampling rate, high measurement accuracy, strong anti-interference ability, and can display transient Load current waveform (digitized).

In addition to the high-speed response of 60A/μs (TH8203) at the highest rate and the minimum setting resolution of 10μA (TH8201 L range), it also has a programmable soft-start function implemented by a DSP algorithm, which further improves the resistance of the instrument. Excitation capability; the use of Linux operating system makes the number of set storage files basically unlimited, and fundamentally improves the robustness of U disk storage support; the addition of various advanced functions basically meets all applications for DC electronic loads Occasions; due to the high-speed response, it can flexibly respond to power supply tests and current sensor tests that require high-speed current changes. Moreover, the wide range of external voltage input can support various applications.

Through the buttons, knobs and display on the front panel, various settings and operations of the instrument can be conveniently and quickly operated, and the instrument can be controlled through wired and wireless communication interfaces such as LAN, USB, RS232 and GPIB (optional).

After unpacking, you should first check whether the instrument is damaged due to transportation. We do not recommend that you power on the instrument if the appearance is damaged.

And please confirm according to the packing list, if there is any discrepancy, please contact our company or distributor as soon as possible to protect your rights and interests.

1.2 Load Characteristics

1. Rated power: 175W, 350W, 1050W
2. Voltage range: 150V
3. Current range: up to 240A
4. Constant current, constant resistance, constant voltage and constant power operation modes
5. Current remote control monitoring function, external trigger function
6. 1mV/10μA high resolution, ripple measurement function
7. Dynamic current/voltage test, dynamic frequency up to 50K
8. The voltage and current measurement can achieve high precision while the test speed can reach 100KHz
9. Programmable soft start function
10. CR-LED test, arbitrary I-V characteristics, battery test, dynamic scan test, load effect, list function and many other advanced functions
11. Overvoltage (programmable), low voltage, overcurrent (programmable), overpower (programmable), overheating, anti-reverse protection and other protection functions
12. Remote voltage compensation input test function
13. Short circuit function simulation
14. The use of Linux operating system is that the number of internal parameter file storage is basically unlimited
15. perfect U disk function (storage and loading of parameter files, interface screenshots, system firmware upgrade)
16. Setting parameters support power-off memory function
17. Intelligent temperature control fan
18. RS232 (standard), USB (standard), Ethernet (standard), GPIB (optional)
19. Support upper computer software to realize remote operation and monitoring

1.3 Fuse

The instrument has been equipped with a fuse in the factory, users should use the fuse provided by our company.

1.4 Environment

1) Please do not operate the instrument in the place that is vibrative, dusty, under direct sunlight or where there is corrosive air.
2) Instrument work environment conditions:
   Temperature: 0 °C ~ 40 °C, humidity: ≤80% RH, no condensation

Instrument storage environment:
Temperature: -10 °C ~ 50 °C, humidity: ≤90% RH, no condensation.

3) In order to keep good airiness, please don't obstruct the left and right airiness holes to make the instrument maintain the accuracy.
4) The instrument has been carefully designed to reduce the clutter caused by the AC power input, and it should still be used in a low-noise environment as much as possible. If it cannot be avoided, install a power filter.
5) The instrument, especially the test lead connected to the DUT, should be kept away from strong electromagnetic fields to avoid interference with the measurement.

1.5 Use of Test Fixture

Please use the test fixtures or test cables provided by our company. **The test fixtures or test cables made by users or other companies may cause incorrect measurement results.** The instrument test fixture or test cable should be kept clean, and the pins of the DUT should also be kept clean to ensure good contact between the DUT and the test fixture.
Connect the test fixture or test cable to the corresponding test end on the front panel of the instrument. Note that the color of the plug of the fixture and the position of the arrow on the instrument panel must be consistent; otherwise it may cause abnormal measurement.

1.6 Warm-up

1) To guarantee the accurate measurement, the warm-up time is no less than 30 minutes.
2) Do not switch the instrument frequently to avoid internal data confusion.

Chapter 2 Front and rear panels and Entry operation

This chapter describes the basic operation steps of TH8200 instrument. Before using TH8200 instrument, please read this chapter in detail so that you can quickly learn the operation of TH8200 instrument.

2.1 Introduction to front panel

Figure 2-1 briefly describes the front panel of the TH8200.

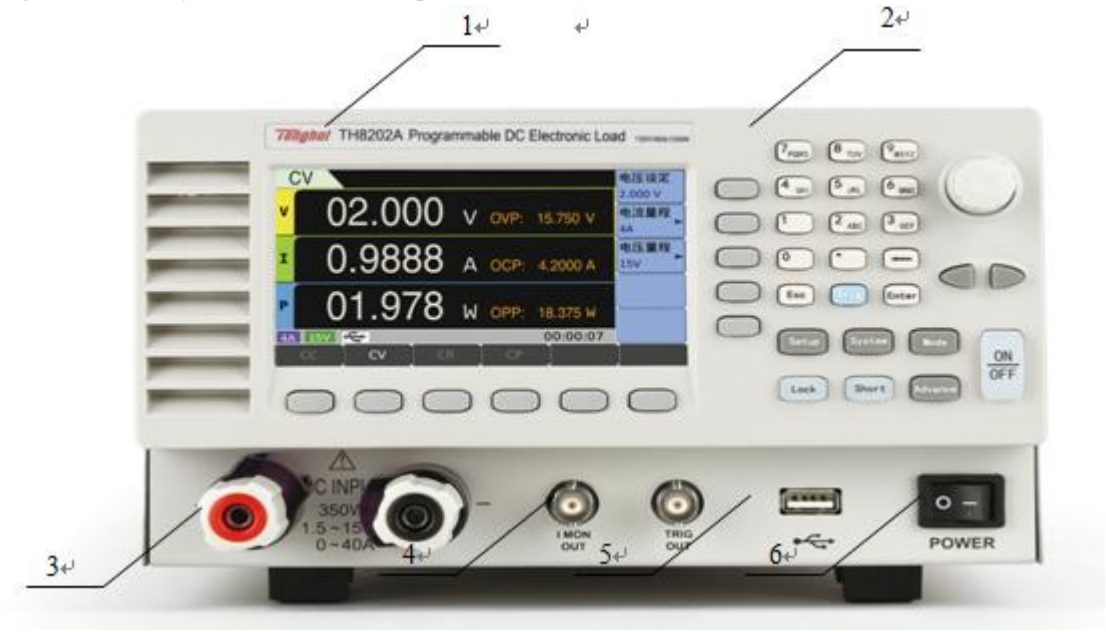


Figure 2-1 Front panel

(1) LCD color liquid crystal display
(2) Button area
(3) Front terminal
(4) Trigger signal terminal
(5) USB
(6) Power switch (POWER)

2.2 Introduction to rear panel

Figure 2-2 shows the rear panel of TH8200.

Figure 2-2 Rear panel

(1) External control terminal
(2) Master-slave connection port
(3) RS232
(4) Handler port
(5) USB
(6) Network port
(7) Power supply and fuse

2.3 Introduction to display zone

TH8200 series uses a 24-bit 4.3-inch true color LCD display with a resolution of 480*272. The display screen is divided into the following display areas, as shown in Figure 2-3.

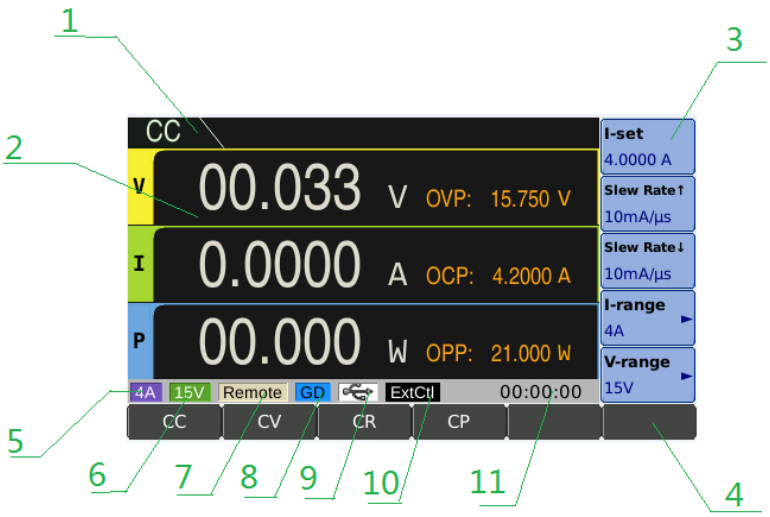


Figure 2-3 display zones

(1) Title area

This area indicates the name of the current load mode.

(2) Measurement result display area

This area displays the voltage, current and power measurement results.

(3) Auxiliary key area

There are 5 auxiliary keys on the right side of the display. They are assigned to multiple soft keys for parameter setting.

(4) Function key area

There are 6 function keys at the bottom of the display. They are assigned to multiple soft keys and are used to expand specific menus in the auxiliary key area.

(5) Current range status display area

This area displays the current range of the instrument.

(6) Voltage range status display area

This area displays the instrument's voltage range.

(7) Remote control status display area

This area shows that the instrument is in remote control.

(8) Limit test result display area

This area shows the results of the instrument's limit test (GD stands for good, NG stands for bad).

(9) U disk mount display area

This area shows that the U disk has been inserted into the instrument.

(10) External level control status display area

This area shows that the instrument is in an external level control state.

(11) Timer display area

This area displays the timer time.

2.4 Basic Operation

The basic operations of TH8200 keys are as follows:

- Use the menu buttons ([MEAS], [SYSTEM], [FILE]) and soft key touch area to select the interface you want to display. (Refer to Figure 3-1)
- Use ([←][↑][→][↓]) to move the cursor to the field you want to set. When the cursor moves to a certain field, the field will change to a cursor color.
- The corresponding menu function at the current cursor will be displayed in the "soft key area". Press the ENTER key to select the first soft key in the soft key area, then use the up, down, left and right keys to select, and press the [ENTER] key to confirm. When you select the area where you want to enter a number or file name, press the ENTER key, the numeric keyboard will be displayed. You can use the up, down, left, and right keys to select numbers or letters and then press the [ENTER] key to confirm the input.

TH8200 touch screen operation is more convenient, just press the corresponding function of the screen with your finger, and the corresponding work will be carried out. **It is important to know that you should never touch the screen with sharp objects and nail tips. This may cause damage to the touch screen. Our company will not be liable for any damage caused.**

2.5 Power On

Plug in the three-wire power plug to ensure reliable connection of the power ground. Press the power switch in the lower left corner of the front panel of the instrument, the instrument turns on and the startup screen is displayed.

Figure 2-4 shows the startup screen of TH8201. The startup screen includes some product information such as Tonghui's trademark, instrument model, and version number

Figure2-4 TH8201 Startup Screen

Chapter 3 Basic Mode Key Group

This chapter provides reference information for the function key menu corresponding to the front panel key MODE.

- "CC Key Group"
- "CV key group"
- "CR key group"
- "CP Key Group"

In each mode, the current range (or resistance range or power range) and voltage range can be set independently.

The range can only be changed when the load is in [Load Off] state.

The corresponding relationship between the measuring range and the instrument model is shown in the following table:

Model	Low current range	Mid current range	High current range
TH8201-150-40	400mA	4A	40A
TH8202-150-80	800mA	8A	80A
TH8203-150-160	1.6A	16A	160A
TH8204-150-240	2.4A	24A	240A
Model	Low resistance range	Mid resistance range	High resistance range
TH8201-150-40	2.5kΩ	25kΩ	250kΩ
TH8202-150-80	1.25kΩ	12.5kΩ	125kΩ
TH8203-150-160	625Ω	6.25kΩ	62.5kΩ
TH8204-150-240	420Ω	4.2kΩ	42kΩ
Model	Low power range	Mid power range	High power range
TH8201-150-40	2W	20W	200W
TH8202-150-80	4W	40W	400W
TH8203-150-160	8W	80W	800W
TH8204-150-240	12W	120W	1200W
Model	Low voltage range	High voltage range	
TH8201-150-40	15V	150V	
TH8202-150-80	15V	150V	
TH8203-150-160	15V	150V	
TH8204-150-240	15V	150V	

The current rising/falling slope can be set in CC and CP modes.

The corresponding relationship between the setting accuracy and the instrument model is shown in the following table:

Model	Low current range	Mid current range	High current range
TH8201-150-40	10μA/μs	100μA/μs	1mA/μs
TH8202-150-80	20μA/μs	200μA/μs	2mA/μs
TH8203-150-160	50μA/μs	500μA/μs	5mA/μs
TH8204-150-240	100μA/μs	1mA/μs	10mA/μs

The corresponding relationship between the setting range and the instrument model is shown in the following table:

Model	Low current range	Mid current range	High current range
TH8201-150-40	100μA/μs ~100mA/μs	1mA/μs ~1A/μs	10mA/μs ~10A/μs
TH8202-150-80	200μA/μs ~200mA/μs	2mA/μs ~2A/μs	20mA/μs ~20A/μs
TH8203-150-160	500μA/μs ~500mA/μs	5mA/μs ~5A/μs	50mA/μs ~50A/μs
TH8204-150-240	1mA/μs ~1A/μs	10mA/μs ~10A/μs	100mA/μs ~100A/μs

3.1 CC Key Group

Press the [CC] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the CC function will be expanded in the auxiliary key area on the right side of the screen.

Current setting	Set load current
Rising slope	Set current rising slope
Down slope	Set the current drop slope
Current range	Low range
	Mid-range
	High range
Voltage range	Low range
	High range

3.1.1 Load Current

The high limit can be set to 105% of the full scale of the current current range.

The relationship between setting accuracy, current range and instrument model is shown in the following table:

Model	Low range setting accuracy	Mid range setting accuracy	High range setting accuracy
TH8201-150-40	10μA	100μA	1mA
TH8202-150-80	20μA	200μA	2mA
TH8203-150-160	50μA	500μA	5mA
TH8204-150-240	100μA	1mA	10mA

3.2 CV Key Group

Press the [CV] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the CV function will be expanded in the auxiliary key area on the right side of the screen.

Voltage setting	Set load voltage
Current range	Low range
	Mid-range
	High range
Voltage range	Low range
	High range

3.2.1 Load Voltage

The high limit can be set to 105% of the full scale of the current voltage range.

The relationship between setting accuracy, voltage range and instrument model is shown in the following table:

Model	Low range setting accuracy	High range setting accuracy
TH8201-150-40	1mV	10mV
TH8202-150-80	1mV	10mV
TH8203-150-160	1mV	10mV
TH8204-150-240	1mV	10mV

3.3 CR Key Group

Press the [CR] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the CR function will be expanded in the auxiliary key area on the right side of the screen.

Resistance setting	Set load resistance
Resistance range	Low range (equivalent to high current range)
	Mid-range (equivalent to current mid-range)
	High range (equivalent to low current range)
Voltage range	Low range
	High range

3.3.1 Load Resistance

The high limit can be set to 105% of the full scale of the current resistance range.

The relationship between setting accuracy, resistance range and instrument model is shown in the following table:

Model	Low range setting accuracy	Mid range setting accuracy	High range setting accuracy
TH8201-150-40	10μΩ	100μΩ	1mΩ
TH8202-150-80	10μΩ	100μA	1mA
TH8203-150-160	1μΩ	10μΩ	100μΩ

TH8204-150-240	1μΩ	10μΩ	100μΩ

3.4 CP Key Group

Press the [CP] menu key in the function key area at the bottom of the screen, and the parameter setting menu about the CP function will be expanded in the auxiliary key area on the right side of the screen.

Power setting	Set load power
Rising slope	Set current rising slope
Down slope	Set the current drop slope
Power range	Low range (equivalent to low current range)
	Mid-range (equivalent to current mid-range)
	High range (equivalent to current high range)
Voltage range	Low range
	High range

3.4.1 Load Power

The high limit can be set to 105% of the full scale of the current power range.

The relationship between setting accuracy, power range and instrument model is shown in the following table:

Model	Low range setting accuracy	Mid range setting accuracy	High range setting accuracy
TH8201-150-40	100μW	1mW	10mW
TH8202-150-80	100μW	1mW	10mW
TH8203-150-160	1mW	10mW	100mW
TH8204-150-240	1mW	10mW	100mW

Chapter 4 Advanced Mode Key Group

This chapter provides reference information of the function key menu corresponding to the front panel keys ADVA.

"CR-LED key group"

"Battery Test Key Group"

"Dynamic Test Key Group"

"Scan Key Group"

"Time measurement key group"

"OCP Test Key Group"

"OVP Test Key Group"

"OPP test key group"

"Load effect key group"

"MPPT key group"

"List Test Key Group"

"Waveform Load Key Group"

"ARB key group"

"Circuit Key Group"

"Auto test key group"

In each mode, the current range (or resistance range or power range) and voltage range can be set independently.

The range can only be changed when the load is in [Load Off] state.

The corresponding relationship between the measuring range and the instrument model is shown in the following table:

Model	Low current range	Mid current range	High current range
TH8201-150-40	400mA	4A	40A
TH8202-150-80	800mA	8A	80A
TH8203-150-160	1.6A	16A	160A
TH8204-150-240	2.4A	24A	240A

Model	Low resistance range	Mid resistance range	High resistance range
TH8201-150-40	2.5kΩ	25kΩ	250kΩ
TH8202-150-80	1.25kΩ	12.5kΩ	125kΩ
TH8203-150-160	625Ω	6.25kΩ	62.5kΩ
TH8204-150-240	420Ω	4.2kΩ	42kΩ
Model	Low power range	Mid power range	High power range
TH8201-150-40	2W	20W	200W
TH8202-150-80	4W	40W	400W
TH8203-150-160	8W	80W	800W
TH8204-150-240	12W	120W	1200W
Model	Low voltage range	High voltage range	

TH8201-150-40	15V	150V
TH8202-150-80	15V	150V
TH8203-150-160	15V	150V
TH8204-150-240	15V	150V

Some advanced functions can set the current rising/falling slope.

The corresponding relationship between the setting accuracy and the instrument model is shown in the following table:

Model	Low current range	Mid current range	High current range
TH8201-150-40	10μA/μs	100μA/μs	1mA/μs
TH8202-150-80	20μA/μs	200μA/μs	2mA/μs
TH8203-150-160	50μA/μs	500μA/μs	5mA/μs
TH8204-150-240	100μA/μs	1mA/μs	10mA/μs

The corresponding relationship between the setting range and the instrument model is shown in the following table:

Model	Low current range	Mid current range	High current range
TH8201-150-40	100μA/μs ~100mA/μs	1mA/μs ~1A/μs	10mA/μs ~10A/μs
TH8202-150-80	200μA/μs ~200mA/μs	2mA/μs ~2A/μs	20mA/μs ~20A/μs
TH8203-150-160	500μA/μs ~500mA/μs	5mA/μs ~5A/μs	50mA/μs ~50A/μs
TH8204-150-240	1mA/μs ~1A/μs	10mA/μs ~10A/μs	100mA/μs ~100A/μs

4.1 CR-LED Key Group

Press the [CR-LED] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the CR-LED function will be expanded in the auxiliary key area on the right side of the screen.

Resistance setting	Set the load resistance (setting accuracy is the same as the load resistance in CR mode)
Turn-on voltage	Set the turn-on voltage (when the source voltage is higher than the turn-on voltage Vd, the current starts to load)
Resistance range	Low range (equivalent to high current range)
	Mid-range (equivalent to current mid-range)
	High range (equivalent to low current range)
Voltage range	Low range
	High range

This function can be used to simulate the load characteristics of the diode.

4.2 Battery Test Key Group

Press the [Battery Test] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the battery test function will be expanded in the auxiliary key area on the

right side of the screen.

Mode	CC
	CR
	CP
Current setting	Set load current, effective in CC mode
Resistance setting	Set load resistance, effective in CR mode
Power setting	Set load power, effective in CP mode
Stop condition	Voltage
	Time
	Current capacity
	Power Capacity
Stop threshold	Set the threshold for the specified stop condition
Rising slope	Set current rising slope, only effective in CC and CP modes
Down slope	Set the current falling slope, only effective in CC and CP modes
Current range (resistance range, power range)	Low range
	Mid-range
	High range
Voltage range	Low range
	High range

If the stop condition is set to [Voltage], when the source voltage is lower than the threshold voltage, the load completes the test and stops loading.

If the stop condition is set to [Time], when the loading time exceeds the threshold time, the load completes the test and stops loading.

If the stop condition is set to [current capacity], when the current capacity dissipated after the load is loaded exceeds the threshold capacity, the load completes the test and stops the load.

If the stop condition is set to [power capacity], when the power capacity dissipated after the load is loaded exceeds the threshold capacity, the load completes the test and stops loading.

4.3 Dynamic Test Key Group

Press the [Dynamic Test] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the dynamic test function will be expanded in the auxiliary key area on the right side of the screen.

Set value -A	Set the load value of A load	
Pulse Width-A	Set pulse width of A load	
Set value -B	Set the load value of B load	
Pulse Width-B	Set pulse width of B load	
Dynamic type	Continuous	The load will be continuously switched between the A value and the B value according to the set duration, and will be unloaded after repeating the specified number of cycles. If the number of repetitions is set to 0,

		the load will switch between the two loads in an endless loop.
	Pulse	Each time a trigger signal is received, the load will switch to the B value, and after maintaining the B pulse width time, it will switch back to the A value.
	Flip	Each time a trigger signal is received, the load will switch between A value and B value。
Repeat times	Set the number of dynamic cycle repetitions (valid when the dynamic type is continuous)	
Rising slope	Set current rising slope	
Down slope	Set the current drop slope	
Current range	Low range	
	Mid-range	
	High range	
Voltage range	Low range	
	High range	

4.4 Sweep Test Key Group

Press the [Sweep Test] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the scan test function will be expanded in the auxiliary key area on the right side of the screen.

Minimum current	Set the minimum current at the beginning of the scan test	
Maximum current	Set the maximum current at the end of the scan test	
Frequency	Starting frequency	Set the start frequency of the scan test
	Cut-off frequency	Set the cut-off frequency of the scan test
	Points	Set the frequency step number of sweep test
	Stepping method	Linear
		Logarithm
Dwell time Duty cycle	Dwell time	Set single frequency point duration
	Duty cycle	Set the duty cycle (the duration of each current level will be determined by the scanning frequency and duty cycle)
	Set current rising slope	
Rising slope	Set the current drop slope	
Down slope Current range	Low range	
	Mid-range	
	High range	
	Low range	
	High range	

The load is switched repeatedly between the two loads according to the preset current increase rate and current decrease rate, similar to the dynamic mode.

It is used to capture Vp+ and Vp- in the worst case of the power supply under test.

4.5 Time Test Key Group

Press the [Time Test] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the time measurement function will be expanded in the auxiliary key area on the right side of the screen.

Mode	CC	
	CV	
	CR	
	CP	
Current setting	Set load current, effective when the mode is CC	
Voltage setting	Set the load voltage, effective when the mode is CV	
Resistance setting	Set pull resistance, effective when the mode is CR	
Power setting	Set load power, effective when the mode is CP	
Start trigger	Start signal	Trigger
		Voltage
		Electric current
	Edge	Set trigger edge
	Numerical value	Set the trigger voltage or current threshold
Termination trigger	Start signal	Trigger
		Voltage
		Electric current
	Edge	Set trigger edge
	Numerical value	Set the trigger voltage or current threshold
Rising slope	Set current rising slope, effective in CC and CP modes	
Down slope	Set current down slope, effective in CC and CP modes	
Current range	Low range	
	Mid-range	
	High range	
Voltage range	Low range	
	High range	

The load automatically captures 2 trigger signals and calculates the time interval under predetermined loading conditions. After the test is completed, the load will display the time interval between two triggers (Time).

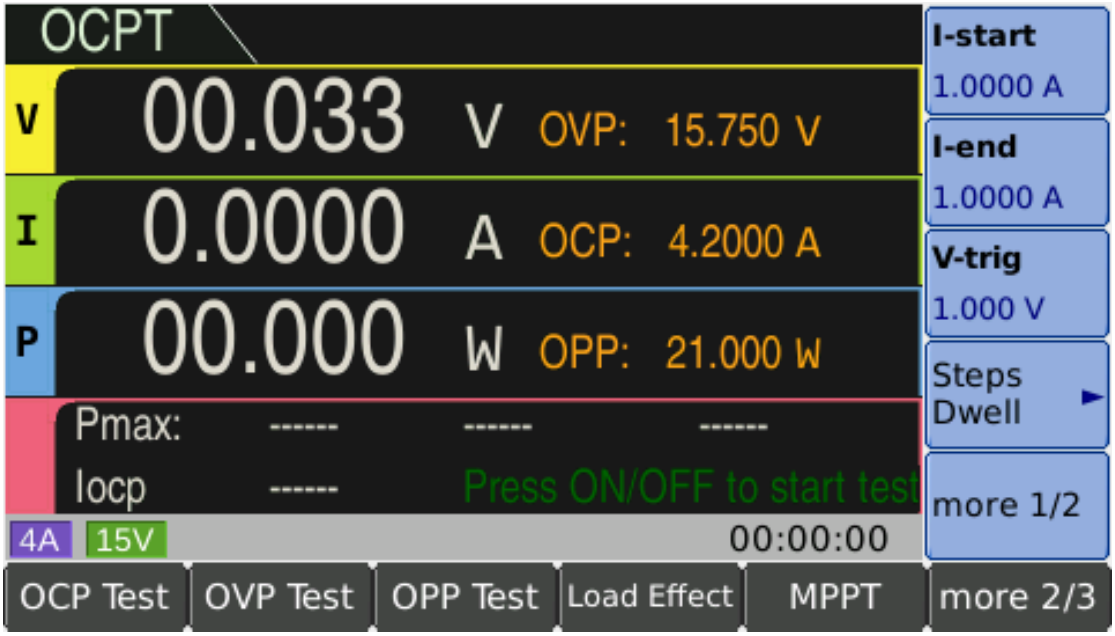
4.6 OCP Test Key Group

Press the [OCP Test] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the OCP test function will be expanded in the auxiliary key area on the right side of the screen.

Starting current	Set the starting current of the OCP test
Cut-off current	Set the cut-off current of the OCP test
Trigger voltage	Set the trigger voltage of the OCP test

Step count Dwell time	Step count	Set current increment step
	Dwell time	Set the Dwell time for each step
	Set current rising slope	
Rising slope	Set the current drop slope	
Down slope Current range	Low range	
	Mid-range	
	High range	
	Low range	
	High range	

The load provides over-current protection test function. The load starts from the initial current and gradually increases the current to the cut-off current according to the set number of steps. When the input level is detected to fall to the trigger level, the power supply under test is considered to have achieved OCP protection. At this time, the current value is the overcurrent protection point of the power supply under test. At the same time, the load will monitor the input power throughout the process and automatically capture the maximum power point and the voltage and current value at the maximum power point. The interface displays as shown below:



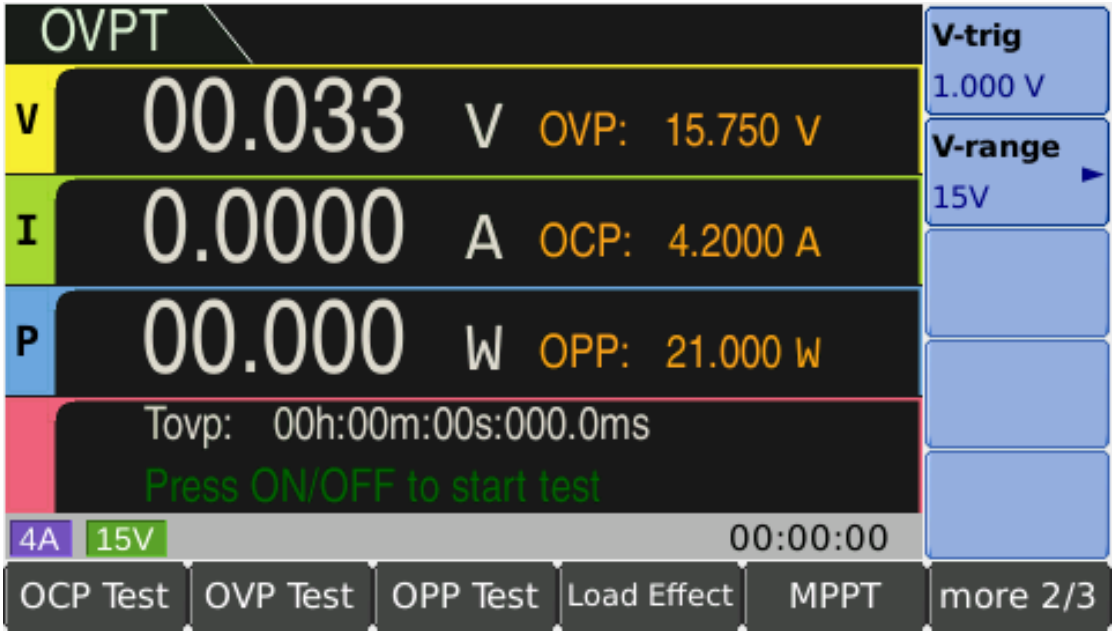
4.7 OVP Test Key Group

Press the [OVP Test] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the OVP test function will be expanded in the auxiliary key area on the right side of the screen.

Trigger voltage	Set the trigger voltage of OVP test
Voltage range	Low range
	High range

The load provides the overvoltage protection test function. The load captures the peak point and the falling edge of the input voltage and triggers at the preset level at the falling edge time. This peak

voltage is the overvoltage protection point of the power supply under test, and the peak time The time interval of the trigger time is the OVP response time of the power supply under test, and the response time measurement accuracy is 2uS. The interface displays as shown below:



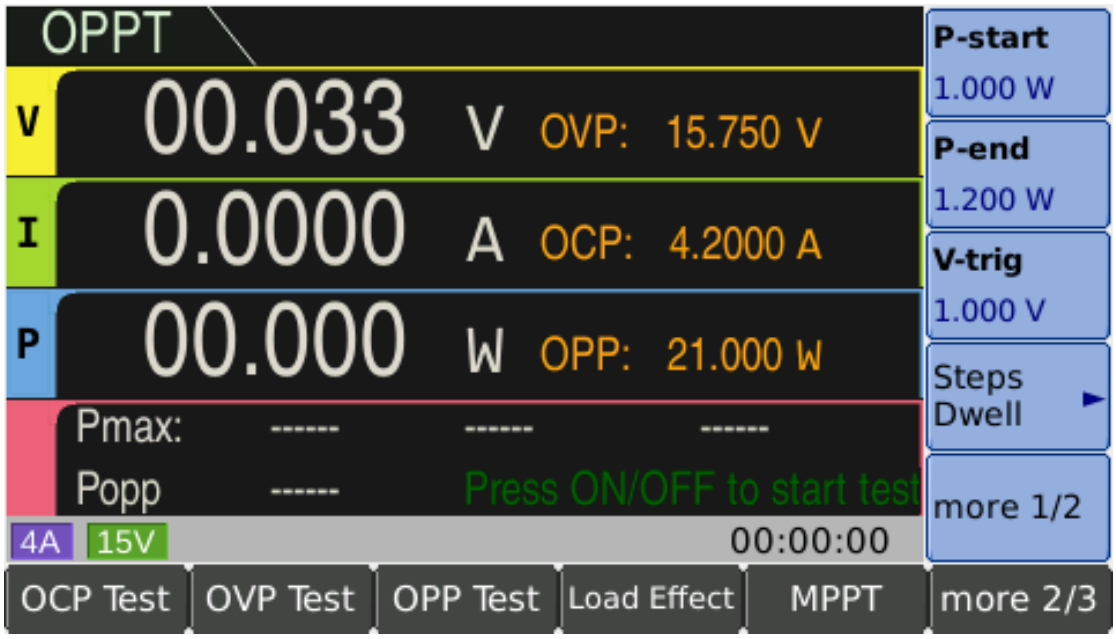
4.8 OPP Test Key Group

Press the [OPP Test] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the OPP test function will be expanded in the auxiliary key area on the right side of the screen.

Starting power	Set the initial power of the OPP test	
Cut-off power	Set the cut-off power of the OPP test	
Trigger voltage	Set the trigger voltage of the OPP test	
Step count Dwell time	Step count	Set power increment steps
	Dwell time	Set the dwell time for each step
	Set current rising slope	
Rising slope	Set the current drop slope	
Down slope Power range	Low range	
	Mid-range	
	High range	
	Low range	
	High range	

The load provides over-current protection test function. The load starts from the initial power and gradually increases the power to the cut-off power according to the set number of steps. When the input level is detected to fall to the trigger level, the power supply under test is considered to have achieved OPP protection. At this time, the power value is the overpower protection point of the power supply under test. At the same time, the load will monitor the input power throughout the

process and automatically capture the maximum power point and the voltage and current value at the maximum power point. The interface displays as shown below:



4.9 Load Effect Key Group

Press the [Load Effect] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the load effect function will be expanded in the auxiliary key area on the right side of the screen.

Minimum current	Set low level load current
Maximum current	Set high level load current
Normal current	Set normal working current
Delay	Set the current load time of each step
Rising slope	Set current rising slope
Down slope	Set the current drop slope
Current range	Low range
	Mid-range
	High range
Voltage range	Low range
	High range

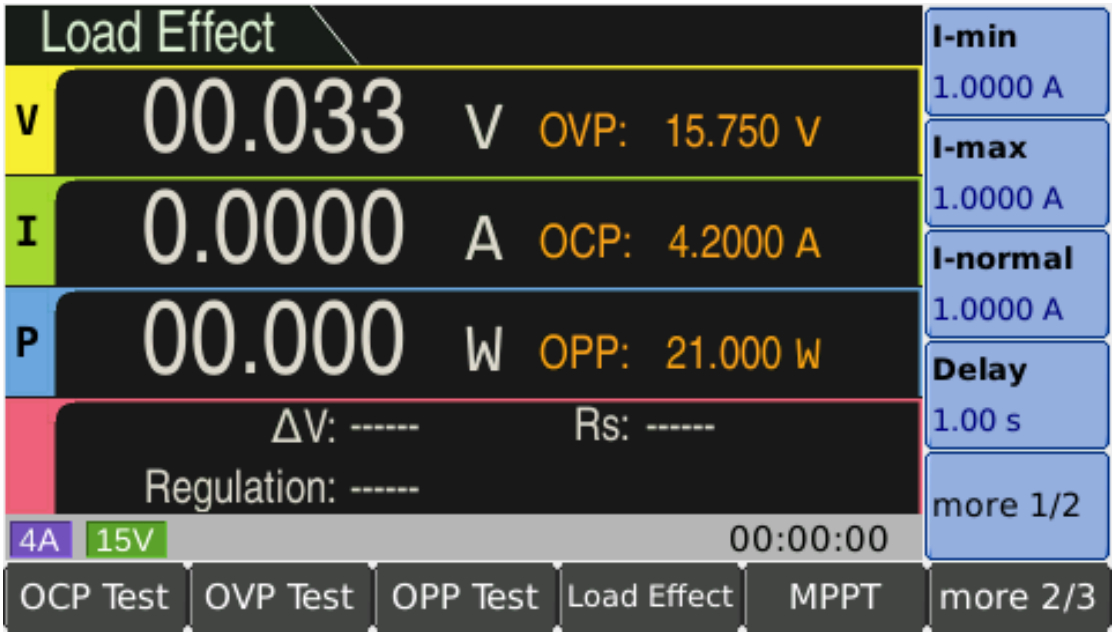
The load provides a load effect test function. The load will be loaded under 3 different loads and continue for a preset time respectively, then record the voltage value under different loads, and finally calculate the load adjustment rate and ΔV according to the following enumerated formulas And the internal resistance of the power supply.

ΔV = Vmax-Vmin

Rs =ΔV/(Imax-Imin)

Regulation =ΔV/Vnormal

The interface displays as shown below:

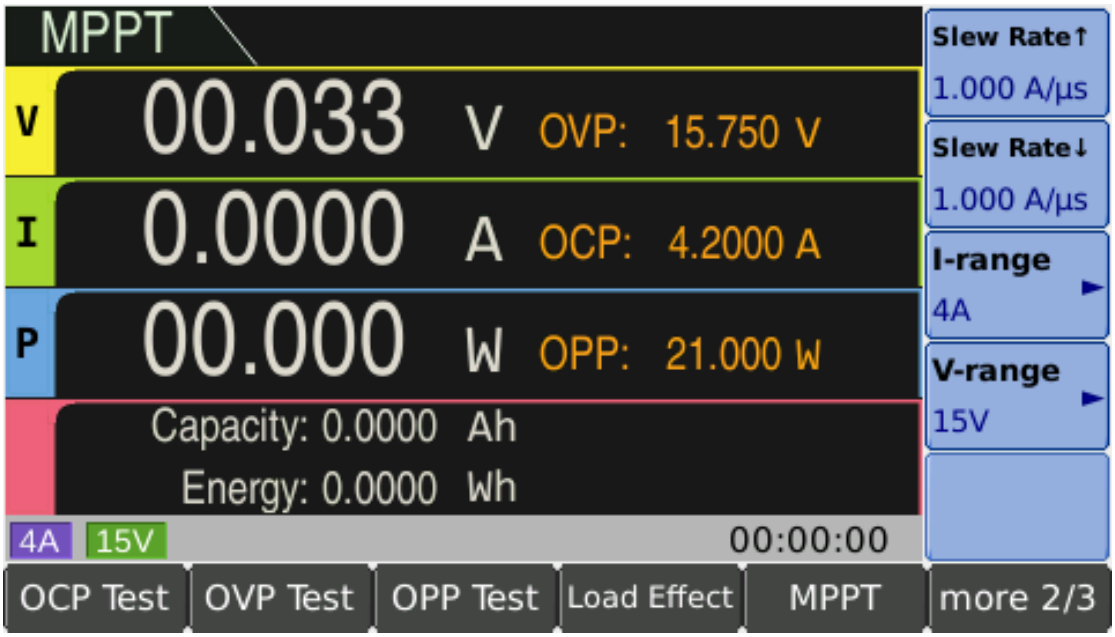


4.10 MPPT Key Group

Press the [MPPT] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the MPPT function will be expanded in the auxiliary key area on the right side of the screen.

Rising slope	Set current rising slope
Down slope	Set the current drop slope
Current range	Low range
	Mid-range
	High range
Voltage range	Low range
	High range

The load provides the maximum power point tracking function, and the current capacity and power capacity are automatically recorded during the test. The interface displays as shown below:

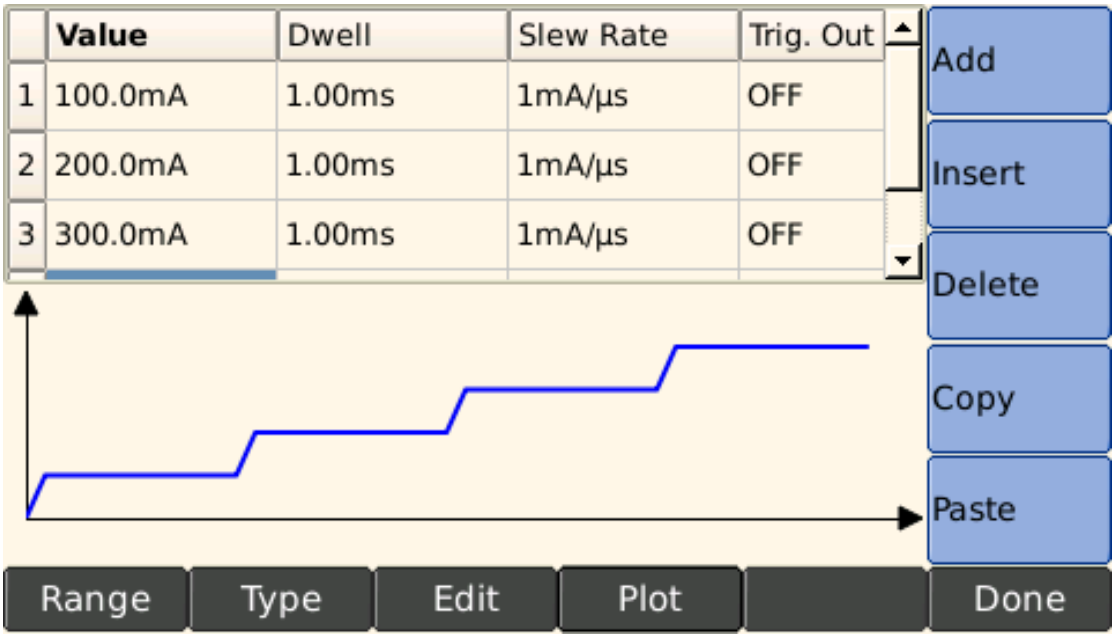


4.11 List Test Key Group

Press the [List Test] menu key in the function key area at the bottom of the screen. The parameter setting menu for the list test function will be expanded in the auxiliary key area on the right side of the screen.

Load file	Load the list test setting file with the suffix "lst"
Edit	Enter the list test editing interface
Save document	Save the list test settings as a file with the suffix "lst"

Press the [Edit] menu key in the auxiliary key area on the right side of the screen to enter the list test editing interface, as shown in the following figure:



The user can edit the load value, dwell time (10μs~60s), slope and trigger output of each step separately (the load outputs a level signal for each step completed). The maximum number of steps is 100 steps.

4.11.1 Range Key Group

Press the [Range] menu key in the function key area at the bottom of the screen, and the range setting menu for the list test will be expanded in the auxiliary key area on the right side of the screen

Current range	Low range
	Mid-range
	High range
Voltage range	Low range
	High range

4.11.2 Work Mode Key Group

Press the [Work Mode] menu key in the function key area at the bottom of the screen, and the working mode parameter setting menu for the list test will be expanded in the auxiliary key area on the right side of the screen.

work mode	Continuous	Continuous load sequence
	Count	Each time the trigger signal is received, the load is pulled in sequence and repeated for several cycles, and the loading is stopped after the end. Counting range: 1~9999999
	Single step	Each time the trigger signal is received, the load is loaded according to the next setting parameter in the file
Count	Set the number of cycles (only valid when the working mode is counting)	

4.11.3 Edit Mode Key Group

Press the [Edit] menu key in the function key area at the bottom of the screen, and the edit menu for the list test will be expanded in the auxiliary key area on the right side of the screen.

Add	Add a step at the end of the list
Insert	Insert a step in the currently selected line
Delete	Delete the currently selected line
Copy	Copy the currently selected line
Paste	Paste the copied line to the current line

4.11.4 Coordinate Map

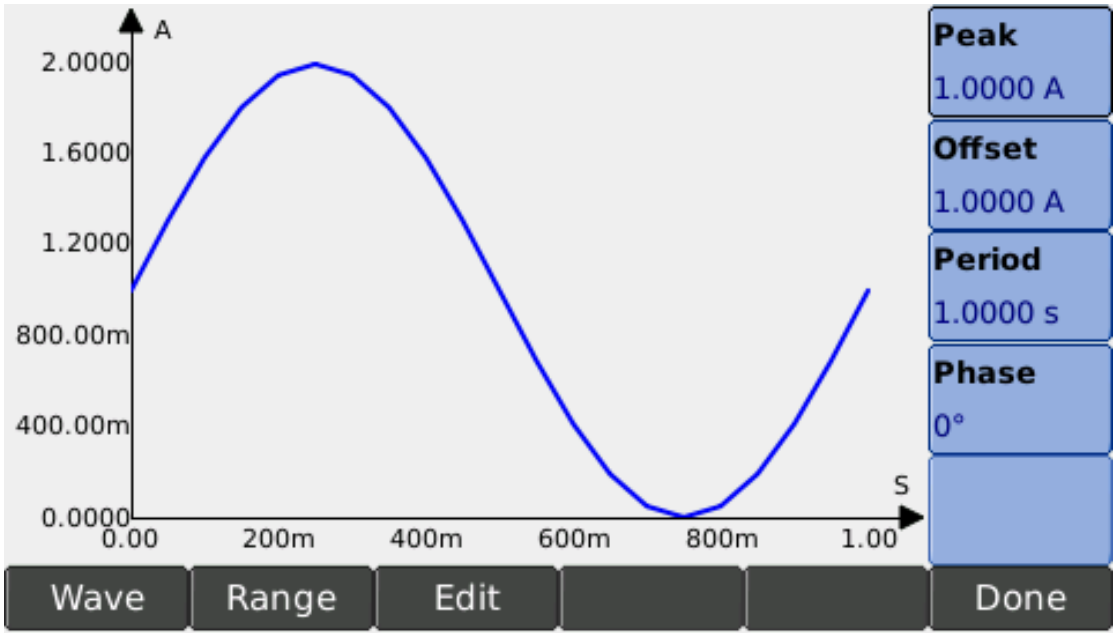
Press the [Coordinate Map] menu key in the function key area at the bottom of the screen to display the polyline effect map of the currently edited list. Press the menu key again to hide the graph.

4.12 Waveform Load Key Group

Press the [Waveform Load] menu key in the function key area at the bottom of the screen to expand the parameter setting menu for the waveform load function in the auxiliary key area on the right side of the screen.

Load file	Load the list test setup file with the suffix "wav"
Edit	Enter the waveform load editing interface
Save document	Save the list test settings as a file with the suffix "wav"

Press the [Edit] menu key in the auxiliary key area on the right side of the screen to enter the waveform load editing interface, as shown in the following figure:



Users can edit the periodic current signal to load, including sine wave, triangle wave, square wave, trapezoidal wave, front sawtooth wave, back sawtooth wave.

4.12.1 Waveform Key Group

Press the [Waveform] menu key in the function key area at the bottom of the screen to expand the waveform selection menu in the auxiliary key area on the right side of the screen.

Sine wave	Load sine wave current
Triangle wave	Load pulls triangle wave current
Square wave	Load pull square wave current
Trapezoid wave	Traction trapezoidal wave current
Front sawtooth wave	Sawtooth current before load
Back sawtooth	Sawtooth current after load is loaded

4.12.2 Range Key Group

Press the [Range] menu key in the function key area at the bottom of the screen, and the range setting menu about the waveform load will be expanded in the auxiliary key area on the right side of the screen.

Current range	Low range
	Mid-range
	High range
Voltage range	Low range
	High range

4.12.3 Edit Key Group

Press the [Edit] menu key in the function key area at the bottom of the screen, and the parameter editing menu about the waveform load will be expanded in the auxiliary key area on the right side of the screen.

Current waveform mode	**Menu options**
Sine wave	Peak
	Bias
	Cycle
	Phase
Triangle wave	Peak
	Bias
	Front pulse width
	Trailing pulse width
	Phase
Square wave	Peak
	Bias
	Pulse width
	Cycle
	Phase
Trapezoid wave	Peak
	Bias
	Pulse width
	Cycle
	Phase
Front sawtooth wave	Peak
	Bias
	Pulse width
	Cycle
	Phase

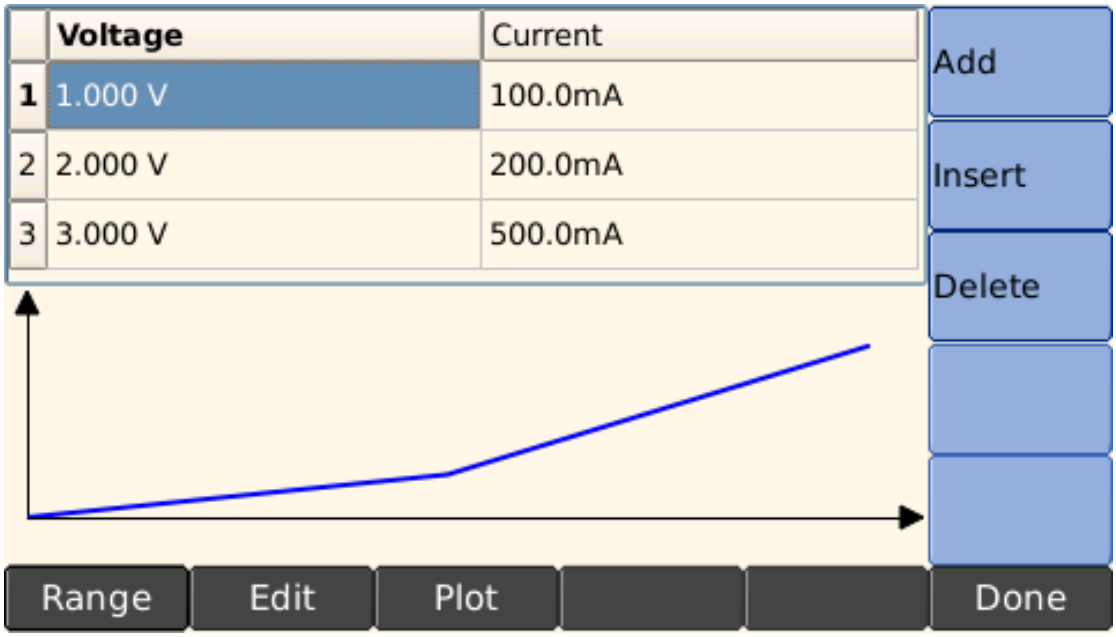
Back sawtooth	Peak
	Bias
	Pulse width
	Cycle
	Phase

4.13 ARB Key Group

Press the [ARB] menu key in the function key area at the bottom of the screen, and the parameter setting menu about the ARB function will be expanded in the auxiliary key area on the right side of the screen.

Load file	Load the list test setup file with the suffix "arb"
Edit	Enter the ARB editing interface
Save document	Save the list test settings as a file with the suffix "arb"

Press the [Edit] menu key in the auxiliary key area on the right side of the screen to enter the ARB editing interface, as shown below:



In the ARB (arbitrary I-V characteristics) mode, multiple sets of I-V feature points (3~100 points) can be set to describe any I-V characteristics. Linear interpolation is used between the two points. This function can be used to simulate a diode.

4.13.1 Range Key Group

Press the [Range] menu key in the function key area at the bottom of the screen to expand the ARB range setting menu in the auxiliary key area on the right side of the screen.

Current range	Low range
	Mid-range
	High range
Voltage range	Low range
	High range

4.13.2 Edit Mode Key Group

Press the [Edit] menu key in the function key area at the bottom of the screen, and the edit menu for the list test will be expanded in the auxiliary key area on the right side of the screen.

Add	Add a point at the end of the list
Insert	Insert a point in the currently selected row
Delete	Delete the currently selected line

Make sure that the voltage and current values increase point by point.

4.13.3 Coordinate Map

Press the [Coordinate Map] menu key in the function key area at the bottom of the screen to display the polyline effect map of the currently edited list. Press the menu key again to hide the graph.

4.14 Circuit Key Group

Press the [Circuit] menu key in the function key area at the bottom of the screen, and the parameter setting menu for circuit functions will be expanded in the auxiliary key area on the right side of the screen.

Load file	Load the list test setting file with the suffix "cct"
Edit	Enter the circuit editing interface
Save document	Save the list test settings as a file with the suffix "cct"

The user selects a circuit model and customizes the component parameters. The load simulates the V-I characteristic of the circuit.
This function can be used to simulate the start-up of capacitive loads, the load condition of non-linear loads, and the load of automobile generators.

4.14.1 Circuit Key Group

Press the [circuit] menu key in the function key area at the bottom of the screen, and the circuit model selection menu will be expanded in the auxiliary key area on the right side of the screen

Circuit A	Characteristics of load simulation circuit A
Circuit B	Characteristics of load simulation circuit B
Circuit C	Characteristics of load simulation circuit C

Circuit D	Characteristics of load simulation circuit D
Circuit E	Characteristics of load simulation circuit E
Circuit F	Characteristics of load simulation circuit F

4.14.2 Range Key Group

Press the [Range] menu key in the function key area at the bottom of the screen, and the range setting menu about the circuit will be expanded in the auxiliary key area on the right side of the screen.

Current range	Low range
	Mid-range
	High range
Voltage range	Low range
	High range

4.14.3 Edit Key Group

Press the [Edit] menu key in the function key area at the bottom of the screen, and the parameter editing menu about the circuit will be expanded in the auxiliary key area on the right side of the screen.

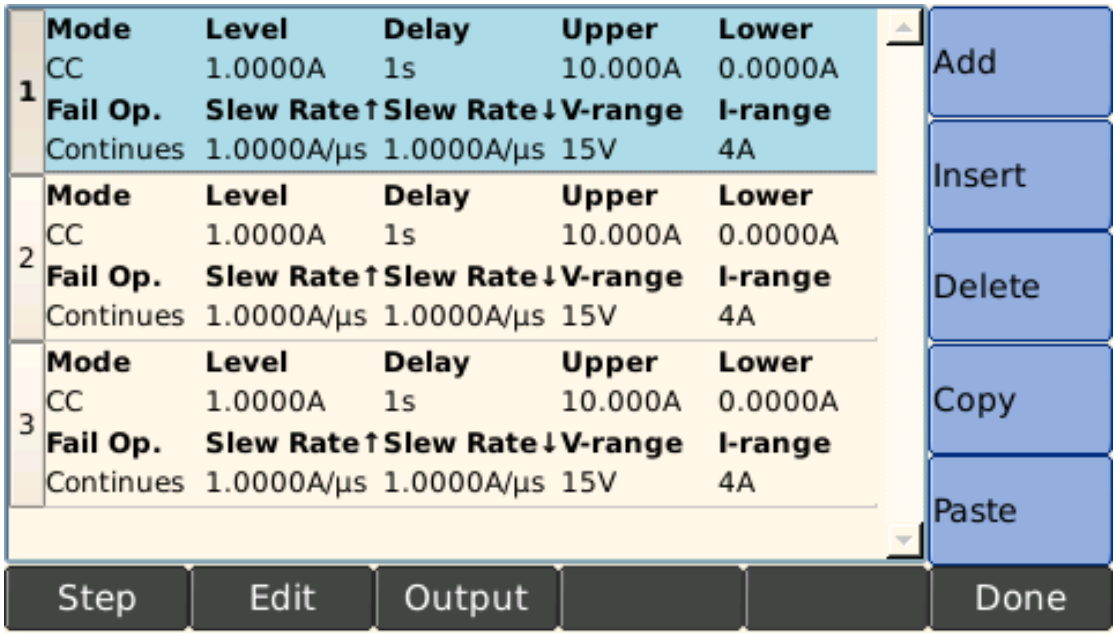
Current waveform mode	**Menu options**
Circuit A	L1
	C1
	R1
Circuit B	L1
	R0
	R1
Circuit C	L1
	C1
	R1
Circuit D	L1
	C1
	R1
Circuit E	R0
	R1
	C1
	L1
Circuit F	R0
	L1
	C1
	R1

4.15 Automatic Test Key Group

Press the [Auto Test] menu key in the function key area at the bottom of the screen, and the parameter setting menu for the automatic test function will be expanded in the auxiliary key area on the right side of the screen.

Load file	load the list test setting file with the suffix "ato"
Edit	Enter the automatic test editing interface
Save document	Save the list test settings as a file with the suffix "ato"

Press the [Edit] menu key in the auxiliary key area on the right side of the screen to enter the automatic test editing interface, as shown in the figure below:



The automatic test function is used for product inspection in the production line. The load is loaded and tested in sequence according to the steps edited in the file, automatically judged whether it is qualified or not, and starts the trigger output according to the set trigger condition.

4.15.1 Step Key Group

Press the [Step] menu key in the function key area at the bottom of the screen, and the step parameter setting menu will be expanded in the auxiliary key area on the right side of the screen.

Mode	CC
	CV
	CR
	CP
Load current	Effective in CC mode
Load voltage	Effective in CV mode
Load resistance	Effective in CR mode
Load power	Effective in CP mode

Limit	Specify parameters	Electric current	
		Voltage	
		Power	
		No	
	Upper Value		
	Low Value		
	Failed operation	Continuous	If judged as unqualified, continue to the next step
		Stop	Stop pulling when judged as unqualified
Delay	Delay type	Time	
		Trigger signal	
	Time	Valid when the delay type is set to [time]	
Rising slope	Set current rising slope (valid in CC and CP mode)		
Down slope	Set current falling slope (valid in CC and CP mode)		
Current range	Low range		
	Mid-range		
	High range		
Voltage range	Low range		
	High range		

4.15.2 Edit Key Group

Press the [Edit] menu key in the function key area at the bottom of the screen, and the automatic test editing menu will be expanded in the auxiliary key area on the right side of the screen.

Add	Add a step at the end of the list
insert	Insert a step in the currently selected line
delete	Delete the currently selected line
copy	Copy the currently selected line
Paste	Paste the copied line to the current line

4.15.3 Output Key Group

Press the [Output] menu key in the function key area at the bottom of the screen, and the output menu about automatic test will be expanded in the auxiliary key area on the right side of the screen.

Output condition	Pass	Output a level or pulse signal when the limit judgment result is "pass"
	Failure	Output a level or pulse signal when the limit judgment result is "failure"
	End	Output a level or pulse signal at the end of all steps
	Disable	No external output signal
Output type	Level	
	Pulse	

Chapter 5 SETUP Key Group

This chapter provides reference information for the function key menu corresponding to the front panel key SETUP.

• "Load/unload key set"
• "Protection Key Group"
• "Display key group"
• "Preset key group"
• "Storage Key Group"
• "Timer Key Group"
• "Function key group"
• "Limit Key Group"
• "Calibration key set"

5.1 Load /Unload Key Group

Press the [Load/Unload] menu key in the function key area at the bottom of the screen, and the parameter setting menu about the load/unload function will be expanded in the auxiliary key area on the right side of the screen.

Load voltage	When the power supply voltage to be measured is loaded with the load voltage, the load is loaded	
Work mode	Follow	When the voltage of the power supply to be tested drops and is less than the load voltage, the load performs unloading operation
	Latch	When the voltage of the power supply to be tested drops and is less than the load voltage, the load will not be unloaded
Unloading voltage	When the power supply voltage to be tested is lower than the unloading voltage setting value, the load will perform unloading operation (only valid when the working mode is set to [Latch])	

When testing some power products with a slower voltage rise, if the input of the electronic load is turned on first, and then the power is turned on, the phenomenon of power pull protection may occur. For this, the user can set the load voltage value, when the power supply is higher than this value, the electronic load starts to load.

5.2 Protect Key Group

Press the [Protect] menu key in the function key area at the bottom of the screen, and the parameter setting menu about the protection function will be expanded in the auxiliary key area on the right side of the screen.

Overvoltage protection	State	Default	Execute protection operation when the measured voltage exceeds 105% of the full scale of the current voltage range

		Customize	Execute protection operation when the measured voltage exceeds the maximum voltage set by the user
	Maximum voltage	Only valid when the status is set to [Custom]	
Overcurrent protection	State	Default	Execute protection operation when the measured current exceeds 105% of the current current range full scale
		Customize	Execute protection operation when the measured current exceeds the maximum current set by the user
	Maximum current	Only valid when the status is set to [Custom]	
	Protection action	Close load	Once the protection is executed, the buzzer will alarm and the instrument will be uninstalled
		Limit	Once the protection is executed, the buzzer will alarm and the instrument will continue to load with the maximum current that does not exceed 105% of the current current range full scale
Overpower protection	State	Default	Execute protection operation when the measured power exceeds 105% of the current power range full scale
		Customize	Perform protection operation when the measured power exceeds the maximum power set by the user
	Maximum power	Only valid when the status is set to [Custom]	
	Protection action	Close load	Once the protection is executed, the buzzer will alarm and the instrument will be uninstalled
		Limit	Once the protection is executed, the buzzer will alarm and the instrument will continue to load with the maximum current that does not exceed 105% of the current current range full scale
Low voltage protection	State		ON
			OFF
Back pressure protection			ON

5.3 Display Key Group

Press the [Display] menu key in the function key area at the bottom of the screen, and the parameter setting menu about the display function will be expanded in the auxiliary key area on the right side of the screen.

Current view	Menu options	
Numerical value	View	Numerical value
		Digitizing
	Second display	Protection
		Peak
		Deviation
	Time interval	Set the time interval for updating measurement data
Digitizing	View	Numerical value
		Digitizing
	Type	V-t
		I-t
		Vt + It
		P-t
	Sampling Rate	Set sample rate
	Points	Set the total number of samples
	Run (stop)	Start or stop data sampling

The instrument has two display modes for users to choose.

In the numerical display mode, the interface displays the V, I, P measurement readings in numerical form. The measurement result is updated regularly at the set time interval. In the secondary parameter display, you can view the protection value setting or peak statistics or deviation from the reference value.

In the digital display mode, the interface displays the measurement data of each ADC sampling in the form of a curve. The sampling rate and the total number of samples need to be set.

5.4 Preset Key Group

Press the [Preset] menu key in the function key area at the bottom of the screen, and the menu about preset functions will be expanded in the auxiliary key area on the right side of the screen.

STATE	If there is a configuration file named "STATE.sta" in the root directory of the instrument file system, load the file, otherwise it will prompt "File does not exist"
STATE(2)	If there is a configuration file named "STATE(2).sta" in the root directory of the instrument file system, load the file, otherwise it will prompt "File

	does not exist"
STATE(3)	If there is a configuration file named "STATE(3).sta" in the root directory of the instrument file system, load the file, otherwise it will prompt "File does not exist"
STATE(4)	If there is a configuration file named "STATE(4).sta" in the root directory of the instrument file system, load the file, otherwise it will prompt "File does not exist"
Default	Restore factory settings

If you need to switch between several sets of configuration parameters, this function is very convenient.

5.5 Save Key Group

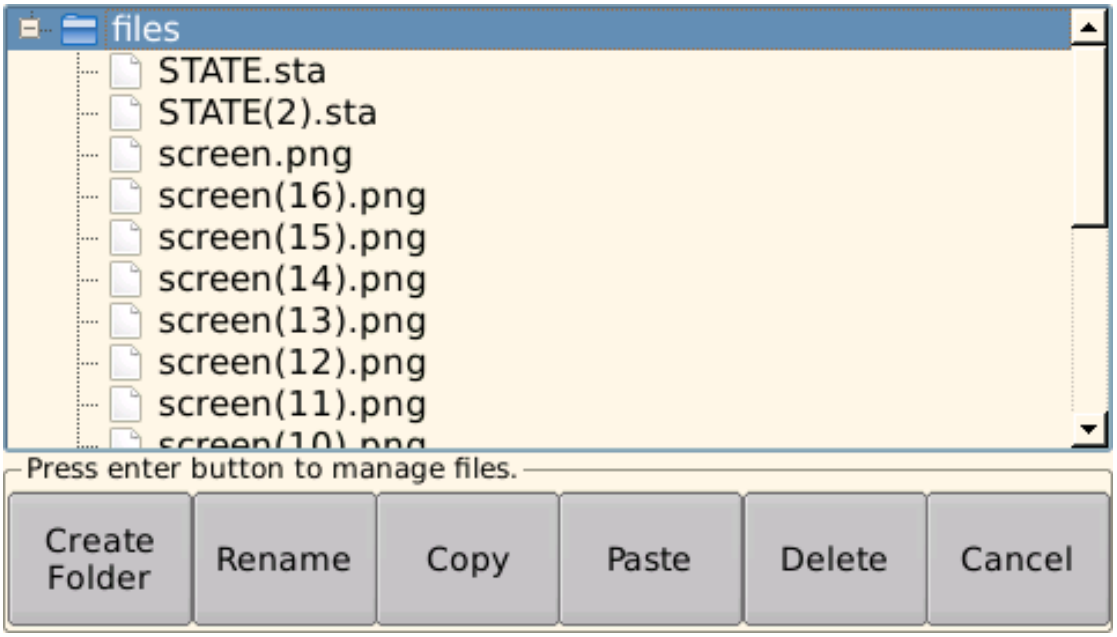
Press the [Save] menu key in the function key area at the bottom of the screen, and the storage function menu will be expanded in the auxiliary key area on the right side of the screen.

Save reading	Enter the file system interface and perform operations related to saving readings
Save Settings	Enter the file system interface and perform operations related to saving settings
Load file	Enter the file system interface and perform operations related to loading settings
Manage files	Enter the file system interface and perform file management related operations
Screen capture	Capture the current screen and save it to the root directory of the file system in png format

The relationship between file types and saved parameters/readings is shown in the following table:

Parameter	Suffix name
Measure and test related parameters	sta
System setting and display related parameters	prf
Measurement reading	csv
List test parameters	lst
Waveform load test parameters	wav
ARB test parameters	arb
Circuit test parameters	cct
Automatic test parameters	ato

File system interface as shown in below:



5.6 Timer Key Group

Press the [Timer] menu key in the function key area at the bottom of the screen, and the parameter setting menu about the timer function will be expanded in the auxiliary key area on the right side of the screen.

Load timing	OFF
	ON
Timed uninstall	OFF
	ON
Timing	Set timing time (only valid when timing unloading is on)

The forward timer resets to zero from the moment the load is loaded and starts timing until the load is unloaded.
The countdown timer counts down according to the time set by the user, and the time is reset to be responsible for uninstalling.
Only one timer can be turned on.

5.7 Function Key Group

Press the [Function] menu key in the function key area at the bottom of the screen, and the parameter setting menu about the function will be expanded in the auxiliary key area on the right side of the screen.

Soft start	Set the soft start time (0~500ms, the minimum setting accuracy is 5μs)
Trigger method	Manual
	external

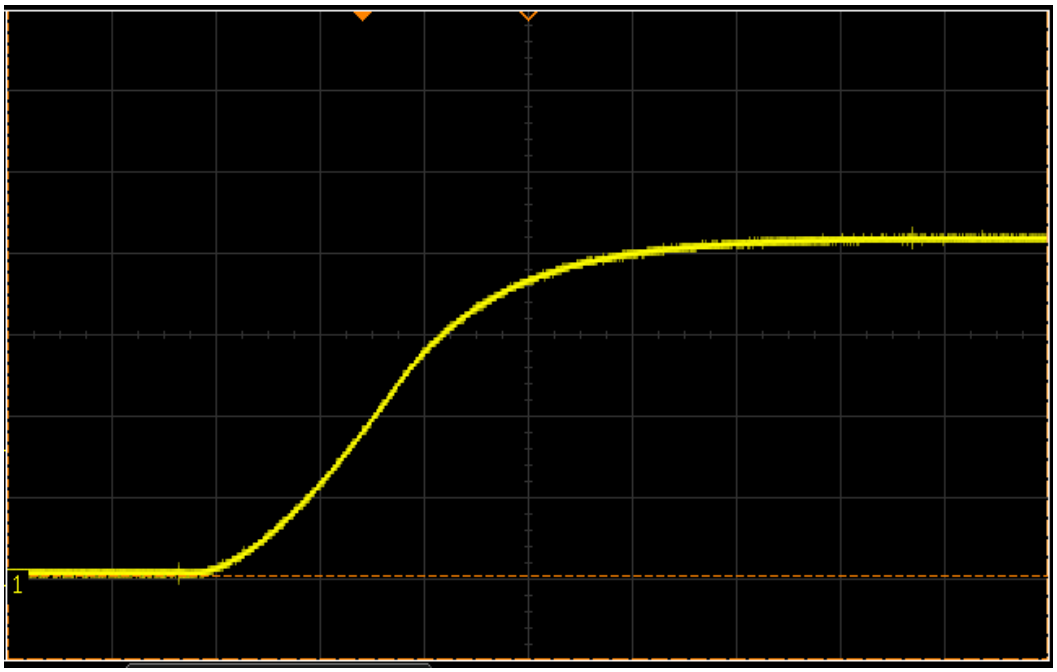
The soft start function can control the current rise time of the electronic load. It will only take effect when all the following conditions are met:

1. The current load mode is CC mode.
2. The input signal cannot be less than the minimum load voltage of the electronic load.

Mainly used in the following situations:

1. The power supply under test oscillates or produces a sharply changing current.
2. When the electronic load starts to load, unnecessary overcurrent protection occurs.

After the soft start function is turned on, the current rising curve is as shown in the figure:



5.8 Limit Key Group

Press the [Limit] menu key in the function key area at the bottom of the screen, and the parameter setting menu about the limit function will be expanded in the auxiliary key area on the right side of the screen.

Voltage	Status	Shut down
		Open
	Interval type	Within interval
		Out of range
	Mode	Absolute value
		Deviation
		Percentage
	Reference	
	Voltage upper limit	
	Voltage lower limit	
Electric current	State	Shut down
		Open

	Interval type	Within interval
		Out of range
	Mode	Absolute value
		Deviation
		Percentage
	Reference	
	Current limit	
	Current lower limit	
Power	State	Shut down
		Open
	Interval type	Within interval
		Out of range
	Mode	Absolute value
		Deviation
		Percentage
	Reference	
	Power limit	
	Power lower limit	

It can judge the limits of the voltage, current, and power readings respectively. If one parameter is judged unqualified, the buzzer will alarm.
Only in the open state, the limit judgment is performed.
The interval type is used to define whether the reading is within the interval as qualified or outside the interval as qualified.
You can arbitrarily choose to set the limit in one of three forms: absolute value, deviation (difference from reference value), and percentage. Need to set the reference value, upper limit, and lower limit.

5.9 Calibration Key Group

Press the [Calibration] menu key in the function key area at the bottom of the screen, and the menu about the calibration function will be expanded in the auxiliary key area on the right side of the screen.

change password	Enter the correct original password, and then enter the new password, the password modification is successful
Perform calibration	Enter the correct password to enter the calibration interface

The initial password is "ABC".
Users are not recommended to calibrate by themselves. If the instrument needs calibration, please contact professionals.

Chapter 6 SYSTEM Key Group

This chapter provides reference information for the function key menu corresponding to the front panel key SYSTEM.

• "Master/Slave Key Group"
• "Power-on state key group"
• "Communication interface key group"
• "External Key Group"
• "User Setting Key Group"
• "Version Information Key Group"

6.1 Host /Slave Key Group

Press the [Load/Unload] menu key in the function key area at the bottom of the screen, and the parameter setting menu about the load/unload function will be expanded in the auxiliary key area on the right side of the screen.

Operation mode	Host
	Slave
Parallel mode	Slave
	Enhancer
Number of slaves/number of enhancers	0
	1
	2
	3
	4

The electronic load can increase the current and power carrying capacity by connecting slaves or boosters in parallel.

The user can use the following two methods for parallel operation:

1. Use electronic loads of the same model in parallel. Up to 5 electronic loads can be connected in parallel. One of them is the master and the others are slaves. The slave machine obeys the parameter setting of the master machine.

2. Use an electronic load and booster to connect in parallel. Up to 4 boosters can be connected in parallel.

To avoid damage to the instrument when connecting multiple devices in parallel, please use the input terminal on the rear panel

6.2 Power On State Key Group

Press the [Power On State] menu button in the function key area at the bottom of the screen, and the parameter setting menu about power on state functions will be expanded in the auxiliary key area on the right side of the screen.

Load	OFF	The load is not automatically loaded after starting
	ON	The load is automatically loaded after startup
Keyboard lock	OFF	Do not lock the keyboard after booting
	ON	The keyboard is automatically locked after booting
State setting	Factory settings	Load factory settings after booting
	Last time	Restore the settings from the last shutdown after booting

6.3 Communication Interface Key Group

Press the [Communication Interface] menu key in the function key area at the bottom of the screen, and the parameter setting menu about the communication interface function will be expanded in the auxiliary key area on the right side of the screen.

Serial port	Baud rate	4800
		9600
		19200
		38400
		115200
	Data bit	5
		6
		7
		8
	Stop bit	1
		1.5
		2
	Parity check	no
		Odd parity
		Even parity
		Flag bit
		Space
USB	USB Id	
The internet	Network Type	Wired network
		Wi-Fi
	Configure the network	
	Set as Default	
Handler	Output	Maintain
		Pulse
	Pulse width	Set pulse width (only valid when Handler output mode is pulse)
Agreement type	SCPI	
	ModBus	

Instrument address	Set the instrument address (1~32), only valid when the protocol type is ModBus

6.4 External Key Group

Press the [External] menu key in the function key area at the bottom of the screen to expand the parameter setting menu for external functions in the auxiliary key area on the right side of the screen.

External control	Shut down
	Voltage
Switch input	Low level
	High level
Calibration	

The user can control the load value in CC, CV, CR, CP mode through the external input voltage of the rear panel port. The magnitude of the load value is calculated from the ratio of the input voltage to the full scale value of the current range, and satisfies the following equation:

Vin / 10 = Set / Range

Among them:

Vin represents the input voltage.

Set represents the current load value.

Range represents the full scale of the current current and voltage range.

Control deviation can be deducted by calibration.

The user can also control the loading/unloading status of the instrument through the high-level and low-level input signals of the adjacent ports.

6.5 User Setting Key Group

Press the [External] menu key in the function key area at the bottom of the screen to expand the parameter setting menu for external functions in the auxiliary key area on the right side of the screen.

Language selection	Chinese	
	English	
Sound settings	Buzzer	OFF
		ON
	Key sound	OFF
		ON
Date time	Edit the date and time of the instrument	
Event log	View event log of loading/unloading	

Message log	View the message log displayed on the instrument interface

6.6 Version Information Key Group

Press the [Version Information] menu key in the function key area at the bottom of the screen, and the parameter setting menu about version information will be expanded in the auxiliary key area on the right side of the screen.

Version	View instrument software version number and hardware version number
Software version	View instrument software version update log
Hardware version	View the instrument hardware version update log
Program update	Upgrade the instrument APP program and DSP program (the upgrade program needs to be stored in the "update" folder in the root directory of the U disk)

Chapter 7 RS232 Interface

The currently widely used serial communication standard is the RS-232 standard, which can also be called the asynchronous serial communication standard. RS is the abbreviation of the English name of "Recommended Standard" (recommended standard). 232 is the standard number. This standard is the US electronics industry. The Association (IEA) officially announced the standard in 1969, which stipulates that it should be transmitted one data line at a time.

Like most serial ports in the world, the serial interface of this instrument is not strictly based on the RS-232 standard, but only provides a minimal subset. The following table:

Signal	Abbreviation	Connector Pin#
Send data	TXD	2
Receive data	RXD	3
Ground	GND	5

Table 6-1 RS232 Signal and Pin

The reason is that the operation of three lines is much cheaper than the operation of five or six lines, which is the biggest advantage of using serial port communication;

The connection between the instrument and the computer is shown in Figure 6-1:

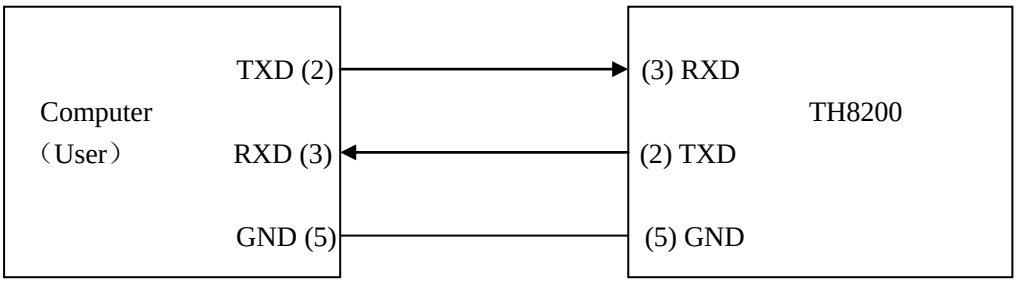


Figure 6-1 Schematic diagram of computer and instrument connection

As can be seen from Figure 6-1, the pin definition of the instrument is different from the pin definition of the 9-pin connector serial interface used by the computer. Users can purchase the serial interface cable of computer and Tonghui instrument from Changzhou Tonghui Electronics Co., Ltd.

The baud rate of the RS232 interface can be selected from 9600 to 115200, no parity, 8 data bits, and 1 stop bit.

The instrument commands conform to the SCPI standard. When the command string is sent to the instrument, LF (hexadecimal: 0AH) must be sent as the end character. The maximum number of SCPI command string bytes that the instrument can receive at one time is 2Kbyte.
For the format of the result data sent by the instrument to the computer, refer to the description of the command reference section.

7.1 USBTMC Remote Control System

The USB (Universal Serial Bus) remote control system controls the device through the USB interface. The connection conforms to USBTMC-USB488 and USB2.0 protocols.

7.1.1 System Configuration

Connect the USB interface on the rear panel of the TH8200 to the USB interface on the host computer via a USB cable.

7.1.2 Install the Driver

When connecting TH8200 to a computer with a USB cable for the first time, the computer will prompt in the lower right corner of the desktop: "Found new hardware", and then a dialog box asking for driver installation will pop up. Select "Install the software automatically (recommended)". After the driver is installed, the user can see "usb test and measurement device" in the device manager of the computer. When using the USBTMC interface, the user can access the instrument through Labview software programming.

7.2 USBVCOM Vital Serial Port

By selecting the bus mode "USBVCOM", the USB interface can be configured as a virtual serial port (VCOM).

7.2.1 System Configuration

Connect the USB interface on the rear panel of the TH8200 to the USB interface on the host computer via a USB cable.

7.2.2 Install the Driver

The method for installing the driver for USBCDC is the same as the method for installing the driver for USBTMC. After the driver is installed, users can see "USB Vcom Port" in the device manager of the computer.
At this time, USB Vcom Port is equivalent to a serial port. When the PC does not have a serial port, the communication software based on the serial port can be used as a virtual serial port of the USB port in this mode.

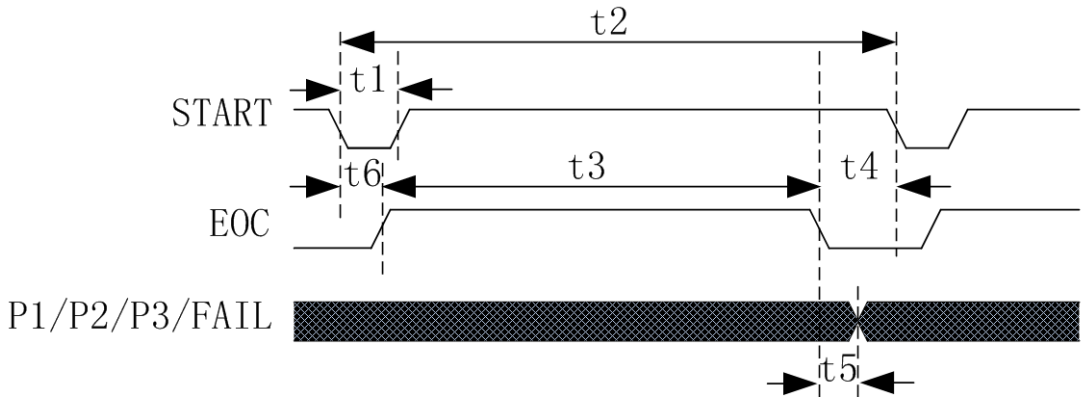
Chapter 8 Handler

TH8200 series DC resistance tester provides users with a Handler interface, which is mainly used for the output of instrument sorting results. When the instrument is used in an automatic component sorting test system, this interface provides the contact signal with the system and the sorting result output signal. The sorting result output corresponds to the comparison result output of the current file of the comparator.

Port and specific meaning

Port#	Name	Meaning
1	START	The trigger signal is measured, and the falling edge is valid. When the instrument is in external trigger mode and the signal is valid, the instrument will perform a trigger measurement.
2	PASS2	Output signal of bin 2 comparison result， low effective
3	FAIL	Comparison result output signal，low effective
4	+5V	Internal +5V power output.
5	EXT_VCC	When the setting item "Handler" power is set to "external", the port is an external power input, the voltage range is +5V~+30V; when the setting item "Handler" power is set to "internal", the port is an internal power output.
6	PASS1	Output signal of bin 1 comparison result，low effective
7	PASS3	Output signal of bin 3 comparison result，low effective
8	EOC	End of measurement signal.low effective.
9	EXT_GND	When the setting item "Handler" power is set to "external", the port is the external power ground; when the setting item "Handler" power is set to "internal", the port is the internal power ground.

Timing Diagram



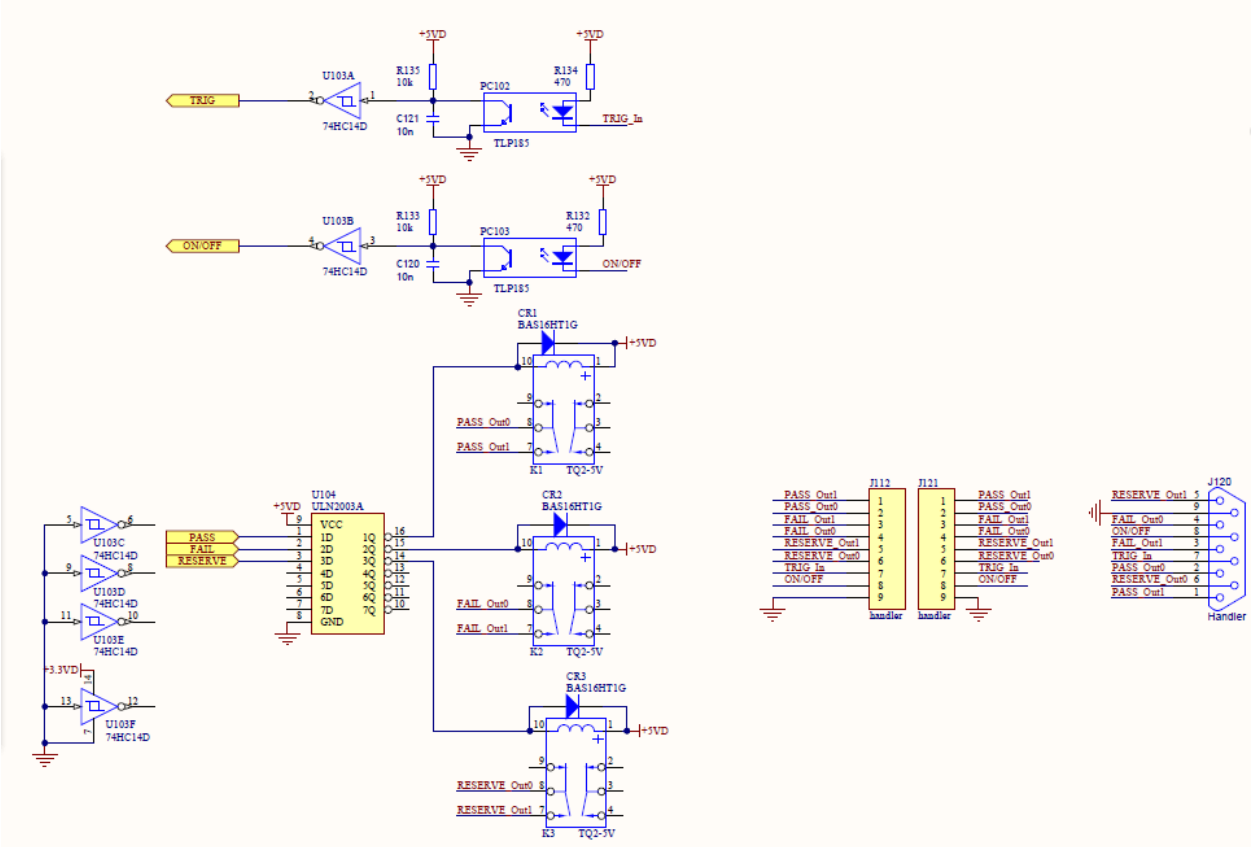
Note：P1/P2/P3 are PASS1/PASS2/PASS3 signal

Time	Min. Value	Max. Value
t1: Trigger pulse width	10ms	---
t2:One measurement time	t3+t4	---
t3:— Sampling time for each measurement	1 Sampling Time	---
t4:Data processing and display time for one measurement	Display “ON”: 22ms Display “OFF”: 5ms	---
t5:End of sampling to control output time	2ms	---
t6:Measurement delay time	See measurement delay settings	---

OVC OFF： Sampling Time = 5ms (50 Hz) / 5ms(60 Hz) Fast
20 ms (50 Hz) / 16.6ms(60 Hz) Medium
110 ms (50 Hz) / 110ms(60 Hz) Slow
450 ms (50 Hz) / 450ms(60 Hz) Slow

OVC ON： Sampling Time = 10 ms + t6 (50 Hz) / 10ms + t6 (60 Hz) Fast
40 ms + t6 (50 Hz) / 33ms + t6 (60 Hz) Medium
220 ms + 9* t6 (50 Hz) / 220 ms + 11* t6 (60 Hz) Slow
900 ms + 39*t6(50 Hz) / 900 ms + 47*t6(60 Hz) Slow

Electrical characteristics



Chapter 9 SCPI Commands

1. The data agreement in this manual
NR1: integer, for example: 123.
NR2: fixed-point number, for example: 12.3.
NR3: floating point number, for example: 12.3E+5.
NL: carriage return, integer 10.
^END: EOI (end) signal of IEEE-488 bus.

9.1 System Commands of TH8200

●INPut ●SOURce ●CONFigure ●MEASure ●PEAK
●ADVance ●SYSTem ●CALibration

9.2 IEEE488.2 General and 1rst Level Commands

Commands	Function	Typical Return
*IDN?	Returns the identification string of the instrument	Tonghui,TH8201,Ver 1.00
*TRG	Perform a trigger operation	(None)
*RST	Reset the instrument and restore the factory settings	(None)
FETCh?	Return measurement reading <volt,curr,pow>	1.0000,2.0000,3.0000
COPY	Take a screenshot and save to the file system	(None)

9.3 INPut Subsystem Commands

9.3.1 :INPut:[STATe]

--Function: Set loading/unloading status
--Format:
Setting format: :INPut:[STATe] {OFF|0|ON|1}
Query format: :INPut:[STATe]?
--Data<data>
Data type: Boolean
Data range:
OFF|0---off
ON|1---open
Data accuracy:
Data unit:
--Setup example:
If you want to load the instrument:

Then the input command is: :INP:STAT 1

--Query example:

If the input command is: :INP:STAT?

The returned content is: 0, indicating that the instrument is in the unloaded state.

9.3.2 :INPut:SHOR

--Function: Set loading/unloading status

--format:

Setting format: :INPut:SHOR {OFF|0|ON|1}

Query format: :INPut:SHOR?

--Data<data>

Data type: Boolean

Data range:

OFF|0---off

ON|1---open

Data accuracy:

Data unit:

--Setup example:

If you want the instrument to be in short circuit mode:

Then the input command is: :INP: SHOR 1

--Query example:

If the input command is: :INP: SHOR?

Then the returned content is: 1, indicating that the instrument is in a short circuit state.

9.4 SOURce Subsystem Commands

9.4.1 [:SOURce]:MODE

--Function: Set loading/unloading status

--format:

Setting format: [:SOURce]:MODE {CC|CV|CR|CP}

Query format: [:SOURce]:MODE?

--Data<data>

Data type: Discrete

Data range:

CC---CC mode

CV---CV mode

CR---CR mode

CP---CP mode

Data accuracy:

Data unit:

--Setup example:

If you want to set CC mode:

Then the input command is: MODE CC

--Query example:

If the input command is: MODE?

The returned content is: 0, indicating that the instrument is in CC mode.

9.4.2 [:SOURce]:CURRent:[LEVel]

--Function: Set the load current in CC mode

--format:

Setting format: [:SOURce]:CURRent:[LEVel] <value>

Query format: [:SOURce]:CURRent[:LEVel]?

--Data<data>

Data type: numeric

Data range: 0~105%* full-scale value of current range

Data accuracy: Please refer to specific performance index

Data unit: A (can be omitted)

--Setup example:

If you want to set the load current in CC mode:

The input command is: CURR 1.0000

--Query example:

If the input command is: CURR?

The returned content is: 1.0000, indicating that the CC load current is 1.000A.

9.4.3 [:SOURce]:CURRent:RANGe

--Function: Set current range

--format:

Setting format: [:SOURce]:CURRent:RANGe {LOW|MIDdle|HIGH}

Query format: [:SOURce]:CURRent:RANGe?

--Data<data>

Data type: Discrete

data range:

LOW ---low range

MIDdle ---Mid range

HIGH ---High range

Data accuracy:

Data unit:

--Setup example:

If you want to set the current range

Then the input command is: CURR:RANG LOW

--Query example:

If the input command is: CURR:RANG?
The returned content is: LOW, indicating that the current range is low.

9.4.4 [:SOURce]:CURRent:SLEWrate:RISE

--Function: Set the current rising slope
--format:
Setting format: [:SOURce]:CURRent:SLEWrate:RISE <value>
Query format: [:SOURce]:CURRent:SLEWrate:RISE?
--Data<data>
Data type: numeric
Data range: specific reference to performance indicators
Data accuracy: specific reference to performance indicators
Data unit: A/μs
--Setup example:
If you want to set the current rising slope
Then the input command is: CURR:SLEW:RISE 1.0000
--Query example:
If the input command is: CURR:SLEW:RISE?
Then the returned content is: 1.0000, indicating that the current rise slope is 1.000 A/μs.

9.4.5 [:SOURce]:CURRent:SLEWrate:FALL

--Function: Set the current decline slope
--format:
Setting format: [:SOURce]:CURRent:SLEWrate:FALL <value>
Query format: [:SOURce]:CURRent:SLEWrate:FALL?
--Data<data>
Data type: numeric
Data range: specific reference to performance indicators
Data accuracy: specific reference to performance indicators
Data unit: A/μs
--Setup example:
If you want to set the current decline slope
Then the input command is: CURR:SLEW:FALL 1.0000
--Query example:
If the input command is: CURR:SLEW:FALL?
Then the returned content is: 1.0000, indicating that the current decline slope is 1.000 A/μs.

9.4.6 [:SOURce]:CURRent:LIMit:STATe

--Function: Set the open state of the current limit test.
--format:

Setting format: [:SOURce]:CURRent:LIMit:STAT {OFF|0|ON|1}
Query format: [:SOURce]:CURRent:LIMit:STAT?
--Data<data>
Data type: Boolean
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the current limit judgment state
Then the input command is: CURR:LIM:STAT 1
--Query example:
If the input command is: CURR:LIM:STAT?
Then the returned content is:

9.4.7 [:SOURce]:CURRent:LIMit:INOUT

--Function: Set the current limit test qualified range mode
--format:
Setting format: [:SOURce]:CURRent:LIMit:INOUT {IN|OUT}
Query format: [:SOURce]:CURRent:LIMit:INOUT?
--Data<data>
Data type: Discrete
data range:
IN ---interval
OUT ---outside
Data accuracy:
Data unit:
--Setup example:
If you want to set the current limit judgment interval type
Then the input command is: CURR:LIM:INOUT IN
--Query example:
If the input command is: CURR:LIM:INOUT?
The returned content is: 0, indicating that the interval type is within the interval.

9.4.8 [:SOURce]:CURRent:LIMit:MODE

--Function: Set the current limit test judgment mode
--format:
Setting format: [:SOURce]:CURRent:LIMit:MODE {ABS|DEViation|PERCent}
Query format: [:SOURce]:CURRent:LIMit:MODE?
--Data<data>
Data type: Discrete
data range:
ABS --- absolute value

DEViation ---deviation value
PERCent---Percent
Data accuracy:
Data unit:
--Setup example:
If you want to set the current limit judgment mode
Then the input command is: CURR:LIM:MODE ABS
--Query example:
If the input command is: CURR:LIM:MODE?
The returned content is: ABS, indicating that the limit judgment mode is an absolute value.

9.4.9 [:SOURce]:CURRent:LIMit:UPPer[:ABS]

--Function: Set the absolute value of the upper limit of the current limit test
--format:
Setting format: [:SOURce]:CURRent:LIMit:UPPer[:ABS]
Query format: [:SOURce]:CURRent:LIMit:UPPer[:ABS]?
--Data<data>
Data type: Discrete
Data range: 0~inf
Data accuracy: Same as load current setting accuracy
Data unit: A (can be omitted)
--Setup example:
If you want to set the current limit to judge the absolute value of the upper limit
Then the input command is: CURR:LIM:UPP 1.0000
--Query example:
If the input command is: CURR:LIM:UPP?
The returned content is: 1.0000, indicating that the absolute value of the upper limit of the current limit judgment is 1.000A.

9.4.10 [:SOURce]:CURRent:LIMit:UPPer:DEViation

--Function: Set the upper limit deviation value of current limit test
--format:
Setting format: [:SOURce]:CURRent:LIMit:UPPer:DEViation
Query format: [:SOURce]:CURRent:LIMit:UPPer:DEViation?
--Data<data>
Data type: Discrete
Data range: -inf~inf
Data accuracy: Same as load current setting accuracy
Data unit: A (can be omitted)
--Setup example:
If you want to set the current limit to judge the upper limit deviation value
Then the input command is: CURR:LIM:UPP:DEV 1.0000

--Query example:
If the input command is: CURR:LIM:UPP:DEV?
The returned content is: 1.0000, indicating that the upper limit deviation value of the current limit judgment is 1.000A.

9.4.11 [:SOURce]:CURRent:LIMit:UPPer:PERCent

--Function: Set the upper limit percentage of the current limit test
--format:
Setting format: [:SOURce]:CURRent:LIMit:UPPer:PERCent
Query format: [:SOURce]:CURRent:LIMit:UPPer:PERCent?
--Data<data>
Data type: Discrete
Data range: 1%~100%
Data accuracy: 1%
Data unit:
--Setup example:
If you want to set the current limit to judge the upper limit percentage
Then the input command is: CURR:LIM:UPP:PERC 50
--Query example:
If the input command is: CURR:LIM:UPP:PERC?
Then the returned content is: 50, indicating that the upper limit percentage of the current limit judgment is 50%.

9.4.12 [:SOURce]:CURRent:LIMit:LOWer[:ABS]

--Function: Set the absolute value of the lower limit of the current limit test
--format:
Setting format: [:SOURce]:CURRent:LIMit:LOWer[:ABS]
Query format: [:SOURce]:CURRent:LIMit: LOWer [:ABS]?
--Data<data>
Data type: Discrete
Data range: 0~inf
Data accuracy: Same as load current setting accuracy
Data unit: A (can be omitted)
--Setup example:
If you want to set the current limit to determine the absolute value of the lower limit
Then the input command is: CURR:LIM:LOW 1.0000
--Query example:
If the input command is: CURR:LIM:LOW?
The returned content is: 1.0000, indicating that the absolute value of the current limit judgment lower limit is 1.0000A.

9.4.13 [:SOURce]:CURRent:LIMit:LOWer:DEViation

--Function: Set the lower limit deviation value of current limit test
--format:
Setting format: [:SOURce]:CURRent:LIMit:LOWer:DEViation
Query format: [:SOURce]:CURRent:LIMit:LOWer:DEViation?
--Data<data>
Data type: Discrete
Data range: -inf~inf
Data accuracy: Same as load current setting accuracy
Data unit: A (can be omitted)
--Setup example:
If you want to set the current limit to judge the lower limit deviation value
Then the input command is: CURR:LIM:LOW:DEV 1.0000
--Query example:
If the input command is: CURR:LIM:LOW:DEV?
The returned content is: 1.0000, indicating that the lower limit deviation value of the current limit judgment is 1.000A.

9.4.14 [:SOURce]:CURRent:LIMit:LOWer:PERCent

--Function: Set the lower limit percentage of the current limit test
--format:
Setting format: [:SOURce]:CURRent:LIMit:LOWer:PERCent
Query format: [:SOURce]:CURRent:LIMit:LOWer:PERCent?
--Data<data>
Data type: Discrete
Data range: 1%~100%
Data accuracy: 1%
Data unit:
--Setup example:
If you want to set the current limit to judge the lower limit percentage
Then the input command is: CURR:LIM:LOW:PERC 50
--Query example:
If the input command is: CURR:LIM:LOW:PERC?
The returned content is: 50, indicating that the lower limit percentage of the current limit judgment is 50%.

9.4.15 [:SOURce]:CURRent:LIMit: REFerence

--Function: Set current limit test reference value
--format:
Setting format: [:SOURce]:CURRent:LIMit:REFerence

Query format: [:SOURce]:CURRent:LIMit: REFerence?
--Data<data>
Data type: Discrete
Data range: 0~inf
Data accuracy: Same as load current setting accuracy
Data unit: A (can be omitted)
--Setup example:
If you want to set the reference value of current limit judgment.
Then the input command is: CURR:LIM:REF 1.0000
--Query example:
If the input command is: CURR:LIM:REF?
Then the returned content is: 1, indicating that the current limit judgment reference value is 1.000A.

9.4.16 [:SOURce]:VOLTage:[LEVel]

--Function: Set the load voltage in CV mode
--format:
Setting format: [:SOURce]:VOLTage:[LEVel] <value>
Query format: [:SOURce]: VOLTage [:LEVel]?
--Data<data>
Data type: numeric
Data range: 0~105%* full scale value of current voltage range
Data accuracy: Refer to technical specifications
Data unit: V (can be omitted)
--Setup example:
If you want to set the load voltage in CV mode:
Then the input command is: VOLT 1.0000
--Query example:
If the input command is: VOLT?
The returned content is: 1.0000, indicating that the CV load voltage is 1.000V.

9.4.17 [:SOURce]:VOLTage:RANGe

--Function: Set voltage range
--format:
Setting format: [:SOURce]:VOLTage:RANGe {LOW |HIGH}
Query format: [:SOURce]:VOLTage:RANGe?
--Data<data>
Data type: Discrete
data range:
LOW ---low range
HIGH ---High volume
Data accuracy:
Data unit:

--Setup example:

If you want to set the voltage range

Then the input command is: VOLT:RANG LOW

--Query example:

If the input command is: VOLT:RANG?

The returned content is: LOW, indicating that the voltage range is low.

9.4.18 [:SOURce]:VOLTage:LIMit:STATe

--Function: Set the voltage limit test on

--format:

Setting format: [:SOURce]:VOLTage:LIMit:STAT {OFF|0|ON|1}

Query format: [:SOURce]: VOLTage:LIMit:STAT?

--Data<data>

Data type: Boolean

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to set the voltage limit judgment state is on

Then the input command is: VOLT:LIM:STAT ON

--Query example:

If the input command is: VOLT:LIM:STAT?

The returned content is: OFF/ON represents whether the voltage limit test is turned on.

9.4.19 [:SOURce]:VOLTage:LIMit:INOUT

--Function: Set voltage limit judgment range mode

--format:

Setting format: [:SOURce]:VOLTage:LIMit:INOUT {IN|OUT}

Query format: [:SOURce]:VOLTage:LIMit:INOUT?

--Data<data>

Data type: Discrete

Data range: IN ---interval

OUT ---outside

Data accuracy:

Data unit:

--Setup example:

If you want to set the voltage limit judgment interval type

Then the input command is: VOLT:LIM:INOUT IN

--Query example:

If the input command is: VOLT:LIM:INOUT?

The returned content is: 0, indicating that the interval type is within the interval.

9.4.20 [:SOURce]:VOLTage:LIMit:MODE

--Function: Set the voltage limit judgment mode
--format:
Setting format: [:SOURce]:VOLTage:LIMit:MODE {ABS|DEViation|PERCent}
Query format: [:SOURce]:VOLTage:LIMit:MODE?
--Data<data>
Data type: Discrete
data range:
ABS --- absolute value
DEViation ---deviation value
PERCent---Percent
Data accuracy:
Data unit:
--Setup example:
If you want to set the voltage limit judgment mode
Then the input command is: VOLT:LIM:MODE ABS
--Query example:
If the input command is: VOLT:LIM:MODE?
The returned content is: ABS, indicating that the limit judgment mode is an absolute value.

9.4.21 [:SOURce]:VOLTage:LIMit:UPPer[:ABS]

--Function: Set the upper limit of the voltage limit test
--format:
Setting format: [:SOURce]:VOLTage:LIMit:UPPer[:ABS]
Query format: [:SOURce]:VOLTage:LIMit:UPPer[:ABS]?
--Data<data>
Data type: Discrete
Data range: 0~inf
Data accuracy: Same setting accuracy as load voltage
Data unit: V (can be omitted)
--Setup example:
If you want to set the voltage limit to judge the absolute value of the upper limit
Then the input command is: VOLT:LIM:UPP 1.0000
--Query example:
If the input command is: VOLT:LIM:UPP?
The returned content is: 1.0000, indicating that the absolute value of the upper limit of the voltage limit judgment is 1.000V.

9.4.22 [:SOURce]:VOLTage:LIMit:UPPer:DEViation

--Function: Set voltage limit test deviation value

--format:

Setting format: [:SOURce]:VOLTage:LIMit:UPPer:DEViation

Query format: [:SOURce]:VOLTage:LIMit:UPPer:DEViation?

--Data<data>

Data type: Discrete

Data range: -inf~inf

Data accuracy: Same setting accuracy as load voltage

Data unit: V (can be omitted)

--Setup example:

If you want to set the voltage limit to judge the upper limit deviation value

Then the input command is: VOLT:LIM:UPP:DEV 1.0000

--Query example:

If the input command is: VOLT:LIM:UPP:DEV?

The returned content is: 1.0000, indicating that the upper limit deviation value of the voltage limit judgment is 1.000V.

9.4.23 [:SOURce]:VOLTage:LIMit:UPPer:PERCent

--Function: Set the voltage limit test deviation percentage

--format:

Setting format: [:SOURce]:VOLTage:LIMit:UPPer:PERCent

Query format: [:SOURce]:VOLTage:LIMit:UPPer:PERCent?

--Data<data>

Data type: Discrete

Data range: 1%~100%

Data accuracy: 1%

Data unit:

--Setup example:

If you want to set the voltage limit to judge the upper limit percentage

Then the input command is: VOLT:LIM:UPP:PERC 50

--Query example:

If the input command is: VOLT:LIM:UPP:PERC?

The returned content is: 50, indicating that the upper limit percentage of the voltage limit judgment is 50%.

9.4.24 [:SOURce]:VOLTage:LIMit:LOWer: [:ABS]

--Function: Set the absolute value of the upper and lower limits of the voltage limit test

--format:

Setting format: [:SOURce]:VOLTage:LIMit:LOWer[:ABS]

Query format: [:SOURce]:VOLTage:LIMit: LOWer [:ABS]?

--Data<data>

Data type: Discrete

Data range: 0~inf

Data accuracy: Same setting accuracy as load voltage

Data unit: V (can be omitted)

--Setup example:

If you want to set the voltage limit to judge the absolute value of the lower limit

Then the input command is: VOLT:LIM:LOW 1.0000

--Query example:

If the input command is: VOLT:LIM:LOW?

The returned content is: 1.0000, indicating that the absolute value of the lower limit of the voltage limit judgment is 1.000V.

9.4.25 [:SOURce]:VOLTage:LIMit:LOWer:DEViation

--Function: Set voltage limit test deviation value

--format:

Setting format: [:SOURce]:VOLTage:LIMit:LOWer:DEViation

Query format: [:SOURce]:VOLTage:LIMit:LOWer:DEViation?

--Data<data>

Data type: Discrete

Data range: -inf~inf

Data accuracy: Same setting accuracy as load voltage

Data unit: V (can be omitted)

--Setup example:

If you want to set the voltage limit to judge the lower limit deviation value

Then the input command is: VOLT:LIM:LOW:DEV 1.0000

--Query example:

If the input command is: VOLT:LIM:LOW:DEV?

The returned content is: 1.0000, indicating that the lower limit deviation of the voltage limit judgment is 1.000A.

9.4.26 [:SOURce]:VOLTage:LIMit:LOWer:PERCent

--Function: Set the percentage of the voltage limit test range

--format:

Setting format: [:SOURce]:VOLTage:LIMit:LOWer:PERCent

Query format: [:SOURce]:VOLTage:LIMit:LOWer:PERCent?

--Data<data>

Data type: Discrete

Data range: 1%~100%

Data accuracy: 1%

Data unit:

--Setup example:

If you want to set the voltage limit to judge the lower limit percentage

Then the input command is: VOLT:LIM:LOW:PERC 50

--Query example:

If the input command is: VOLT:LIM:LOW:PERC?
The returned content is: 50, indicating that the lower limit of the voltage limit judgment is 50%.

9.4.27 [:SOURce]:VOLTage:LIMit: REFerence

--Function: Set the reference value of voltage limit test and use it with deviation.
--format:
Setting format: [:SOURce]:VOLTage:LIMit:REFerence
Query format: [:SOURce]:VOLTage:LIMit: REFerence?
--Data<data>
Data type: Discrete
Data range: 0~inf
Data accuracy: Same setting accuracy as load voltage
Data unit: V (can be omitted)
--Setup example:
If you want to set the reference value of voltage limit judgment.
Then the input command is: VOLT:LIM:REF 1.0000
--Query example:
If the input command is: VOLT:LIM:REF?
Then the returned content is: 1, indicating that the voltage limit judgment reference value is 1.000V.

9.4.28 [:SOURce]: RESistance [:LEVel]

--Function: Set the pull resistance in CR mode
--format:
Setting format: [:SOURce]:RESistance [:LEVel] <value>
Query format: [:SOURce]: RESistance[:LEVel]?
--Data<data>
Data type: numeric
Data range: 0~105%* full scale value of current resistance range
Data accuracy: Refer to technical specifications
Data unit:
--Setup example:
If you want to set the load resistance in CR mode:
The input command is: RES 1.0000
--Query example:
If the input command is: RES?
The returned content is: 1.0000, indicating that the CR load resistance is 1.000Ω.

9.4.29 [:SOURce]:RESistance:RANGe

--Function: Set current range
--format:

Setting format: [:SOURce]:RESistance:RANGe {LOW|MIDdle|HIGH}
Query format: [:SOURce]:RESistance:RANGe?
--Data<data>
Data type: Discrete
data range:
LOW ---low range
MIDdle ---Mid range
HIGH ---High range
Data accuracy:
Data unit:
--Setup example:
If you want to set the current range
Then the input command is: RES:RANG LOW
--Query example:
If the input command is: RES:RANG?
The returned content is: LOW, indicating that the resistance range is low.

9.4.30 [:SOURce]: POWer [:LEVel]

--Function: Set the load power in CP mode
--format:
Setting format: [:SOURce]:POWer [:LEVel] <value>
Query format: [:SOURce]: POWer[:LEVel]?
--Data<data>
Data type: numeric
Data range: 0~105%* full scale value of current power range
Data accuracy: Refer to technical specifications
Data unit:
--Setup example:
If you want to set the load power in CP mode:
Then the input command is: POW 1.0000
--Query example:
If the input command is: POW?
The returned content is: 1.0000, indicating that the CP load resistance is 1.000W.

9.4.31 [:SOURce]:POWer:RANGe

--Function: Set the power range
--format:
Setting format: [:SOURce]:POWer:RANGe {LOW|MIDdle|HIGH}
Query format: [:SOURce]:POWer:RANGe?
--Data<data>
Data type: Discrete
data range:

LOW ---low range
MIDdle ---Mid range
HIGH ---High range
Data accuracy:
Data unit:
--Setup example:
If you want to set the current range
Then the input command is: POW:RANG LOW
--Query example:
If the input command is: POW:RANG?
Then the returned content is: LOW, indicating that the power range is low range.

9.4.32 [:SOURce]:POWer:LIMit:STATe

--Function: Set the power limit test on
--format:
Setting format: [:SOURce]:POWer:LIMit:STAT {OFF|0|ON|1}
Query format: [:SOURce]: POWer:LIMit:STAT?
--Data<data>
Data type: Boolean
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the power limit judgment state is on
Then the input command is: POW:LIM:STAT ON
--Query example:
If the input command is: POW:LIM:STAT?
Then the returned content is: OFF/ON represents whether the power limit test is turned on.

9.4.33 [:SOURce]:POWer:LIMit:INOUT

--Function: Set the power limit to judge the qualified range mode
--format:
Setting format: [:SOURce]:POWer:LIMit:INOUT {IN|OUT}
Query format: [:SOURce]:POWer:LIMit:INOUT?
--Data<data>
Data type: Discrete
Data range: IN ---interval
OUT ---outside
Data accuracy:
Data unit:
--Setup example:
If you want to set the power limit judgment interval type

Then the input command is: POW:LIM:INOUT IN

--Query example:

If the input command is: POW:LIM:INOUT?

The returned content is: 0, indicating that the interval type is within the interval.

9.4.34 [:SOURce]:POWer:LIMit:MODE

--Function: Set the power limit judgment mode

--format:

Setting format: [:SOURce]:POWer:LIMit:MODE {ABS|DEViation|PERCent}

Query format: [:SOURce]:POWer:LIMit:MODE?

--Data<data>

Data type: Discrete

data range:

ABS --- absolute value

DEViation ---deviation value

PERCent---Percent

Data accuracy:

Data unit:

--Setup example:

If you want to set the power limit judgment mode

Then the input command is: POW:LIM:MODE ABS

--Query example:

If the input command is: POW:LIM:MODE?

The returned content is: ABS, indicating that the limit judgment mode is an absolute value.

9.4.35 [:SOURce]:POWer:LIMit:UPPer[:ABS]

--Function: Set the upper limit of the power limit test

--format:

Setting format: [:SOURce]:POW:LIMit:UPPer[:ABS]

Query format: [:SOURce]:POW:LIMit:UPPer[:ABS]?

--Data<data>

Data type: Discrete

Data range: 0~inf

Data accuracy: Same as load setting accuracy

Data unit: W (can be omitted)

--Setup example:

If you want to set the power limit to judge the absolute value of the upper limit

Then the input command is: POW:LIM:UPP 1.0000

--Query example:

If the input command is: POW:LIM:UPP?

The returned content is: 1.0000, indicating that the absolute value of the upper limit of the power limit judgment is 1.0000W.

9.4.36 [:SOURce]:POWer:LIMit:UPPer:DEViation

--Function: Set the power limit test deviation value
--format:
Setting format: [:SOURce]:POWer:LIMit:UPPer:DEViation
Query format: [:SOURce]:POWer:LIMit:UPPer:DEViation?
--Data<data>
Data type: Discrete
Data range: -inf~inf
Data accuracy: Same as load setting accuracy
Data unit: W (can be omitted)
--Setup example:
If you want to set the power limit to judge the upper limit deviation value
Then the input command is: POW:LIM:UPP:DEV 1.0000
--Query example:
If the input command is: POW:LIM:UPP:DEV?
The returned content is: 1.0000, indicating that the upper limit deviation value of the power limit judgment is 1.000W.

9.4.37 [:SOURce]:POWer:LIMit:UPPer:PERCent

--Function: Set the deviation percentage of the power limit test
--format:
Setting format: [:SOURce]:POWer:LIMit:UPPer:PERCent
Query format: [:SOURce]:POWer:LIMit:UPPer:PERCent?
--Data<data>
Data type: Discrete
Data range: 1%~100%
Data accuracy: 1%
Data unit:
--Setup example:
If you want to set the power limit to judge the upper limit percentage
Then the input command is: POW:LIM:UPP:PERC 50
--Query example:
If the input command is: POW:LIM:UPP:PERC?
Then the returned content is: 50, indicating that the upper limit percentage of power limit judgment is 50%.

9.4.38 [:SOURce]:POWer:LIMit:LOWer: [:ABS]

--Function: Set the upper and lower percentage of power limit test
--format:
Setting format: [:SOURce]:POWer:LIMit:LOWer[:ABS]

Query format: [:SOURce]:POWer:LIMit: LOWer [:ABS]?
--Data<data>
Data type: Discrete
Data range: 0~inf
Data accuracy: Same as load setting accuracy
Data unit: W (can be omitted)
--Setup example:
If you want to set the power limit to judge the absolute value of the lower limit
Then the input command is: POW:LIM:LOW 1.0000
--Query example:
If the input command is: POW:LIM:LOW?
The returned content is: 1.0000, indicating that the absolute value of the lower limit of the power limit judgment is 1.0000W.

9.4.39 [:SOURce]:POWer:LIMit:LOWer:DEViation

--Function: Set the power limit test deviation value
--format:
Setting format: [:SOURce]:POWer:LIMit:LOWer:DEViation
Query format: [:SOURce]:POWer:LIMit:LOWer:DEViation?
--Data<data>
Data type: Discrete
Data range: -inf~inf
Data accuracy: Same as load setting accuracy
Data unit: W (can be omitted)
--Setup example:
If you want to set the power limit to judge the lower limit deviation value
Then the input command is: POW:LIM:LOW:DEV 1.0000
--Query example:
If the input command is: POW:LIM:LOW:DEV?
The returned content is: 1.0000, indicating that the lower limit deviation value of the power limit judgment is 1.0000W.

9.4.40 [:SOURce]:POWer:LIMit:LOWer:PERCent

--Function: Set the percentage of the power limit test range
--format:
Setting format: [:SOURce]:POWer:LIMit:LOWer:PERCent
Query format: [:SOURce]:POWer:LIMit:LOWer:PERCent?
--Data<data>
Data type: Discrete
Data range: 1%~100%
Data accuracy: 1%
Data unit:

--Setup example:

If you want to set the power limit to judge the lower limit percentage

Then the input command is: POW:LIM:LOW:PERC 50

--Query example:

If the input command is: POW:LIM:LOW:PERC?

Then the returned content is: 50, indicating that the lower limit percentage of power limit judgment is 50%.

9.4.41 [:SOURce]:POWer:LIMit: REFerence

--Function: Set the reference value of power limit test and use it with deviation.

--format:

Setting format: [:SOURce]:POWer:LIMit:REFerence

Query format: [:SOURce]:POWer:LIMit: REFerence?

--Data<data>

Data type: Discrete

Data range: 0~inf

Data accuracy: Same as load setting accuracy

Data unit: W (can be omitted)

--Setup example:

If you want to set a reference value for power limit judgment.

Then the input command is: POW:LIM:REF 1.0000

--Query example:

If the input command is: POW:LIM:REF?

The returned content is: 1, indicating that the power limit judgment reference value is 1.000W.

9.5 CONFigure Subsystem Commands

9.5.1 :CONFigure:VON:LEVel

--Function: Set the load voltage.

--format:

Setting format: :CONFigure:VON:LEVel

Query format: :CONFigure:VON:LEVel?

--Data<data>

Data type: Discrete

Data range: 0~inf

Data accuracy: Same setting accuracy as load voltage

Data unit: V (can be omitted)

--Setup example:

If you want to set the load voltage value.

Then the input command is: CONF:VON:LEV 1.0000

--Query example:

If the input command is: CONF:VON:LEV?
Then the returned content is: 1 means that the load will start when the voltage exceeds 1V

9.5.2 :CONFigure:VON:MODE

--Function: Set the load voltage working mode.
--format:
Setting format: :CONFigure:VON:MODE {LIVing|LATch}
Query format: :CONFigure:VON:MODE?
--Data<data>
Data type: Boolean
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the load voltage working mode.
Then the input command is: :CONF:VON:MODE LIVing
--Query example:
If the input command is: :CONF:VON:MODE?
Then the returned content is: 0 means the working mode is follow

9.5.3 :CONFigure:VOFF: LEVel

--Function: Set the unload voltage.
--format:
Setting format: :CONFigure:VOFF: LEVel
Query format: :CONFigure:VOFF:LEVel?
--Data<data>
Data type: Discrete
Data range: 0~inf
Data accuracy: Same setting accuracy as load voltage
Data unit: V (can be omitted)
--Setup example:
If you want to set the uninstall work mode.
Then the input command is: :CONF:VOFF:LEVel 1
--Query example:
If the input command is: :CONF:VOFF:LEVel?
Then the returned content is: 1 means in the latch mode, unload below 1V

9.5.4 :CONFigure:PRESet

--Function: Call the prefabricated state file.
--format:

Setting format: :CONFigure:PRESet

--Data<data>

Data type: Discrete

Data range: 0~5

Data accuracy:

Data unit:

--Setup example:

If you want to call the first prefabricated state.

Then the input command is: :CONF:PRES 1

9.5.5 :CONFigure:PROTect:CURRent:STATe

--Function: Set the overcurrent protection status.

--format:

Setting format: :CONFigure:PROTect:CURRent:STATe {ON/OFF}

Query format: :CONFigure:PROTect:CURRent:STATe?

--Data<data>

Data type: Boolean

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to set the overcurrent protection on.

Then the input command is: :CONFigure:PROTect:CURRent:STATe ON

--Query example:

If the input command is: :CONFigure:PROTect:CURRent:STATe?

Then the returned content is: ON means that overcurrent protection is turned on

9.5.6 :CONFigure:PROTect:CURRent:LEVel

--Function: Set the maximum protection current.

--format:

Setting format: :CONFigure:PROTect:CURRent:LEVel {value}

Query format: :CONFigure:PROTect:CURRent:LEVel?

--Data<data>

Data type: Discrete

Data range: 0~inf

Data accuracy: Same as load current setting accuracy

Data unit: A (can be omitted)

--Setup example:

If you want to set the maximum protection current to 10A.

Then the input command is: :CONFigure:PROTect:CURRent:LEVel 10

--Query example:

If the input command is: :CONFigure:PROTect:CURRent:LEVel?

Then the returned content is: 10 means self-protection at 10A

9.5.7 :CONFigure:PROTect:CURRent:ACTion

--Function: Set the protection action.
--format:
Setting format: :CONFigure:PROTect:CURRent:ACTion {LIMit|OFF}
Query format: :CONFigure:PROTect:CURRent:ACTion?
--Data<data>
Data type: Boolean
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the protection action to turn off the electronic load.
Then the input command is: :CONFigure:PROTect:CURRent:ACTion OFF
--Query example:
If the input command is: :CONFigure:PROTect:CURRent:ACTion?
Then the returned content is: 0 means turn off the electronic load when the maximum current is exceeded.

9.5.8 :CONFigure:PROTect:VOLTage:STATe

--Function: Set the overvoltage protection status.
--format:
Setting format: :CONFigure:PROTect:VOLTage:STATe {ON/OFF}
Query format: :CONFigure:PROTect:VOLTage:STATe?
--Data<data>
Data type: Boolean
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the overvoltage protection on.
Then the input command is: :CONF:PROT:VOLT:STAT ON
--Query example:
If the input command is: :CONF:PROT:VOLT:STAT?
Then the returned content is: ON means that overvoltage protection is turned on

9.5.9 :CONFigure:PROTect:VOLTage:LEVel

--Function: Set the maximum protection voltage.
--format:

Setting format: :CONFigure:PROTect:VOLTage:LEVel {value}
Query format: :CONFigure:PROTect:VOLTage:LEVel?
--Data<data>
Data type: Discrete
Data range: 0~inf
Data accuracy: Same setting accuracy as load voltage
Data unit: V (can be omitted)
--Setup example:
If you want to set the maximum protection voltage to 10V.
The input command is: :CONF:PROT:VOLT:LEV 10
--Query example:
If the input command is: :CONF:PROT:VOLT:LEV?
Then the returned content is: 10 means self-protection at 10V

9.5.10 :CONFigure:PROTect:POWer:STATe

--Function: Set over-power protection status.
--format:
Setting format: :CONFigure:PROTect:POWer:STATe {ON/OFF}
Query format: :CONFigure:PROTect:POWer:STATe?
--Data<data>
Data type: Boolean
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set over power protection on.
Then the input command is: :CONF:PROT:POW:STAT ON
--Query example:
If the input command is: :CONF:PROT:POW:STAT?
Then the returned content is: ON means that overpower protection is turned on

9.5.11 :CONFigure:PROTect:POWer:LEVel

--Function: Set the maximum protection power.
--format:
Setting format: :CONFigure:PROTect:POWer:LEVel {value}
Query format: :CONFigure:PROTect:POWer:LEVel?
--Data<data>
Data type: Discrete
Data range: 0~inf
Data accuracy: the same as the setting accuracy of the load electric power
Data unit: W (can be omitted)
--Setup example:

If you want to set the maximum protection power to 10W.

Then the input command is: :CONF:PROT:POW:LEV 10

--Query example:

If the input command is: :CONF:PROT:POW:LEV?

Then the returned content is: 10 means self-protection at 10W

9.5.12 :CONFigure:PROTect:POWer:ACTion

--Function: Set the protection action.

--format:

Setting format: :CONFigure:PROTect:POWer:ACTion {LIMit|OFF}

Query format: :CONFigure:PROTect:POWer:ACTion?

--Data<data>

Data type: Boolean

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to set the protection action to turn off the electronic load.

Then the input command is: :CONF:PROT:POW:ACT OFF

--Query example:

If the input command is: :CONF:PROT:POW:ACT?

Then the returned content is: 0 means turn off the electronic load when the maximum power is exceeded.

9.5.13 :CONFigure:FUNCtion:STARt

--Function: Set the maximum protection power.

--format:

Setting format: :CONFigure:FUNCtion:STARt {value}

Query format: :CONFigure:FUNCtion:STARt?

--Data<data>

Data type: Discrete

Data range: 0~0.5

Data accuracy:

Data unit: s

--Setup example:

If you want to set the soft start time to 500ms.

Then the input command is: :CONF:FUNC:STAR 0.5

--Query example:

If the input command is: :CONF:FUNC:STAR?

Then the returned content is: 0.5 means that the soft start time is 500ms

9.5.14 :CONFigure:FUNCtion:TRIGger

--Function: Set the maximum protection power.
--format:
Setting format: :CONFigure:FUNCtion:TRIGger {MANUal|EXTernal|BUS}
Query format: :CONFigure:FUNCtion:TRIGger?
--Data<data>
Data type: enumeration
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the bus trigger.
The input command is: :CONF:FUNC:TRIG BUS
--Query example:
If the input command is: :CONF:FUNC:TRIG?
Then the returned content is: 2 means the trigger form is bus

9.5.15 :CONFigure:TIMer:COUNT

--Function: Set the on-load timing switch.
--format:
Setting format: :CONFigure:TIMer:COUNT {0|1}
Query format: :CONFigure:TIMer:COUNT?
--Data<data>
Data type: Boolean
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the load timer to open.
Then the input command is: :CONFigure:TIMer:COUNT 1
--Query example:
If the input command is: :CONFigure:TIMer:COUNT?
Then the returned content is: 1 means that the load timer is turned on

9.5.16 :CONFigure:TIMer:CUT:STATe

--Function: Set the timer unload switch.
--format:
Setting format: :CONFigure:TIMer:CUT:STATe {0|1}
Query format: :CONFigure:TIMer:CUT:STATe?
--Data<data>

Data type: Boolean
data range:
Data accuracy:
Data unit:

--Setup example:

If you want to set the timer unload switch to turn on.
Then the input command is: :CONF:TIM:CUT:STAT 1

--Query example:

If the input command is: :CONF:TIM:CUT:STAT?
Then the returned content is: 1 Timed unload switch is turned on

9.5.17 :CONFigure:TIMer:CUT:LEVel

--Function: Set the scheduled unload time.

--format:

Setting format: :CONFigure:TIMer:CUT:LEVel {value}
Query format: :CONFigure:TIMer:CUT:LEVel?

--Data<data>

Data type: Discrete
Data range: 1~86399
Data accuracy: 1
Data unit: s (can be omitted)

--Setup example:

If you want to set the scheduled uninstall time 10s.
Then the input command is: :CONF:TIM:CUT:LEV 10

--Query example:

If the input command is: :CONF:TIM:CUT:LEV?
The returned content is: 00:00:10 Uninstall after 10s

9.5.18 :CONFigure:DISPlay:TYPE

--Function: Set the interface mode.

--format:

Setting format: :CONFigure:DISPlay:TYPE {NUMber|DIGitize}
Query format: :CONFigure:DISPlay:TYPE?

--Data<data>

Data type: enumeration
data range:
Data accuracy:
Data unit:

--Setup example:

If you want to set the interface is a digital display.
Then the input command is: :CONF:DISP:TYPE NUM

--Query example:

If the input command is: :CONF:DISP:TYPE?
Then the returned content is: 0 means numeric display

9.5.19 :CONFigure:DISPlay:SECond

--Function: Set the second display.
--format:
Setting format: :CONFigure:DISPlay:SECond {PROTect|PEAK|DEViation}
Query format: :CONFigure:DISPlay: SECond?
--Data<data>
Data type: enumeration
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the second display as protection.
Then the input command is: :CONF:DISP:SEC PROT
--Query example:
If the input command is: :CONF:DISP:SEC?
Then the returned content is: 0 means the second display is the protection value

9.5.20 :CONFigure:DISPlay:INTerval

--Function: Set the display refresh time.
--format:
Setting format: :CONFigure:DISPlay:INTerval {value}
Query format: :CONFigure:DISPlay:INTerval?
--Data<data>
Data type: Discrete
Data range: 0.1~1
Data accuracy: 0.1
Data unit: s (can be omitted)
--Setup example:
If you want to set the setting refresh time is 1s.
Then the input command is: :CONF:DISP:INT 1
--Query example:
If the input command is: :CONF:DISP:INT?
The returned content is: 1 The display is refreshed once every 1s.

9.5.21 :CONFigure:DISPlay:PLOT:TYPe

--Function: Set the XY coordinate axis properties of the graph.
--format:

Setting format: :CONFigure:DISPlay:PLOT:TYPe {0|1|2|3}
Query format: :CONFigure:DISPlay:PLOT:TYPe?
--Data<data>
Data type: enumeration
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the curve type V-T.
Then the input command is: :CONF:DISP:PLOT:TYP 0
--Query example:
If the input command is: :CONF:DISP:PLOT:TYP?
Then the returned content is: 0 indicates the curve type V-T

9.5.22 :CONFigure:DISPlay:PLOT:RATe

--Function: Set the sampling rate.
--format:
Setting format: :CONFigure:DISPlay:PLOT:RATe {value}
Query format: :CONFigure:DISPlay:PLOT:RATe?
--Data<data>
Data type: Discrete
Data range: 100~99.99k
Data accuracy: 0.1
Data unit:
--Setup example:
If you want to set the sampling rate to 100HZ.
Then the input command is: :CONF:DISP:PLOT:RAT 100
--Query example:
If the input command is: :CONF:DISP:PLOT:RAT?
Then the returned content is: 100 means that the sampling rate is 100HZ

9.5.23 :CONFigure:DISPlay:PLOT:POINts

--Function: Set the number of mining points.
--format:
Setting format: :CONFigure:DISPlay:PLOT:POINts {value}
Query format: :CONFigure:DISPlay:PLOT: POINts?
--Data<data>
Data type: Discrete
Data range: 2~1000
Data accuracy: 1
Data unit:
--Setup example:

If you want to set the number of mining points 100.

Then the input command is: :CONF:DISP:PLOT:POIN 100

--Query example:

If the input command is: :CONF:DISP:PLOT:POIN?

Then the returned content is: 100 means the number of mining points is 100

9.5.24 :CONFigure:DISPlay:PLOT:FORmat

--Function: Set the coordinate mode.

--format:

Setting format: :CONFigure:DISPlay:PLOT:FORmat {LOGarithmic|LINear}

Query format: :CONFigure:DISPlay:PLOT: FORmat?

--Data<data>

Data type: enumeration

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to set the coordinate mode to linear.

Then the input command is: :CONF:DISP:PLOT:FOR LIN

--Query example:

If the input command is: :CONF:DISP:PLOT:FOR?

Then the returned content is: 0 means linear

9.5.25 :CONFigure:DISPlay:PLOT:STARt

--Function: Start drawing.

--format:

Setting format: :CONFigure:DISPlay:PLOT:STARt

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

If you start drawing.

Then the input command is: :CONF:DISP:PLOT:START

9.5.26 :CONFigure:DISPlay:PLOT:STOP

--Function: End drawing.

--format:

Setting format: :CONFigure:DISPlay:PLOT:STOP

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

If you finish drawing.

Then the input command is: :CONF:DISP:PLOT:STOP

9.6 MEASure Subsystem Commands

9.6.1 :MEASure:VOLTage:AVERage

--Function: Return the average value of 1000 test voltages.

--format:

Query format: :MEASure:VOLTage:AVERage?

--Query example:

Then the input command is: :MEAS:VOLT:AVER?

The returned content is: 0.0339925, that is, the average voltage of 1000 times is 0.0339925V

9.6.2 :MEASure:VOLTage:MAXimum

--Function: return to peak value when the second function is peak-to-peak value and the peak value is turned on.

--format:

Query format: :MEASure:VOLTage:MAXimum?

--Query example:

Then the input command is: :MEAS:VOLT:MAX?

The returned content is: 0.0729572, that is, the maximum value is 0.0729572V

9.6.3 :MEASure:VOLTage:MINimum

--Function: return to peak value when the second function is peak-to-peak value and the peak value is turned on.

--format:

Query format: :MEASure:VOLTage:MINimum?

--Query example:

Then the input command is: :MEAS:VOLT:MIN?

The returned content is: 0. That is, the minimum value is 0 V

9.6.4 :MEASure:CURRent:AVERage

--Function: return the average value of 1000 times test current.
--format:
Query format: :MEASure:CURRent:AVERage?
--Query example:

Then the input command is: :MEAS:CURR:AVER?
The returned content is: 0.0339925, that is, the average current of 1000 times is 0.0339925A

9.6.5 :MEASure:CURRent:MAXimum

--Function: return to peak value when the second function is peak-to-peak value and the peak value is turned on.
--format:
Query format: :MEASure:CURRent:MAXimum?
--Query example:

Then the input command is: :MEAS:CURR:MAX?
The returned content is: 0.0729572, the maximum value is 0.0729572A

9.6.6 :MEASure:CURRent:MINimum

--Function: return to peak value when the second function is peak-to-peak value and the peak value is turned on.
--format:
Query format: :MEASure:CURRent:MINimum?
--Query example:

Then the input command is: :MEAS:CURR:MIN?
The returned content is: 0. That is, the minimum value is 0 A

9.6.7 :MEASure:POWer:AVERage

--Function: Return the average value of 1000 times test power.
--format:
Query format: :MEASure:POWer:AVERage?
--Query example:

Then the input command is: :MEAS:POW:AVER?
The returned content is: 0.0339925, that is, the average power of 1000 times is 0.0339925W

9.6.8 :MEASure:POWer:MAXimum

--Function: return to peak value when the second function is peak-to-peak value and the peak value is turned on.
--format:
Query format: :MEASure:POWer:MAXimum?
--Query example:

Then the input command is: :MEAS:POW:MAX?
The returned content is: 0.0729572, the maximum value is 0.0729572W

9.6.9 : MEASure:POWer:MINimum

--Function: return to peak value when the second function is peak-to-peak value and the peak value is turned on.
--format:
Query format: :MEASure:POWer:MINimum?
--Query example:

Then the input command is: :MEAS:POW:MIN?
The returned content is: 0. That is, the minimum value is 0 W

9.7 PEAK Subsystem Commands

9.7.1 :PEAK:STARt

--Function: Set the peak state.
--format:
Setting format: :PEAK:STATe
Query format: :PEAK:STATe?
--Data<data>
Data type: Boolean
data range:
Data accuracy:
Data unit:
--Setup example:
If the peak state is set to open.
Then the input command is: :PEAK:STAT ON
--Query example:
Then the input command is: :PEAK:STAT?
The returned content is: 0, which means that the peak state is off.

9.7.2 :PEAK:CLEar

--Function: Clear peak record.
--format:
Setting format: :PEAK:CLEar
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
If you reset the peak record.
Then the input command is: :PEAK:CLE

9.7.3 :PEAK:VOLTage:MAXimum

--Function: When the second function is peak-to-peak and the peak state is turned on, the voltage peak value is returned.
--format:
Query format: :PEAK:VOLTage:MAXimum?
--Query example:

Then the input command is: :PEAK:VOLT:MAX?
The returned content is: 0.0729572, that is, the maximum value is 0.0729572V

9.7.4 :PEAK:VOLTage:MINimum

--Function: When the second function is peak-to-peak and the peak state is turned on, the voltage valley value is returned.
--format:
Query format: :PEAK:VOLTage:MINimum?
--Query example:

Then the input command is: :PEAK:VOLT:MIN?
The returned content is: 0.3202255, that is, the minimum value is 0.3202255V

9.7.5 :PEAK:CURRent:MAXimum

--Function: When the second function is peak-to-peak and the peak state is turned on, the current peak value is returned.
--format:
Query format: :PEAK:CURRent:MAXimum?
--Query example:

Then the input command is: :PEAK:CURR:MAX?
The returned content is: 0.0729572, the maximum value is 0.0729572A

9.7.6 :PEAK:CURRent:MINimum

--Function: When the second function is peak-to-peak and the peak state is turned on, the current valley value is returned.
--format:
Query format: :PEAK:CURRent:MINimum?
--Query example:

Then the input command is: :PEAK:CURR:MIN?
The returned content is: 0.3202255, the minimum value is 0.3202255A

9.7.7 :PEAK:POWer:MAXimum

--Function: return to peak power when the second function is peak-to-peak and the peak state is turned on.
--format:
Query format: :PEAK:POWer:MAXimum?
--Query example:

Then the input command is: :PEAK:POW:MAX?
The returned content is: 0.0729572, the maximum value is 0.0729572W

9.7.8 :PEAK:POWer:MINimum

--Function: When the second function is peak-to-peak and the peak state is turned on, the power bottom value is returned.
--format:
Query format: :PEAK:POWer:MINimum?
--Query example:

Then the input command is: :PEAK:POW:MIN?
The returned content is: 0.3202255, that is, the minimum value is 0.3202255W

9.8 ADVance Subsystem Commands

9.8.1 :ADVance:MODE

--Function: Select advanced features.

--format:

Format:

:ADVance:MODE{ LED|BATTery|DYNamic|SWEEp|TIMing|OCPT|OVPT|OPPT|EFFECt|MPPT|LIST|WAVE|AUTO|ARB|CIRCuit}

Query format: :ADVance:MODE?

--Data<data>

Data type: enumeration

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to choose advanced function LED.

The input command is: :ADV:MODE LED

--Query example:

If the input command is: :ADC:MODE?

Then the returned content is: 0 means that the advanced function LED is selected

9.8.2 ADVance:LED:RESistance

--Function: Set the pull resistance in CR-LED mode

--format:

Setting format: ADVance:LED:RESistance <value>

Query format: ADVance:LED:RESistance?

--Data<data>

Data type: numeric

Data range: 0~105%* full scale value of current resistance range

Data accuracy: Refer to technical specifications

Data unit:

--Setup example:

If you want to set the load resistance in CR-LED mode:

Then the input command is: ADV:LED:RES 1.0000

--Query example:

If the input command is: ADV:LED:RES?

The returned content is: 1.0000, indicating that the CR-LED pull-up resistance is 1.0000Ω

9.8.3 ADVance:LED:VOLTage

--Function: Set the on-voltage in CR-LED mode

--format:

Setting format: ADVance:LED:VOLTage <value>

Query format: ADVance:LED: VOLTage?

--Data<data>

Data type: numeric

Data range: 0~105%* full scale value of current voltage range

Data accuracy: Refer to technical specifications

Data unit:

--Setup example:

If you want to set the turn-on voltage in CR-LED mode:

Then the input command is: ADV:LED:VOLT 1.0000

--Query example:

If the input command is: ADV:LED:VOLT?

The returned content is: 1.0000, indicating that the CR-LED on-voltage is 1.000V

9.8.4 :ADVance:BATTery:MODE

--Function: Select the battery test mode.

--format:

Setting format: :ADVance:BATTery:MODE{ CC|CR|CP}

Query format: :ADVance:BATTery:MODE?

--Data<data>

Data type: enumeration

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to select the battery test in CC mode.

Then the input command is: :ADV:BATT:MODE CC

--Query example:

If the input command is: :ADV:BATT:MODE?

Then the returned content is: CC indicates that the battery test is in CC mode

9.8.5 ADVance:BATTery:CURRent

--Function: Set the current when the battery test mode is CC

--format:

Setting format: ADVance:BATTery:CURRent <value>

Query format: ADVance:BATTery: CURRent?

--Data<data>

Data type: numeric

Data range: 0~105%* full-scale value of current range

Data accuracy: Refer to technical specifications

Data unit:

--Setup example:

If you want to set the battery test mode to CC when the current is 200mA:

Then the input command is: ADV:BATT:CURR 0.2

--Query example:

If the input command is: ADV:BATT:CURR?

The returned content is: 0.2, indicating that the current is 200mA when the battery test mode is CC.

9.8.6 ADVance:BATTery:RESistance

--Function: Set the resistance when the battery test mode is CR
--format:
Setting format: ADVance:BATTery:RESistance <value>
Query format: ADVance:BATTery:RESistance?
--Data<data>
Data type: numeric
Data range: (0.001%*~105%*) full scale value of current resistance range
Data accuracy: Refer to technical specifications
Data unit:
--Setup example:
If you want to set the battery test mode to CR when the resistance is 1Ω:
Then the input command is: ADV:BATT:RES 1
--Query example:
If the input command is: ADV:BATT:RES?
The returned content is: 1, indicating that the resistance is set to 1Ω when the battery test mode is CR.

9.8.7 ADVance:BATTery:POWer

--Function: Set the power when the battery test mode is CP
--format:
Setting format: ADVance:BATTery:POWer <value>
Query format: ADVance:BATTery:POWer?
--Data<data>
Data type: numeric
Data range: 0~183.75W
Data accuracy: Refer to technical specifications
Data unit:
--Setup example:
If you want to set the battery test mode to CP when the power is 1W:
Then the input command is: ADV:BATT:POW 1
--Query example:
If the input command is: ADV:BATT:POW?
The returned content is: 1, indicating that the power is set to 1W when the battery test mode is CP.

9.8.8 :ADVance:BATTery:CONdition

--Function: Select the stop condition for battery test.
--format:
Setting format: :ADVance:BATTery:CONdition{ VOLTage|TIMe|CAPacity|ENErgy}
Query format: :ADVance:BATTery: CONdition?

--Data<data>

Data type: enumeration

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to select the battery test stop condition is voltage.

Then the input command is: :ADV:BATT:CON VOLT

--Query example:

If the input command is: :ADV:BATT:CON?

The returned content is: 0 indicates that the battery test stop condition is voltage.

9.8.9 ADVance:BATTery:STOP

--Function: Set the battery test stop threshold

--format:

Setting format: ADVance:BATTery:STOP <value>

Query format: ADVance:BATTery:STOP?

--Data<data>

Data type: numeric

data range:

Data accuracy: Refer to technical specifications

Data unit:

--Setup example:

If you want to set the battery test stop threshold 1:

Then the input command is: ADV:BATT:STOP 1

--Query example:

If the input command is: ADV:BATT:STOP?

The returned content is: 1, indicating that the battery test stop threshold is 1.

9.8.10 :ADVance:BATTery:R?

--Function: return to test Rs.

--format:

Query format: :ADVance:BATTery:R?

--Query example:

Then the input command is: :ADV:BATT:R?

The returned content is: 0.3202255, indicating that the measured Rs is 0.3202255

9.8.11 :ADVance:BATTery:C?

--Function: return to test Cap.

--format:

Query format: :ADVance:BATTery:C?

--Query example:

Then the input command is: :ADV:BATT:C?

The returned content is: 0.3202255, indicating that the measured Cap is 0.3202255

9.8.12 :ADVance:BATTery:E?

--Function: return to test Energy.

--format:

Query format: :ADVance:BATTery:E?

--Query example:

Then the input command is: :ADV:BATT:E?

The returned content is: 0.3202255, indicating that the measured Energy is 0.3202255

9.8.13 : ADVance: DYNamic: TYPe

--Function: Select the dynamic type of dynamic test.

--format:

Setting format: :ADVance:DYNamic:TYPe{ CONTinues|PULSe|TOGgle}

Query format: :ADVance:DYNamic: TYPe?

--Data<data>

Data type: enumeration

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to select the dynamic test dynamic type is continuous.

Then the input command is: :ADV:DYN:TYP CONT

--Query example:

If the input command is: :ADV:DYN:TYP?

The returned content is: 0 means that the dynamic mode of the dynamic test is continuous.

9.8.14 ADVance:DYNamic:LEVel

--Function: Set dynamic test settings

--format:

Setting format: ADVance:DYNamic:LEVel <A|B,value>

Query format: ADVance:DYNamic: LEVel?

--Data<data>

Data type: numeric

data range:

Data accuracy: Refer to technical specifications

Data unit:

--Setup example:

If you want to set the dynamic test A set value 1:

The input command is: ADV:DYN:LEV A,1;

--Query example:

If the input command is: ADV:DYN:LEV?

The returned content is: 1, indicating that dynamic test A is set to 1.

9.8.15 ADVance:DYNamic:WIDth

--Function: Set dynamic test settings

--format:

Setting format: ADVance:DYNamic:WIDth <A|B,value>

Query format: ADVance:DYNamic: WIDth?

--Data<data>

Data type: numeric

data range:

Data accuracy: Refer to technical specifications

Data unit:

--Setup example:

If you want to set the dynamic test A pulse width value 1:

The input command is: ADV:DYN:WID A,1;

--Query example:

If the input command is: ADV:DYN:WID?

The returned content is: 1, indicating that dynamic test A is set to 1.

9.8.16 ADVance:DYNamic:REPeat

--Function: Set the number of dynamic test repetitions

--format:

Setting format: ADVance:DYNamic:REPeat <value>

Query format: ADVance:DYNamic: REPeat?

--Data<data>

Data type: numeric

Data range: 0-65536

Data accuracy: Refer to technical specifications

Data unit:

--Setup example:

If you want to set the dynamic test repeat times to 10:

The input command is: ADV:DYN:REP 10;

--Query example:

If the input command is: ADV:DYN:REP?

The returned content is: 10, indicating that the number of dynamic test repetitions is 10.

9.8.17 ADVance:SWEEp:CURRent:MAXinmum

--Function: Set the maximum current for scanning test
--format:
Setting format: ADVance:SWEEp:CURRent:MAXinmum <value>
Query format: ADVance:SWEEp:CURRent:MAXinmum?
--Data<data>
Data type: numeric
Data range: 0~105%*Maximum current range
Data accuracy: Refer to technical specifications
Data unit:
--Setup example:
If you want to set the maximum current to 100mA:
Then the input command is: ADV:SWEE:CURR:MAX 0.1;
--Query example:
If the input command is: ADV:SWEE:CURR:MAX?
The returned content is: 0.1, which means that the maximum scanning current is 100mA.

9.8.18 ADVance:SWEEp:CURRent:MINinmum

--Function: Set the scan test minimum current
--format:
Setting format: ADVance:SWEEp:CURRent:MINinmum <value>
Query format: ADVance:SWEEp:CURRent:MINinmum?
--Data<data>
Data type: numeric
Data range: 0~105%*Maximum current range
Data accuracy: Refer to technical specifications
Data unit:
--Setup example:
If you want to set the minimum current to 100mA:
The input command is: ADV:SWEE:CURR:MIN 0.1;
--Query example:
If the input command is: ADV:SWEE:CURR:MIN?
The returned content is: 0.1, which means that the minimum scanning current is 100mA.

9.8.19 ADVance:SWEEp:FREQuency:STARt

--Function: Set the frequency of scanning test starting point
--format:
Setting format: ADVance:SWEEp:FREQuency:STARt <value>

Query format: ADVance:SWEEp:FREQuency:STARt?
--Data<data>
Data type: numeric
Data range: 0~50K
Data accuracy: Refer to technical specifications
Data unit:
--Setup example:
If you want to set the starting frequency 10HZ:
The input command is: ADV:SWEE:FREQ:STAR 10;
--Query example:
If the input command is: ADV:SWEE:FREQ:STAR?
Then the returned content is: 10, indicating that the frequency of the scanning start point is 10HZ.

9.8.20 ADVance:SWEEp:FREQuency:END

--Function: Set the frequency of scanning test termination point
--format:
Setting format: ADVance:SWEEp:FREQuency:END <value>
Query format: ADVance:SWEEp:FREQuency:END?
--Data<data>
Data type: numeric
Data range: 0~50K
Data accuracy: Refer to technical specifications
Data unit:
--Setup example:
If you want to set the end point frequency 10HZ:
The input command is: ADV:SWEE:FREQ:END 10;
--Query example:
If the input command is: ADV:SWEE:FREQ:END?
Then the returned content is: 10, indicating that the frequency of the scanning end point is 10HZ.

9.8.21 ADVance:SWEEp:FREQuency:POINt

--Function: Set the number of scanning test points
--format:
Setting format: ADVance:SWEEp:FREQuency:POINt <value>
Query format: ADVance:SWEEp:FREQuency:POINt?
--Data<data>
Data type: numeric
Data range: 0~5000
Data accuracy: Refer to technical specifications
Data unit:
--Setup example:
If you want to set the number of scanning points to 100:

The input command is: ADV:SWEE:FREQ:POIN 100;

--Query example:

If the input command is: ADV:SWEE:FREQ:POIN?

The returned content is: 100, indicating that the number of scanning points is 100.

9.8.22 :ADVance:SWEEp:FREQuency:STEP

--Function: Select the stepping method of dynamic test

--format:

Setting format: :ADVance:SWEEp:FREQuency:STEP {LOGarithmic|LINear}

Query format: :ADVance:SWEEp:FREQuency:STEP?

--Data<data>

Data type: enumeration

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to choose the dynamic test stepping method is logarithmic:

Then the input command is: :ADV:SWEE:FREQ:STEP LOG

--Query example:

If the input command is: :ADV:SWEE:FREQ:STEP?

Then the returned content is: 0 means that the stepping method of the dynamic test is logarithmic.

9.8.23 ADVance:SWEEp:DWELl

--Function: Set the scan test residence time

--format:

Setting format: ADVance:SWEEp:DWELl <value>

Query format: ADVance:SWEEp:DWELl?

--Data<data>

Data type: numeric

Data range: 0~99.999

Data accuracy: 0.001

Data unit:

--Setup example:

If you want to set the scan dwell time to 10s:

The input command is: ADV:SWEE:DWEL 10;

--Query example:

If the input command is: ADV:SWEE:DWEL?

The returned content is: 10, indicating that the scan dwell time is 10s.

9.8.24 ADVance:SWEEp:DUTY

--Function: Set the scan test time duty cycle
--format:
Setting format: ADVance:SWEEp:DUTY <value>
Query format: ADVance:SWEEp:DUTY?
--Data<data>
Data type: numeric
Data range: 2~99
Data accuracy: 1
Data unit:
--Setup example:
If you want to set the scan time duty cycle to 10%:
The input command is: ADV:SWEE:DUTY 10;
--Query example:
If the input command is: ADV:SWEE:DUTY?
The returned content is: 10, which means that the scan time duty cycle is 10%.

9.8.25 :ADVance:TIMing:MODE

--Function: Select the time measurement mode.
--format:
Setting format: :ADVance:TIMing:MODE{ CC|CV|CP|CR}
Query format: :ADVance:TIMing:MODE?
--Data<data>
Data type: enumeration
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to select the time measurement mode as CC.
Then the input command is: :ADV:TIM:MODE CC
--Query example:
If the input command is: :ADV:TIM:MODE?
The returned content is: CC means that the time measurement mode is CC.

9.8.26 ADVance:TIMing:CURRent

--Function: Set the current for time measurement when the mode is CC
--format:
Setting format: ADVance:TIMing:CURRent <value>
Query format: ADVance:TIMing:CURRent?
--Data<data>

Data type: numeric

Data range: 0~105%* maximum value of current equation

Data accuracy: Same as current current setting accuracy

Data unit: A (can be omitted)

--Setup example:

If you want to set the time to measure the current is 1A:

The input command is: ADV:TIM:CURR 1;

--Query example:

If the input command is: ADV:TIM:CURR?

The returned content is: 1, indicating that the current measured for time is set to 1A.

9.8.27 ADVance:TIMing:VOLTage

--Function: Set the voltage for time measurement when the mode is CV

--format:

Setting format: ADVance:TIMing:VOLTage <value>

Query format: ADVance:TIMing:VOLTage?

--Data<data>

Data type: numeric

Data range: 0~105%* maximum value of current voltage equation

Data accuracy: Same as current voltage setting accuracy

Data unit: V (can be omitted)

--Setup example:

If you want to set the time measurement voltage to 1V:

The input command is: ADV:TIM:VOLT 1;

--Query example:

If the input command is: ADV:TIM:VOLT?

The returned content is: 1, indicating that the voltage for time measurement is set to 1V.

9.8.28 ADVance:TIMing:POWer

--Function: Set the power for time measurement when the mode is CP

--format:

Setting format: ADVance:TIMing:POWer <value>

Query format: ADVance:TIMing:POWer?

--Data<data>

Data type: numeric

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to set the time measurement power to 1W:

The input command is: ADV:TIM:POW 1;

--Query example:

If the input command is: ADV:TIM:POW?
The returned content is: 1, indicating that the power for time measurement is set to 1W.

9.8.29 ADVance:TIMing:RESistance

--Function: Set the resistance for time measurement when the mode is CR
--format:
Setting format: ADVance:TIMing:RESistance <value>
Query format: ADVance:TIMing: RESistance?
--Data<data>
Data type: numeric
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the time to measure the resistance to 1Ω:
The input command is: ADV:TIM:RES 1;
--Query example:
If the input command is: ADV:TIM:RES?
The returned content is: 1, indicating that the resistance of the time measurement is set to 1Ω.

9.8.30 ADVance:TIMing:TRIGger:SIGnal

--Function: Set the start and end signal settings during time measurement
--format:
Format:
ADVance:TIMing:TRIGger:SIGnal <STARt|END,TRIGger|VOLTage|CURRent>
Query format: ADVance:TIMing:TRIGger:SIGnal?
--Data<data>
Data type: enumeration
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the time measurement start signal as the trigger start:
The input command is: ADV:TIM:TRIG:SIG STAR,TRIG;
--Query example:
If the input command is: ADV:TIM:TRIG:SIG?
The returned content is: 0,0, indicating that the start and end signals of the time measurement are both triggered.

9.8.31 ADVance:TIMing:TRIGger:EDGe

--Function: Set the edge of the start and end signals during time measurement
--format:
Format:
ADVance:TIMing:TRIGger:EDGe <STARt|END,RISE|FALL>
Query format: ADVance:TIMing:TRIGger:EDGe?
--Data<data>
Data type: enumeration
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the time measurement start signal as the rising edge trigger start:
The input command is: ADV:TIM:TRIG:EDG STAR,RISE;
--Query example:
If the input command is: ADV:TIM:TRIG:EDG?
The returned content is: 1,1, indicating that the start and end signals of the time measurement are both triggered by the rising edge.

9.8.32 ADVance:TIMing:TRIGger:LEVel

--Function: Set the value when the time measurement signal is voltage or current
--format:
Format:
ADVance:TIMing:TRIGger:LEVel <STARt|END,VOLTage|CURRent, value>
Query format: ADVance:TIMing:TRIGger:LEVel?
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the time measurement start signal voltage value to 1V:
The input command is: ADV:TIM:TRIG:LEV STAR,VOLT,1;
--Query example:
If the input command is: ADV:TIM:TRIG:LEV?
The returned content is: 1V, 1A, indicating that the start of the time measurement is the voltage signal 1V and the end is the current 1A (when there is a trigger signal in the start and end, it does not return).

9.8.33 ADVance:TIMing:TIMe?

--Function: Time when the mode is time measurement
--format:
Query format: ADVance:TIMing: TIMe?
--Query example:
If the input command is: ADV:TIM:TIM?
The returned content is: 00h:00m:00s:000.0ms.

9.8.34 ADVance:OCPT:CURRent

--Function: Set the starting and ending current in OCPT
--format:
Setting format: ADVance:OCPT :CURRent<STARt|END, value>
Query format: ADVance:OCPT:CURRent?
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the OCPT starting current to 1A:
The input command is: ADV:OCPT:CURR STAR,1;
--Query example:
If the input command is: ADV:OCPT:CURR?
The returned content is: 1,4.2, which means that the initial current is 1A and the current is 4.2A.

9.8.35 ADVance:OCPT:VOLTage

--Function: Set the starting and ending current in OCPT
--format:
Setting format: ADVance:OCPT :VOLTage <value>
Query format: ADVance:OCPT:VOLTage?
--Data<data>
Data type: Discrete
Data range: 0~15.750V
Data accuracy: 0.001
Data unit:
--Setup example:
If you want to set the OCPT trigger voltage to 1V:
The input command is: ADV:OCPT:VOLT 1;
--Query example:
If the input command is: ADV:OCPT:VOLT?

The returned content is: 2, indicating that the trigger voltage is 2V.

9.8.36 ADVance:OCPT:STEP

--Function: Set the number of steps in OCPT
--format:
Setting format: ADVance:OCPT :STEP <value>
Query format: ADVance:OCPT: STEP?
--Data<data>
Data type: Discrete
Data range: 1~1000
Data accuracy: 1
Data unit:
--Setup example:
If you want to set the OCPT steps to 10:
The input command is: ADV:OCPT:STEP 10;
--Query example:
If the input command is: ADV:OCPT:STEP?
The returned content is: 10, indicating that the number of steps is 10.

9.8.37 ADVance:OCPT:DWELl

--Function: Set residence time in OCPT
--format:
Setting format: ADVance:OCPT :DWELl <value>
Query format: ADVance:OCPT: DWELl?
--Data<data>
Data type: Discrete
Data range: 0.01m~999.99ms
Data accuracy: 0.01m
Data unit:
--Setup example:
If you want to set OCPT to set the residence time 10ms:
Then the input command is: ADV:OCPT:DWEL 0.01;
--Query example:
If the input command is: ADV:OCPT:DWEL?
The returned content is: 10, which means that the residence time is 10ms.

9.8.38 ADVance:OCPT:PMAX?

--Function: return PMAX value during OCPT test
--format:
Query format: ADVance:OCPT: PMAX?

--Query example:
If the input command is: ADV:OCPT:PMAX?
The returned content is: 0,0,0.

9.8.39 ADVance:OCPT:IOCP?

--Function: return IOCP value during OCPT test
--format:
Query format: ADVance:OCPT:IOCP?
--Query example:
If the input command is: ADV:OCPT:IOCP?
The returned content is: 0.

9.8.40 ADVance:OVPT:VOLTage

--Function: Set the trigger voltage of OVPT
--format:
Setting format: ADVance:OVPT :VOLTage <value>
Query format: ADVance:OVPT: VOLT?
--Data<data>
Data type: Discrete
Data range: 0~105%*Maximum current voltage range
Data accuracy: Same as current set voltage accuracy
Data unit:
--Setup example:
If you want to set the OVPT setting trigger voltage 1V:
The input command is: ADV:OVPT:VOLT 1.0000;
--Query example:
If the input command is: ADV:OVPT:VOLT?
The returned content is: 1, indicating that the trigger voltage of OVPT is 1V.

9.8.41 ADVance:OVPT:TOVP?

--Function: return TOVP value when OVPT test
--format:
Query format: ADVance:OVPT: TOVP?
--Query example:
If the input command is: ADV:OVPT:TOVP?
The returned content is: 00h:00ms:00s:000.0ms.

9.8.42 ADVance:OPPT:POWer

--Function: Set the starting and ending power in OPPT

--format:

Setting format: ADVance:OPPT :POWer<STARt|END, value>

Query format: ADVance:OPPT:POWer?

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to set OPPT starting power 1W:

The input command is: ADV:OPPT:POW STAR,1;

--Query example:

If the input command is: ADV:OPPT:POW?

The returned content is: 1,10, which means that the starting power is 1W and the cutting power is 10W.

9.8.43 ADVance:OPPT:VOLTage

--Function: Set the trigger voltage of OPPT

--format:

Setting format: ADVance:OPPT :VOLTage <value>

Query format: ADVance:OPPT: VOLTage?

--Data<data>

Data type: Discrete

Data range: 0~105%*Maximum current voltage range

Data accuracy: Same as current set voltage accuracy

Data unit:

--Setup example:

If you want to set OPPT to set the trigger voltage 1V:

The input command is: ADV:OPPT:VOLT 1.0000;

--Query example:

If the input command is: ADV:OPPT:VOLT?

The returned content is: 1, indicating that the trigger voltage of OPPT is 1V.

9.8.44 ADVance:OPPT:STEP

--Function: Set OPPT steps

--format:

Setting format: ADVance:OPPT :STEP <value>

Query format: ADVance:OPPT: STEP?

--Data<data>

Data type: Discrete

Data range: 1-1000

Data accuracy:

Data unit:

--Setup example:

If you want to set OPPT to set the number of steps to 10:

The input command is: ADV:OPPT:STEP 10;

--Query example:

If the input command is: ADV:OPPT:STEP?

The returned content is: 10, indicating that the number of OPPT steps is 10.

9.8.45 ADVance:OPPT:DWELl

--Function: Set the residence time of OPPT

--format:

Setting format: ADVance:OPPT :DWELl <value>

Query format: ADVance:OPPT:DWELl?

--Data<data>

Data type: Discrete

Data range: 0.01m-999.9m

Data accuracy:

Data unit:

--Setup example:

If you want to set OPPT to set the residence time 1ms:

The input command is: ADV:OPPT:DWEL 0.001;

--Query example:

If the input command is: ADV:OPPT:DWEL?

The returned content is: 0.001, indicating that the residence time of OPPT is 1ms.

9.8.46 ADVance:OPPT:PMAX?

--Function: return OPMAX value during OPPT test

--format:

Query format: ADVance:OPPT:PMAX?

--Query example:

If the input command is: ADV:OPPT:PMAX?

The returned content is: 0,0,0.

9.8.47 ADVance:OPPT:POPP?

--Function: return POPP value when OPPT test

--format:

Query format: ADVance:OPPT:POPP?

--Query example:

If the input command is: ADV:OPPT:POPP?

The returned content is: 0.

9.8.48 ADVance:EFFEct:CURRent

--Function: Set the minimum and maximum normal current of load effect
--format:
Format:
ADVance:EFFEct :CURRent <MINimum|MAXimum|NORmal,value>
Query format: ADVance:EFFEct:CURRent?
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the load effect minimum current 1A:
The input command is: ADV:EFFE:CURR MIN,1;
--Query example:
If the input command is: ADV:EFFE:CURR?
The returned content is: 1,1,1, which represents the minimum and maximum load effect, and the normal current is 1A, 1A, 1A.

9.8.49 ADVance:EFFEct:DELay

--Function: Set the delay of load effect
--format:
Setting format: ADVance:EFFEct :DELay <value>
Query format: ADVance:EFFEct:DELay?
--Data<data>
Data type: Discrete
Data range: 0.01-60
Data accuracy:
Data unit:
--Setup example:
If you want to set the load effect delay 1s
The input command is: ADV:EFFE:DEL 1;
--Query example:
If the input command is: ADV:EFFE:DEL?
Then the returned content is: 1 means the delay of load effect is 1s.

9.8.50 ADVance:EFFEct:V?

--Function: return V value during load effect test
--format:
Query format: ADVance:EFFEct:V?

--Query example:
If the input command is: ADV:EFFE:V?
The returned content is: 0.

9.8.51 ADVance:EFFEct:R?

--Function: return R value during load effect test
--format:
Query format: ADVance:EFFEct:R?
--Query example:
If the input command is: ADV:EFFE:R?
The returned content is: 0.

9.8.52 ADVance:EFFEct:REGualtion?

--Function: Return the value of Regulation when the load effect is tested
--format:
Query format: ADVance:EFFEct:REGualtion?
--Query example:
If the input command is: ADV:EFFE:REG?
The returned content is: 0.

9.8.53 ADVance:MPPT:C?

--Function: return cap value when MPPT test
--format:
Query format: ADVance:MPPT:C?
--Query example:
If the input command is: ADV:MPPT:C?
The returned content is: 0.

9.8.54 ADVance:MPPT:E?

--Function: return energy value during MPPT test
--format:
Query format: ADVance:MPPT:E?
--Query example:
If the input command is: ADV:MPPT:E?
The returned content is: 0.

9.8.55 ADVance:LIST:TYPe

--Function: Set the working mode of the list test
--format:
Setting format: ADVance:LIST:TYPe <CONTinue|COUNt|STEP>
Query format: ADVance:LIST:TYPe?
--Data<data>
Data type: enum
data range:
Data accuracy:
Data unit:
--Setup example:
If you want to set the list test working mode to continuous
Then the input command is: ADV:LIST:TYP CONT;
--Query example:
If the input command is: ADV:LIST:TYP?
The returned content is: 0 means that the list test mode is continuous.

9.8.56 ADVance:LIST:COUNt

--Function: Set count times in list test count mode
--format:
Setting format: ADVance:LIST:COUNt <value>
Query format: ADVance:LIST:COUNt?
--Data<data>
Data type: discrete
Data range: 1~9999999
Data accuracy: 1
Data unit:
--Setup example:
If you want to set the number of list test counts to 10 this
The input command is: ADV:LIST:COUN 10;
--Query example:
If the input command is: ADV:LIST:COUN?
The returned content is: 10 means that the list test count is 10.

9.8.57 ADVance:LIST:STEP

--Function: Set the content of the list test table
--format:
Setting format: ADVance:LIST:STEP <value,value,value,value,0|1>
Query format: ADVance:LIST:STEP?
--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to set the first step of the list test, the load value is 2A, the dwell time is 1S, the slope is 1A/us, and the output is turned off.

The input command is: ADV:LIST:STEP 1,2,1,1,0;

--Query example:

If the input command is: ADV:LIST:STEP?

The returned content is: STEP0 2,1,1,0 indicates the first step of the list test, the load value is 2A, the dwell time is 1S and the slope is 1A/us, which triggers the shutdown.

9.8.58 ADVance:LIST:STEPS?

--Function: return to list of steps

--format:

Query format: ADVance:LIST:STEPS?

--Query example:

If the input command is: ADV:LIST:STEPS?

The returned content is: 3 means there are 3 steps in the table.

9.8.59 ADVance:LIST:INSert

--Function: Insert a row in the list test table

--format:

Setting format: ADVance:LIST:INSert <value>

--Setup example:

If you want to insert a line before the first line

Then the input command is: ADV:LIST:INS 1;

9.8.60 ADVance:LIST:ADD

--Function: add a line after the list test table

--format:

Setting format: ADVance:LIST:ADD

--Setup example:

If you want to add a line

Then the input command is: ADV:LIST:ADD

9.8.61 ADVance:LIST:REMove

--Function: List test form deletes a row

--format:

Setting format: ADVance:LIST:REMove{value}

--Setup example:

If you want to delete the first line

The input command is: ADV:LIST:REM 1;

9.8.62 ADVance:WAVe:TYPe

--Function: Set the waveform of the waveform load

--format:

Format:

ADVance:WAVe:TYPe <SIN|TRIA|SQUA|TRAP|SAWA|SAWB>

Query format: ADVance:WAVe:TYPe?

--Data<data>

Data type: enumeration

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to set the waveform load waveform to sine wave

Then the input command is: ADV:WAV:TYP SIN

--Query example:

If the input command is: ADV:WAV:TYP?

The returned content is: 0 indicates that the waveform of the waveform load is a sine wave.

9.8.63 ADVance:WAVe:SINe

--Function: Parameter setting when the waveform load is sine wave

--format:

Setting format: ADVance:WAVe:SINe <value,value,value,value>

Query format: ADVance:WAVe:SINe?

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

If you want to set the sine wave peak 1A offset 0.5A period 1.5s phase 30

Then the input command is: ADV:WAV:SIN 1,0.5,1.5,30

--Query example:

If the input command is: ADV:WAV:SIN?

The returned content is: 1,0.5,1.5,30 means that the peak value of the sine wave is 1A and the phase 30 is 0.5A period and 1.5s period.

9.8.64 ADVance:WAVe:TRIAngle

--Function: Parameter setting when the waveform load is triangle wave
--format:
Setting format: ADVance:WAVe:TRIAngle <value,value,value,value,value>
Query format: ADVance:WAVe:TRIAngle?
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
If the peak value of triangle wave 1A is offset 0.5A pulse width-A500ms pulse width-B100ms initial time 500ms
Then the input command is: ADV:WAV:TRIA 1,0.5,0.5,0.1,0.5
--Query example:
If the input command is: ADV:WAV:TRIA?
Then the returned content is: 1,0.5,0.5,0.1,0.5 means that the peak value of the triangle wave is 1A offset 0.5A pulse width-A500ms pulse width-B100ms 500ms at the initial moment.

9.8.65 ADVance:WAVe:SQUAre

--Function: Parameter setting when the waveform load is square wave
--format:
Setting format: ADVance:WAVe:SQUAre <value,value,value,value,value>
Query format: ADVance:WAVe:SQUAre?
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
If the square wave peak value 1A is set to offset 0.5A pulse width 500ms period 1s initial time 500ms
Then the input command is: ADV:WAV:SQUA 1,0.5,0.5,1,0.5
--Query example:
If the input command is: ADV:WAV:SQUA?
The returned content is: 1,0.5,0.5,1,0.5 means that the peak value of the square wave is 1A offset 0.5A pulse width 500ms period 1s initial time 500ms.

9.8.66 ADVance:WAVe:TRAPezoid

--Function: Parameter setting when the waveform load is trapezoidal

--format:

Setting format: ADVance:WAVe:TRAPezoid <value,value,value,value,value>

Query format: ADVance:WAVe:TRAPezoid?

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

If you set the peak value of trapezoidal wave 1A offset 0.5A pulse width 500ms period 1s initial time 500ms

Then the input command is: ADV:WAV:TRAP 1,0.5,0.5,1,0.5

--Query example:

If the input command is: ADV:WAV:TRAP?

The returned content is: 1,0.5,0.5,1,0.5 means that the peak value of the trapezoidal wave is 1A offset 0.5A pulse width 500ms period 1s initial time 500ms.

9.8.67 ADVance:WAVe:SAWA

--Function: Parameter setting when the waveform load is the front sawtooth wave

--format:

Setting format: ADVance:WAVe:SAWA <value,value,value,value,value>

Query format: ADVance:WAVe:SAWA?

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

If the front sawtooth wave peak value is set to 1A offset 0.5A pulse width 500ms period 1s initial time 500ms

Then the input command is: ADV:WAV:SAWA 1,0.5,0.5,1,0.5

--Query example:

If the input command is: ADV:WAV:SAWA?

The returned content is: 1,0.5,0.5,1,0.5 means the front sawtooth wave peak value 1A offset 0.5A pulse width 500ms period 1s initial time 500ms.

9.8.68 ADVance:WAVe:SAWB

--Function: Parameter setting when the waveform load is the back sawtooth wave

--format:

Setting format: ADVance:WAVe:SAWB <value,value,value,value,value>

Query format: ADVance:WAVe:SAWB?

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

If after setting, the peak value of the sawtooth wave is 1A offset 0.5A pulse width 500ms period 1s initial time 500ms

Then the input command is: ADV:WAV:SAWB 1,0.5,0.5,1,0.5

--Query example:

If the input command is: ADV:WAV:SAWB?

The returned content is: 1,0.5,0.5,1,0.5 means that the peak value of the back sawtooth wave is 1A offset 0.5A pulse width 500ms period 1s initial time 500ms.

9.8.69 ADVance:ARB:POINt

--Function: Set the voltage and current value of a certain point of ARB.

--format:

Setting format: ADVance:ARB:POINt <value,value,value>

Query format: ADVance:ARB:POINt?

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

If the voltage of the first point is set to 2V, the current is 0.5mA

Then the input command is: ADV:ARB:POIN 1,2,0.5

--Query example:

If the input command is: ADV:ARB:POIN?

The returned content is: POINT0 2,0.2 means the first point voltage 2V current 0.5mA.

9.8.70 ADVance:ARB:INSert

--Function: Set ARB to insert a line.

--format:

Setting format: ADVance:ARB:INSert <value>

--Setup example:

If you insert a line before the first line

Then the input command is: ADV:ARB:INS 1

9.8.71 ADVance:ARB:ADD

--Function: Set ARB to join a line.
--format:
Setting format: ADVance:ARB:ADD
--Setup example:
If you add a line at the end
Then the input command is: ADV:ARB:ADD

9.8.72 ADVance:ARB:REMove

--Function: Set ARB to delete a certain line.
--format:
Setting format: ADVance:ARB:REMove <value>
--Setup example:
If you delete the first line
Then the input command is: ADV:ARB:REM 1

9.8.73 ADVance:CIRCuit:TYPe

--Function: Set the circuit type of the circuit function.
--format:
Setting format: ADVance:CIRCuit:TYPe <A|B|C|D|E|F>
Query format: ADVance: CIRCuit:TYPe?
--Data<data>
Data type: enumeration
data range:
Data accuracy:
Data unit:
--Setup example:
If the circuit is set to A model
Then the input command is: ADV:CIRC:TYP A
--Query example:
If the input command is: ADV:CIRC:TYP?
The returned content is: 0 means the model is A.

9.8.74 ADVance:CIRCuit:A

--Function: Set the A circuit parameters of the circuit function.
--format:
Setting format: ADVance:CIRCuit:A <value,value,value>
Query format: ADVance: CIRCuit:A?
--Data<data>

type of data:
data range:
Data accuracy:
Data unit:

--Setup example:

If the circuit is set to A model L1:1mH C1:1mF R1:20Ω

Then the input command is: ADV:CIRC:A 0.001, 0.001, 20

--Query example:

If the input command is: ADV:CIRC:A?

The returned content is: 0.001, 0.001, 20.

9.8.75 ADVance:CIRCuit:B

--Function: Set the B circuit parameters of the circuit function.

--format:

Setting format: ADVance:CIRCuit:B <value,value,value>

Query format: ADVance: CIRCuit:B?

--Data<data>

type of data:
data range:
Data accuracy:
Data unit:

--Setup example:

If the circuit is set to B model L1:1mH R0:10ΩR1:20Ω

Then the input command is: ADV:CIRC:B 0.001,10,20

--Query example:

If the input command is: ADV:CIRC:B?

The returned content is: 0.001,10,20.

9.8.76 ADVance:CIRCuit:C

--Function: Set the C circuit parameters of the circuit function.

--format:

Setting format: ADVance:CIRCuit:C <value,value,value>

Query format: ADVance: CIRCuit:C?

--Data<data>

type of data:
data range:
Data accuracy:
Data unit:

--Setup example:

If the circuit is set to C model L1:1mH C1:1mF R1:20Ω

Then the input command is: ADV:CIRC:C 0.001, 0.001, 20

--Query example:

If the input command is: ADV:CIRC:C?
The returned content is: 0.001, 0.001, 20.

9.8.77 ADVance:CIRCuit:D

--Function: Set the D circuit parameters of the circuit function.
--format:
Setting format: ADVance:CIRCuit:D <value,value,value>
Query format: ADVance: CIRCuit:D?
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
If the circuit is set to D model L1:1mH C1:1mF R1:20Ω
Then the input command is: ADV:CIRC:D 0.001, 0.001, 20
--Query example:
If the input command is: ADV:CIRC:D?
The returned content is: 0.001, 0.001, 20.

9.8.78 ADVance:CIRCuit:E

--Function: Set the E circuit parameters of the circuit function.
--format:
Setting format: ADVance:CIRCuit:E <value,value,value,value>
Query format: ADVance: CIRCuit:E?
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
If the circuit is set to E model R0: 10Ω, R1: 20Ω, C1:1mF, L1:1mH
Then the input command is: ADV:CIRC:E 10,20,0.1,0.1
--Query example:
If the input command is: ADV:CIRC:E?
The returned content is: 10,20,0.1,0.1.

9.8.79 ADVance:CIRCuit:F

--Function: Set the F circuit parameters of the circuit function.
--format:

Setting format: ADVance:CIRCuit:F <value,value,value,value>

Query format: ADVance: CIRCuit:F?

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

If the circuit is set to F model R0: 10Ω, L1:1mH, C1:1mF, R1: 20Ω

Then the input command is: ADV:CIRC:F 10,0.001,0.001,20

--Query example:

If the input command is: ADV:CIRC:F?

Then the returned content is: 10,0.001,0.001,20.

9.8.80 ADVance:AUTo:OUTput:CONditon

--Function: Set the automatic test output condition.

--format:

Setting format: ADVance:AUTo:OUTput:CONditon <PASs|FAIL|END|DISable>

Query format: ADVance: AUTo:OUTput:CONditon?

--Data<data>

Data type: enumeration

data range:

Data accuracy:

Data unit:

--Setup example:

If the automatic test output condition is set to pass

Then the input command is: ADV:AUT:OUT:CON PAS

--Query example:

If the input command is: ADV:AUT:OUT:CON?

The returned content is: 0. Indicates that the automatic test output condition is passed

9.8.81 ADVance:AUTo:OUTput:TYPe

--Function: Set the automatic test output type.

--format:

Setting format: ADVance:AUTo:OUTput:TYPe <LEVel|PULse>

Query format: ADVance: AUTo:OUTput:TYPe?

--Data<data>

Data type: enumeration

data range:

Data accuracy:

Data unit:

--Setup example:

If the automatic test output type is set to level

Then the input command is: ADV:AUT:OUT:TYP LEV

--Query example:

If the input command is: ADV:AUT:OUT:TYP?

The returned content is: 0. Indicates that the automatic test output type is level

9.8.82 ADVance:AUTo:MODe

--Function: Set the test mode for automatically testing a certain step.

--format:

Setting format: ADVance:AUTo:MODe <value, CC|CV|CR|CP>

Query format: ADVance: AUTo:MODe?< value>

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

Set the automatic test first step mode to CC

Then the input command is: ADV:AUT:MOD 1,CC

--Query example:

If the input command is: ADV:AUT:MOD? 1

The returned content is: 0. The first step mode is CC

9.8.83 ADVance:AUTo:LEVel

--Function: Set to automatically test the load of a certain step.

--format:

Setting format: ADVance:AUTo:LEVel <value, CC|CV|CR|CP>

Query format: ADVance: AUTo: LEVel?< value>

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

Set the first step of the automatic test to set the load to 1

Then the input command is: ADV:AUT:LEV 1,1

--Query example:

If the input command is: ADV:AUT:LEV? 1

The content returned is: 1. The first step load is 1

9.8.84 ADVance:AUTo:LIMit:SPECific

--Function: Set the type of restriction for automatic testing of a certain step.
--format:
Format:
ADVance:AUTo:LIMit:SPECific <value,CURRent|VOLTage|POWer|NONE>
Query format: ADVance:AUTo:LIMit:SPECific?< value>
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
Set the automatic test first step load upper and lower limit mode to current
Then the input command is: ADV:AUT:LIM:SPEC 1,CURR
--Query example:
If the input command is: ADV:AUT:LIM:SPEC? 1
The returned content is: 0. The first step load limit mode is current

9.8.85 ADVance:AUTo:LIMit:UPPer

--Function: Set the upper limit value of a certain step of automatic test.
--format:
Setting format: ADVance:AUTo:LIMit:UPPer <value ,value>
Query format: ADVance:AUTo:LIMit:UPPer?< value>
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
Set the upper limit of the first step of the automatic test to 10A
Then the input command is: ADV:AUT:LIM:UPP 1,10
--Query example:
If the input command is: ADV:AUT:LIM:UPP? 1
The returned content is: 10. The upper limit of the first step load limit is 10

9.8.86 ADVance:AUTo:LIMit:LOWer

--Function: Set the lower limit value of a certain step of automatic test.
--format:
Setting format: ADVance:AUTo:LIMit:LOWer <value ,value>
Query format: ADVance:AUTo:LIMit: LOWer?< value>

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

Set the lower limit of the first step of the automatic test to 1A

Then the input command is: ADV:AUT:LIM:LOW 1,1

--Query example:

If the input command is: ADV:AUT:LIM:LOW? 1

The content returned is: 1. The lower limit of the first step load limit is 1

9.8.87 ADVance:AUTo:LIMit:OPERation

--Function: Set the lower limit value of a certain step of automatic test.

--format:

Setting format: ADVance:AUTo:LIMit:OPERation <value, ABORt|CONtinues>

Query format: ADVance:AUTo:LIMit: OPERation?< value>

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

Set the failure operation of the first step of the automatic test to stop

Then the input command is: ADV:AUT:LIM:OPER 1, ABOR

--Query example:

If the input command is: ADV:AUT:LIM:OPER? 1

The returned content is: 0. The first failed operation is stop

9.8.88 ADVance:AUTo:DELay:TYPe

--Function: Set the delay type for a certain step of automatic test.

--format:

Setting format: ADVance:AUTo:DELay:TYPe <value, TIMe|TRIGger>

Query format: ADVance:AUTo:DELay:TYPe?< value>

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

Set the first test delay type for automatic test

Then the input command is: ADV:AUT:DEL:TYP 1, TIM

--Query example:
If the input command is: ADV:AUT:DEL:TYP? 1
The returned content is: 0. The first type of delay is time

9.8.89 ADVance:AUTo:DELay:TIMe

--Function: Set the delay time for automatically testing a certain step.
--format:
Setting format: ADVance:AUTo:DELay:TIMe <value, value>
Query format: ADVance:AUTo:DELay:TIMe?< value>
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
Set the delay time of the first step of the automatic test to be 10s
Then the input command is: ADV:AUT:DEL:TIM 1,10
--Query example:
If the input command is: ADV:AUT:DEL:TIM? 1
The returned content is: 10. The first step delay time is 10s

9.8.90 ADVance:AUTo:RANGe:CURRent

--Function: Set the current range for automatic test.
--format:
Setting format: ADVance:AUTo:RANGe:CURRent <value, LOW|MIDdle|HIGH>
Query format: ADVance:AUTo:RANGe:CURRent?< value>
--Data<data>
type of data:
data range:
Data accuracy:
Data unit:
--Setup example:
Set the automatic test current range to low
Then the input command is: ADV:AUT:RANG:CURR 1,LOW
--Query example:
If the input command is: ADV:AUT:RANG:CURR? 1
The returned content is: 0. Indicates that the current range is low

9.8.91 ADVance:AUTo:RANGe:VOLTage

--Function: Set the voltage range for automatic test.

--format:

Setting format: ADVance:AUTo:RANGe:VOLTage <value, LOW|HIGH>

Query format: ADVance:AUTo:RANGe:VOLTage?< value>

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

Set the auto test voltage range to low

Then the input command is: ADV:AUT:RANG:VOLT 1, LOW

--Query example:

If the input command is: ADV:AUT:RANG:VOLT? 1

The returned content is: 0. Indicates that the voltage range is low

9.8.92 ADVance:AUTo:SLEWrate:RISe

--Function: Set the rising slope of automatic test.

--format:

Setting format: ADVance:AUTo:SLEWrate:RISe <value, value>

Query format: ADVance:AUTo: SLEWrate:RISe?< value>

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

Set automatic test rising slope 100mA/us

Then the input command is: ADV:AUT:SLEW:RIS 1,0.1

--Query example:

If the input command is: ADV:AUT:SLEW:RIS? 1

The returned content is: 0.1. The rising slope is 100mA/us

9.8.93 ADVance:AUTo:SLEWrate:FALl

--Function: Set the down slope of automatic test.

--format:

Setting format: ADVance:AUTo:SLEWrate:FALl <value, value>

Query format: ADVance:AUTo: SLEWrate:FALl?< value>

--Data<data>

type of data:

data range:

Data accuracy:

Data unit:

--Setup example:

Set automatic test lower slope 1mA/us

Then the input command is: ADV:AUT:SLEW:FAL 1,0.001

--Query example:

If the input command is: ADV:AUT:SLEW:FAL? 1

The returned content is: 0.001. It means the downward slope is 1mA/us

9.9 SYSTem Subsystem Commands

9.9.1 SYSTem:TIMe

--Function: Set the system time.

--format:

Setting format: SYSTem:TIMe “YYYY.MM.DD-HH:MM:SS”

Query format: SYSTem:TIMe?

--Setup example:

The setting time is: 2019.04.22 13:37:40

Then the input command is: SYST:TIM "2019.04.22-13:37:40"

--Query example:

If the input command is: SYSTem:TIMe?

Then the returned content is: Mon Apr 22 12:17:48 2019

9.9.2 SYSTem:EXTernal:CONTrol

--Function: Set the external control mode.

--format:

Setting format: SYSTem:EXTernal:CONTrol< OFF|VOLTage>

Query format: SYSTem:EXTernal:CONTrol?

--Setup example:

Turn off external control

Then the input command is: SYST:EXT:CONT OFF

--Query example:

If the input command is: SYST:EXT:CONT?

Then the returned content is: 0 means close external control

9.9.3 SYSTem:EXTernal:LOAD

--Function: Set whether the external voltage control is high level input or low level input.

--format:

Setting format: SYSTem:EXTernal:LOAD< LOW|HIGH>

Query format: SYSTem:EXTernal:LOAD?

--Setup example:

External low voltage input

Then the input command is: SYST:EXT:LOAD LOW

--Query example:

If the input command is: SYST:EXT:LOAD?

Then the returned content is: 0 represents external low voltage input

9.9.4 SYSTem:GROUP:OPERate

--Function: Set the local master-slave mode.

--format:

Setting format: SYSTem:GROUP:OPERate<MASTer|SLAVe>

Query format: SYSTem:GROUP:OPERate?

--Setup example:

Set to host mode

Then the input command is: SYST:GROUP:OPER MAST

--Query example:

If the input command is: SYST:GROUP:OPER?

The returned content is: 0 represents the host mode

9.9.5 SYSTem:GROUP:PARallel:TYPe

--Function: Set the parallel type.

--format:

Setting format: SYSTem:GROUP:PARallel:TYPe< SLAVe|BOOSter>

Query format: SYSTem:GROUP:PARallel:TYPe?

--Setup example:

Set the parallel mode to enhancer

Then the input command is: SYST:GROUP:PAR:TYP BOOS

--Query example:

If the input command is: SYST:GROUP:PAR:TYP?

Then the returned content is: 1 represents the enhancer

9.9.6 SYSTem:GROUP:PARallel:NUMber

--Function: Set the number of parallel connections.

--format:

Setting format: SYSTem:GROUP:PARallel:NUMber< 0|1|2|3|4>

Query format: SYSTem:GROUP:PARallel:NUMber?

--Setup example:

Set the number of parallel connections to 1

Then the input command is: SYST:GROUP:PAR:NUM 1

--Query example:

If the input command is: SYST:GROUP:PAR:NUM?

Then the returned content is: 1 represents 1 in parallel

9.9.7 SYSTem:INITialize:LOAD

--Function: Set whether the load is loaded or unloaded at the time of power-on initialization.
--format:
Setting format: SYSTem:INITialize:LOAD< 0|1>
Query format: SYSTem:INITialize:LOAD?
--Setup example:
Set the load to be in the loaded state when the power is initialized
Then the input command is: SYSTem:INITialize:LOAD 1
--Query example:
If the input command is: SYSTem:INITialize:LOAD?
The returned content is: 1 means that the load is in the loaded state when it is turned on.

9.9.8 SYSTem:INITialize:LOCK

--Function: Set the load key lock status or non-key lock during power-on initialization.
--format:
Setting format: SYSTem:INITialize:LOCK< 0|1>
Query format: SYSTem:INITialize:LOCK?
--Setup example:
Set the load to be in key lock when starting up
Then the input command is: SYSTem:INITialize:LOCK 1
--Query example:
If the input command is: SYSTem:INITialize:LOCK?
Then the returned content is: 1 means that the load is in the key lock state when starting up.

9.9.9 SYSTem:INITialize:SET

--Function: Set whether the load is in the last state or the factory state during power-on initialization.
--format:
Setting format: SYSTem:INITialize:SET< FACTory|LAST>
Query format: SYSTem:INITialize:SET?
--Setup example:
Set the load to be in the factory setting when power on initialization
Then the input command is: SYSTem:INITialize:SET FACT
--Query example:
If the input command is: SYSTem:INITialize:SET?
Then the returned content is: 0 means that the load is restored to the factory settings when it is turned on.

9.9.10 SYSTem:HANDler:OUTput

--Function: Set the output level or hold of the handler.
--format:
Setting format: SYSTem:HANDler:OUTput< HOLD|PULSe>
--Setup example:
Set handler to keep
Then the input command is: SYSTem:HAND:OUT HOLD

9.9.11 SYSTem:HANDler:WIDth

--Function: Set the pulse width of the output level of the handler.
--format:
Setting format: SYSTem:HANDler:WIDth< value>
--Setup example:
Set the handler to output level and pulse width to 5ms
Then the input command is: SYST:HAND:WID 0.005

9.9.12 SYSTem:LANGuage

--Function: Set the language.
--format:
Setting format: SYSTem:LANGuage< ENGlish|CHINese>
Query format: SYSTem:LANGuage?
--Setup example:
Set language to English
Then the input command is: SYST:LANG ENG
--Query example:
If the input command is: SYST:LANG?
The returned content is: 0 represents English.

9.9.13 SYSTem:BEEPer

--Function: Buzzer switch.
--format:
Setting format: SYSTem:BEEPer<0|1>
Query format: SYSTem:BEEPer?
--Setup example:
Set to turn on the buzzer
Then the input command is: SYST:BEEP 1
--Query example:
If the input command is: SYST:BEEP?
Then the returned content is: 0 means the buzzer is off

9.9.14 SYSTem:BEEPer:KEY

--Function: Press the buzzer switch.

--format:

Setting format: SYSTem:BEEPer:KEY<0|1>

Query format: SYSTem:BEEPer:KEY?

--Setup example:

Set to turn on the button buzzer

Then the input command is: SYST:BEEP:KEY 1

--Query example:

If the input command is: SYST:BEEP:KEY?

Then the returned content is: 0 means the button buzzer is off

Chapter 10 Complete Set and Warranty

10.1 Complete Set

The instrument should have the following items when leaving the factory:

	Item	Qty.
1	TH8200 series instrument	1
2	Three-wire power cord	1
3	PT500 temperature sensor	1
4	2A fuse	2
5	Product certification	1
6	Testing report	1
7	Warranty Card	1

After the user receives the instrument, check the above content after unpacking inspection. If any missing, please contact our company or the management department immediately.

10.2 Sign

The following signs are on the panel or nameplate of each instrument.
a. The name or trademark of the manufacturer;
b. Product name and model;
c. Product number and manufacturing year and month;
d. The mark and number of the license for manufacturing measuring instruments;
e. Test terminal mark;

10.3 Packing

The device is packed in a dust-proof, shock-proof and moisture-proof sturdy packing box together with accessories, spare parts, instruction manuals and product certificates.

10.4 Transportation

The device should be handled with care, moisture and rain during transportation.

10.5 Store

The device should be stored in a ventilated room where the ambient temperature is 5℃～40℃ and the relative humidity is not more than 85%. The air should not contain harmful impurities that corrode the measuring instrument.

10.6 Warranty

Warranty period: The user purchases the instrument from the company, calculated from the company's shipping date; the warranty period is 1 year. The warranty card shall be issued for the instrument. During the warranty period, if the instrument is damaged due to improper operation by the user, the maintenance cost shall be borne by the user. The company is responsible for lifetime maintenance of the instrument.

The maintenance of this device requires professional and technical personnel; please do not replace the internal components of the instrument without authorization; after the instrument is repaired, it must be re-measured and calibrated to avoid affecting the accuracy of the test. Due to blind maintenance by the user, damage to the instrument caused by replacement of instrument parts is not covered by the warranty, and the user shall bear the maintenance cost.