Faith

Faith technology

Multi-channel battery simulator

User Manual

（FT8350A series）

Version V2.00

Nov, 2023

Preface

Dear users,

First of all, thank you very much for choosing Shenzhen Faith Technology Co., LTD. (hereinafter referred to as Faithtech), FT8350 series multi-channel battery simulator (hereinafter referred to as FT8350 series battery simulator). This user manual (hereinafter referred to as "the Manual") is applicable to FT8350 series battery simulator of Faith Technology, including the installation, operation and specifications of the power supply.

To ensure the safe and correct use of the power supply device, read this manual carefully before use, especially the safety precautions.

Please keep this manual properly for reference during use.

Notice

The Company is not responsible for any errors that may be contained in this manual or for any damage caused by the provision, execution or use of this Manual.

Warranty service

The company guarantees that the specifications and use characteristics of this instrument fully meet the technical indicators claimed in the manual, and the raw materials and manufacturing processes used in this product are strictly checked to ensure that the product is stable and reliable.

From the date of purchase, within the one-year warranty period, the company is responsible for free repair of all faults occurring in normal use and maintenance of the product. For free maintenance products, users need to prepay the one-way freight sent to the company's maintenance department, the return freight will be borne by the company. If the product is returned to the factory from another country for repair, all freight, duties and other taxes shall be borne by the customer.

Limitation of warranty

This warranty is limited to the power host. For the damage caused by wrong use, unmanaged, unauthorized modification, use in abnormal environment and force majeure, the company will not be responsible for free repair, and will submit the evaluation form before repair.

All OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY, REASONABLENESS AND FITNESS FOR A PARTICULAR APPLICATION, WHETHER IN CONTRACT, CIVIL NEGLIGENCE, OR OTHERWISE, ARE DISCLAIMED.The company shall not be liable for any special, incidental or indirect damages.

Security Summary

.In the operation and use of power supply process, please strictly follow the following safety instructions.Failure to comply with the following precautions or specific warnings as indicated in other sections of this manual may impair the protection provided by the device.

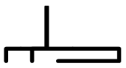
The Company is not responsible for any consequences arising from users' failure to comply with these precautions.

Safety instructions

Please ground it reliably	Before turning on the equipment, make sure the equipment is reliably grounded to prevent electric shock
Single phase 220VAC Input	Input wire conforms to national standards;
Confirm insurance tube	Ensure that the correct 10A fuse is installed;
Do not open the instrument housing	The operator shall not open the equipment shell; Non-professional personnel do not perform maintenance or adjustment.
Do not use in dangerous environment	Do not use the equipment in inflammable and explosive environment.

Safety mark

Please see the following table for the explanation of the international symbols used in the case and user manual of this product.

Symbol	Meaning	Symbol	Meaning
	Direct current	N	Zero or neutral line
	AC current	L	Line of fire
	AC/DC current		Power on
	3 phase current		Power off
	Ground		Backup power supply
	Protective grounding		The button switch is pressed
	Connect the enclosure or chassis		Button switch popup
	Signal ground		Be careful with the shocks
WARNING	Sign of danger		High temperature Warning
Caution	be careful		Warning

Revised version record

Date	Version	Revised chapter
Nov, 2023	2.00	Complete this manual

Content

1. Overview

1.1 Introduction

The FT8350 series battery simulator is a high-precision, multi-channel, dual-quadrant programmable battery simulator.It can be used as DC power supply and has DC load function.The simulator current can be charged and discharged, and supports a variety of fault simulation, which can not only meet the test requirements of BMS, but also meet the ATE test of consumer electronic products. Single machine has 24 channels, electrical isolation between each channel, convenient for users to use in series. Its own upper computer software is simple to operate, flexible and easy to use. Support single-channel programming operations, multi-channel editing operations and multi-process programming operations.

The FT8350 series uses a standard 19-inch chassis with a 3U height and provides dual network ports and RS485 communication ports for easy integration into the R&D and production line automated test platform, or can be used alone.

1.2 Main Features

- voltage range:±5V/±6V/±15V/±20V;
- current range:±1A/±2A/±3A/±5A/±10A;
- Four-wire wiring, high precision output voltage
- Voltage temperature drift coefficient is less than 25ppm/℃;
- Seamless switch between source and load, powerful battery characteristics simulation function;
- Unique fault simulation function, simulating battery disconnection, short circuit, reverse connection, etc;
- Channel isolation, can be used in series with multiple channels;
- Professional testing software to support data reporting and data analysis;
- RS485 and dual Ethernet control interface;
- standard 19 inch, 3U chassis design, frame makes the pipes easier to install.

1.3 Overall Dimensions（mm）

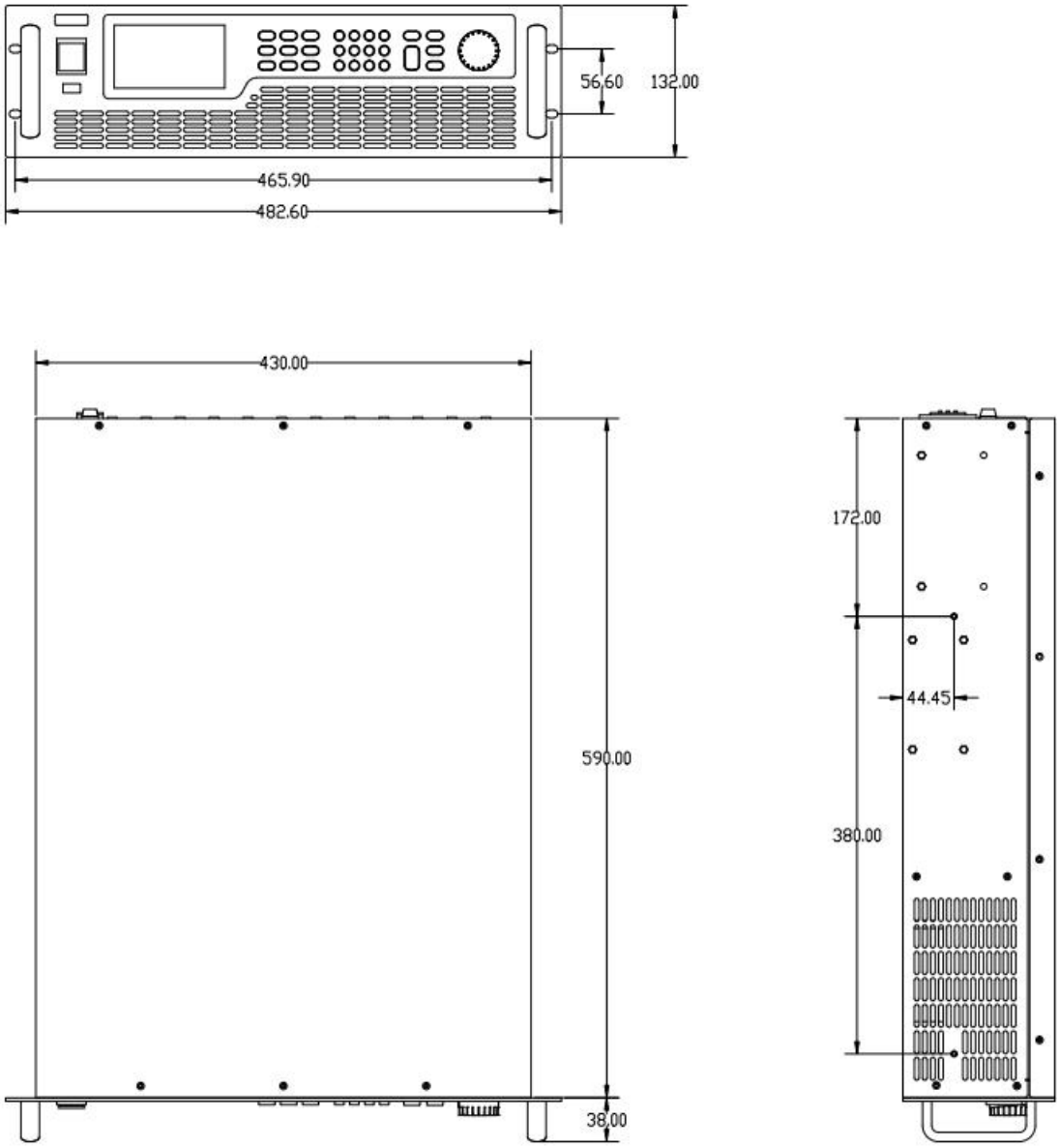


Figure 1- 1 FT8350 Series battery simulator

1.4 Front Panel

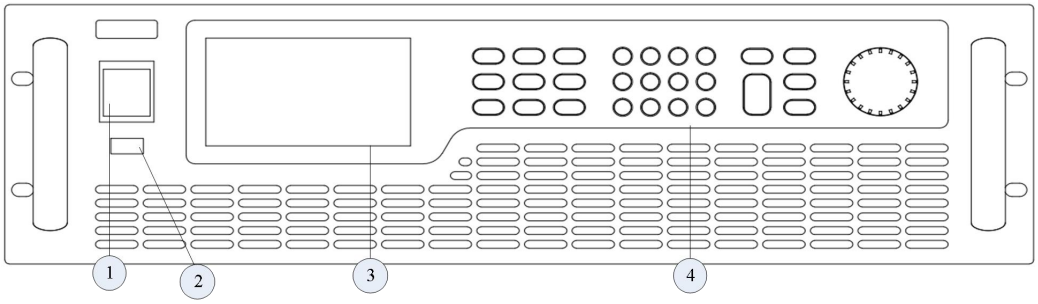


Figure 1- 2 Front panel

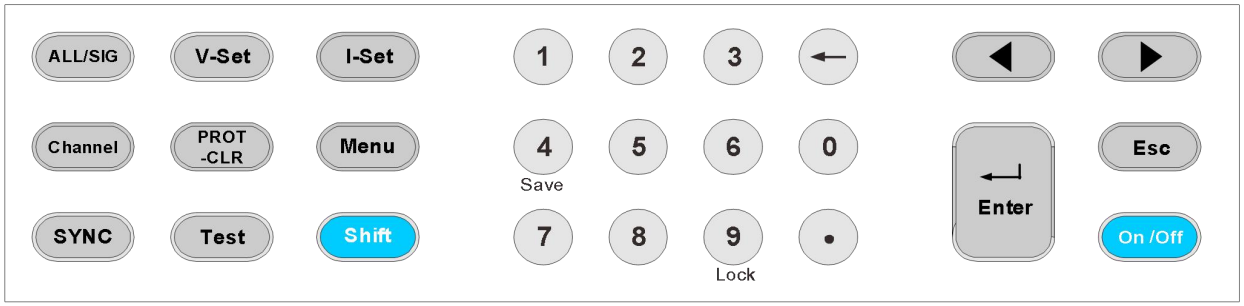
① Power switch

② USB interface

③ LCD

④ Keypad

1.5 Keypad



Keypad description

Table 1- 1 keypad description

Key name	Function description
ALL/SIG	Single/multi channel interface switch
V-Set	Set Voltage
I-Set	Set current
Channel	Skip channel
PROT -CLR	Clear reporting error

Menu	Menu
SYNC	Select all channel,All channels can be synchronously modified parameters
Test	Select advanced test function
Shift	reuse combination key
0 ～ 9	Digit key,Combined with Shift key for second function
•	Dot
◀	move left
▶	Move right
Enter	Enter key, confirm after entering or setting parameters
Esc	escape key or return to the previous menu
On/Off	Output on/output off

Composite key

Used in combination with Shift button to achieve the function of labeling below the button as below.

Table 1- 2 composite key function description

Key name	Function description
Shift + 4 （Save）	Save channel setting parameter
Shift + 9 （Lock）	Lock and unlock keypad
Shift + ◀	Switch the echo parameters，power（mW), loading time(s),capacity(mAh), internal resistance(kΩ), energy(mWh).
Shift + 7	Screenshot function

1.6 Display screen introduce

The simulator information interface display as below.

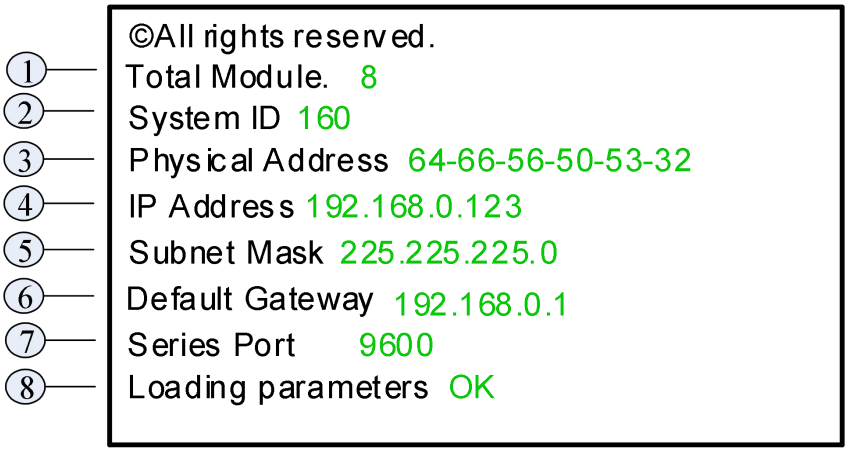


Figure 1-4 FT8350 series information interface

The simulator information interface detailed description

Table 1-3 interface detailed description

No.	Load information	Description
1	Scan Module	Channel numbers of the module
2	System ID	Simulator ID, default dial switch:160
3	Physical Address	Simulator network port physical address
4	IP Address	Simulator network port IP address, default:192.168.0.123
5	Subnet Mask	Simulator subnet mask, default:225.225.225.0
6	Default Gateway	Simulator default gateway, default:192.168.0.1
7	Series Port	RS485 Communication serial port baud rate, verification mode，Default:9600
8	Loading parameters	load simulator parameter

1.7 Multi channel monitoring interface

The monitoring interface displays as below.

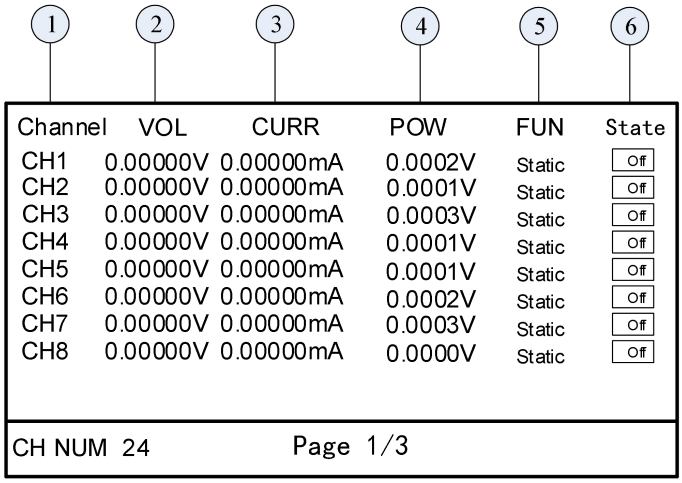


Figure 1-5 main interface

① Channel list
② Echo voltage
③ Echo current
④ Echo power
⑤ Function
⑥ State

1.8 Single channel display interface

Press key ALL/SIG ,enter to single channel function interface; Press key Channel , skip to single channel function interface.

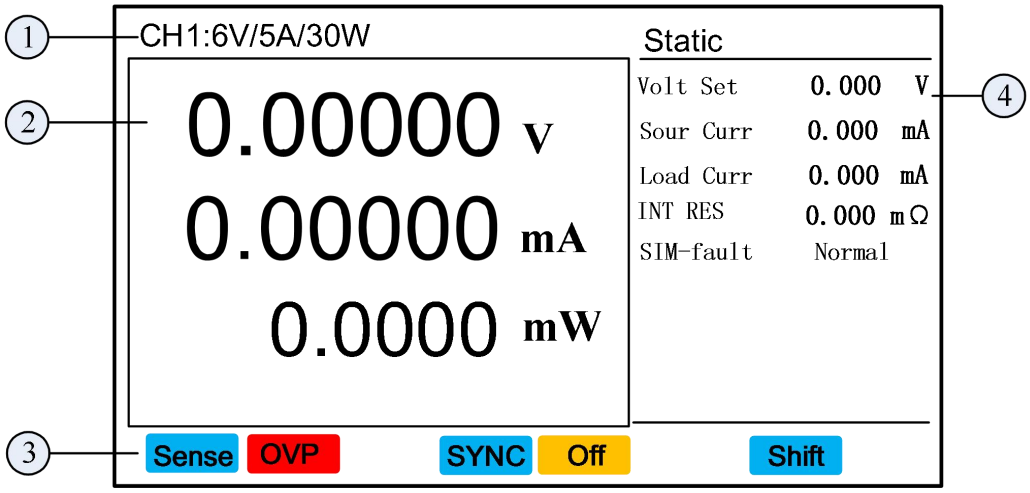


Figure 1-6 single channel interface

① Display channel and specification
② Echo area for voltage, current etc
③ Status prompt area
④ Functional parameter setting area

Specification and parameter display

Display voltage, current and power of the simulator.

The status prompt area description

Display the following types of prompt information:

- Protection:OPP,OCP,OVP,OTP,LVP,OP,OC,OV,CMF
- Status:Off, On
- Composite key:Shift（Key second function）, SYNC(Synchronization setting)
- Sense indicates the remote voltage sampling

Introduce echo area of voltage and current parameters

The echo area is used to display sampling voltage, sampling current, sampling power, measurement results and other information. The echo parameters will be different under different test functions.

Introduce function parameters setting area

The method of setting test parameters is as follows:

1. Scroll the knob or press the arrow key to move the cursor to the parameter to be edited;
2. Press Enter key into parameters editing status;
3. Press numeric key or rotate the knob to enter the numerical values;
4. Press Enter key to enable the entered value and exit editing status.

1.9 Rear Panel

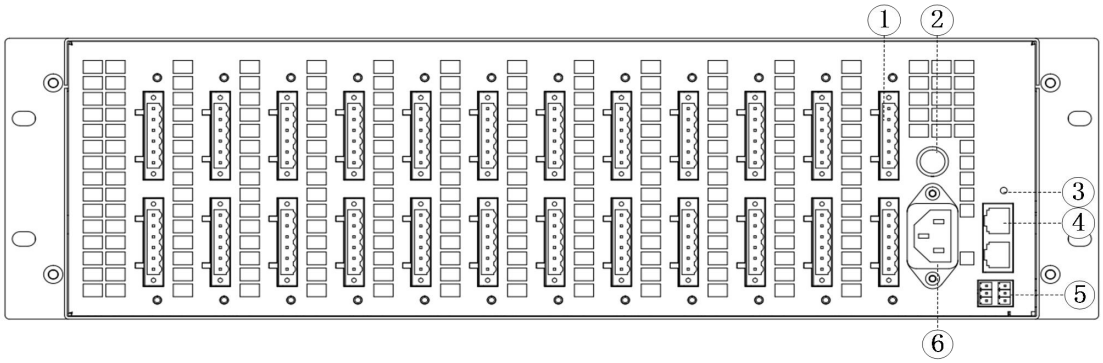


Figure 1- 7 Rear panel

① Battery simulator output terminal ②Fuse box ③ Reset button

④ Ethernet port ⑤ RS485 port and external I/O port

⑥220VAC Power supply socket

1.10 Specifications

Table 1- 4 Specification-1

Model		FT835016A-6-1	FT835016A-6-2	FT835016A-6-3	FT835016A-6-5	FT835016A-15-1	FT835016A-15-2	FT835016A-20-1
Voltage		±6V	±6V	±6V	±6V	±15V	±15V	±20V
Current		±1A	±2A	±3A	±5A	±1A	±2A	±1A
Power		6W	12W	18W	30W	15W	30W	20W
Input impedance		≥3GΩ						
Number of channels		16CH						
Model		FT835018A-6-1	FT835018A-6-2	FT835018A-6-3	FT835018A-6-5	FT835018A-15-1	FT835018A-15-2	FT835018A-20-1
Voltage		±6V	±6V	±6V	±6V	±15V	±15V	±20V
Current		±1A	±2A	±3A	±5A	±1A	±2A	±1A
Power		6W	12W	18W	30W	15W	30W	20W
Input impedance		≥3GΩ						
Number of channels		18CH						
Model		FT835024A-6-1	FT835024A-6-2	FT835024A-6-3	FT835024A-6-5	FT835024A-15-1	FT835024A-15-2	FT835024A-20-1
Voltage		±6V	±6V	±6V	±6V	±15V	±15V	±20V
Current		±1A	±2A	±3A	±5A	±1A	±2A	±1A
Power		6W	12W	18W	30W	15W	30W	20W
Input impedance		≥3GΩ						
Number of channels		24CH						
Max Connection in series		Support series, maximum output voltage in series is less than 1000V						
Voltage parameter	Output range	0～6.12V				0～15.3V		0～20.4V
	Output accuracy	0.5mV				1.5mV		2mV
	Resolution	0.1mV						
	Measurement accuracy	0.5mV				1.5mV		2mV
	Resolution	0.1mV						
	Rise time	≤1ms						
	Temperature coefficient	25ppm/℃						
Current parameter (double range)								
Range 1	Output range	-1～1A	-2～2A	-3～3A	-5～5A	-1～1A	-2～2A	-1～1A
	Measurement accuracy	0.05%+0.5mA	0.05%+1mA	0.05%+1.5mA	0.05%+2.5mA	0.05%+0.5mA	0.05%+1mA	0.05%+0.5mA
	Resolution	0.1mA						
Range 2	Output range	-1～1mA	-2～2mA	-3～3mA	-5～5mA	-1～1mA	-2～2mA	-1～1mA
	Measurement accuracy	0.05%+0.5uA	0.05%+1uA	0.05%+1.5uA	0.05%+2.5uA	0.05%+0.5uA	0.05%+1uA	0.05%+0.5uA

	Resolution	0.1uA
Temperature coefficient		50ppm/℃
Other features		
Connection mode		PCB soldered terminal/Four wire connection
Dimension		3U/19”
Sampling frequency		20Hz
Communication interface		LAN、RS485，CAN
Communication protocol		SCPI、Modbus
Transport protocol		TCP/IP
Fault simulation		Positive open circuit, negative open circuit, output short circuit, polarity reverse connection(Only A series has fault simulation function)
Input power supply		single-phase 100～240Vac,50/60Hz
Environment features	Working temperature	0～40℃
	Storage temperature	-25℃～60℃
	Working humidity	20%rh～85%rh（No condensation）
	Storage humidity	＜90%rh（No condensation）
	Service altitude	altitude＜2000m,Indoor use
	Dimension	430（W）*594（D）*132（H） mm
	Weight	20kg

Table 1- 5 Specification-2

Model	FT835016E-6-1	FT835016E-6-2	FT835016E-6-3	FT835016E-6-5	FT835016E-15-1	FT835016E-15-2	FT835016E-20-1
Voltage	±6V	±6V	±6V	±6V	±15V	±15V	±20V
Current	±1A	±2A	±3A	±5A	±1A	±2A	±1A
Power	6W	12W	18W	30W	15W	30W	20W
Input impedance	≥3GΩ						
Number of channels	16CH						
Model	FT835018E-6-1	FT835018E-6-2	FT835018E-6-3	FT835018E-6-5	FT835018E-15-1	FT835018E-15-2	FT835018E-20-1
Voltage	±6V	±6V	±6V	±6V	±15V	±15V	±20V
Current	±1A	±2A	±3A	±5A	±1A	±2A	±1A
Power	6W	12W	18W	30W	15W	30W	20W
Input impedance	≥3GΩ						
Number of channels	18CH						
Model	FT835024E-6-1	FT835024E-6-2	FT835024E-6-3	FT835024E-6-5	FT835024E-15-1	FT835024E-15-2	FT835024E-20-1
Voltage	±6V	±6V	±6V	±6V	±15V	±15V	±20V

Current		±1A	±2A	±3A	±5A	±1A	±2A	±1A
Power		6W	12W	18W	30W	15W	30W	20W
Input impedance		≥3GΩ						
Number of channels		24CH						
Max Connection in series		Support series, maximum output voltage in series is less than 1000V						
Voltage parameter	Output range	0～6.12V				0～15.3V		0～20.4V
	Output accuracy	0.5mV				1.5mV		2mV
	Resolution	0.1mV						
	Measurement accuracy	0.5mV				1.5mV		2mV
	Resolution	0.1mV						
	Rise time	≤1ms						
	Temperature coefficient	25ppm/℃						
Current parameter (double range)								
Range 1	Output range	-1～1A	-2～2A	-3～3A	-5～5A	-1～1A	-2～2A	-1～1A
	Measurement accuracy	0.05%+0.5mA	0.05%+1mA	0.05%+1.5mA	0.05%+2.5mA	0.05%+0.5mA	0.05%+1mA	0.05%+0.5mA
	Resolution	0.1mA						
Range 2	Output range	-1～1mA	-2～2mA	-3～3mA	-5～5mA	-1～1mA	-2～2mA	-1～1mA
	Measurement accuracy	0.05%+0.5uA	0.05%+1uA	0.05%+1.5uA	0.05%+2.5uA	0.05%+0.5uA	0.05%+1uA	0.05%+0.5uA
	Resolution	0.1uA						
Temperature coefficient		50ppm/℃						
Other features								
Connection mode		PCB soldered terminal/Four wire connection						
Dimension		3U/19''						
Sampling frequency		20Hz						
Communication interface		LAN、RS485，CAN						
Communication protocol		SCPI、Modbus						
Transport protocol		TCP/IP						
Fault simulation		Positive open circuit, negative open circuit, output short circuit, polarity reverse connection(Only A series has fault simulation function)						
Input power supply		single-phase 100～240Vac,50/60Hz						
Environment features	Working temperature	0～40℃						
	Storage temperature	-25℃～60℃						
	Working humidity	20%rh～85%rh（No condensation）						
	Storage humidity	＜90%rh（No condensation）						

	Service altitude	altitude＜2000m,Indoor use
	Dimension	430（W）*594（D）*132（H） mm
	Weight	20kg

Note: More specifications and models support customization.

2. Quick Start

2.1 Inspection

After receiving the power supply, check the equipment according to the following steps:

■ Check for damage during transportation

If the packing case or protective pad is seriously damaged, please contact our authorized distributor or after-sales service department immediately.

Note: Do not return the device without a positive response.

■ Check accessories

Confirm that you received the following attachments when you received the equipment:

Table 2- 1 Accessories Description

Accessories	quantity	description
Power cord	1 pcs	220VAC 10A 1.5m
6 pins green terminals	24pcs	6 pin 5.08mm male head green terminal
LAN Connecting wire	1 pcs	Connect PC-LAN
User manual	1 pcs	Includes installation and operation information
CD	1 pcs	Software and technical information
Warranty card and certificate of qualification	1 pcs	Warranty and after-sales service information

If there is any missing or damage, please immediately contact our authorized dealer or after-sales service department.

■ Check the device

If the chassis is damaged or works abnormally, contact our authorized distributor or after-sales service department immediately.

■ Clean

If you need to clean the shell of the machine, please gently wipe with a dry cloth or a slightly damp cloth, do not wipe the inside of the device.

⚠ **Warning: Disconnect power before cleaning!**

2.2 Battery Simulator Output Terminals

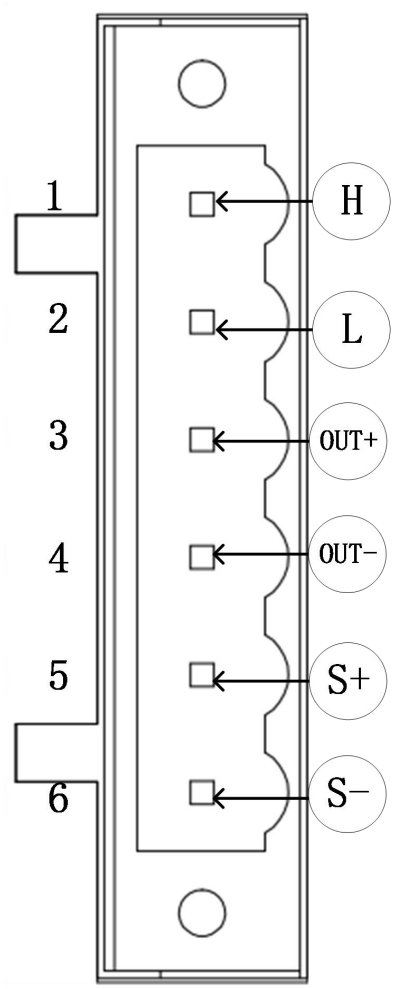


Figure 2- 1 Battery Simulator Output Terminals

The output wire of FT8350 series battery simulator shall adopt four-wire method as shown in "Figure 2-1 Battery simulator output terminal" to ensure the high precision of output voltage. OUT+ and OUT- are power line output terminals, and S+ and S- are voltage remote sampling terminals. When the battery simulator is in use, connect V+/S+ and V-/S- respectively to the positive and negative terminals of the load device, as shown in Figure 2-2 Four-wire Connection Method. As far as possible, S+/S- should be

close to the test point to avoid measurement errors caused by line losses. H+ and L- are serial output lines that connect multiple terminals in series, as shown in Figure 2-3 Serial Output Wiring Diagram.

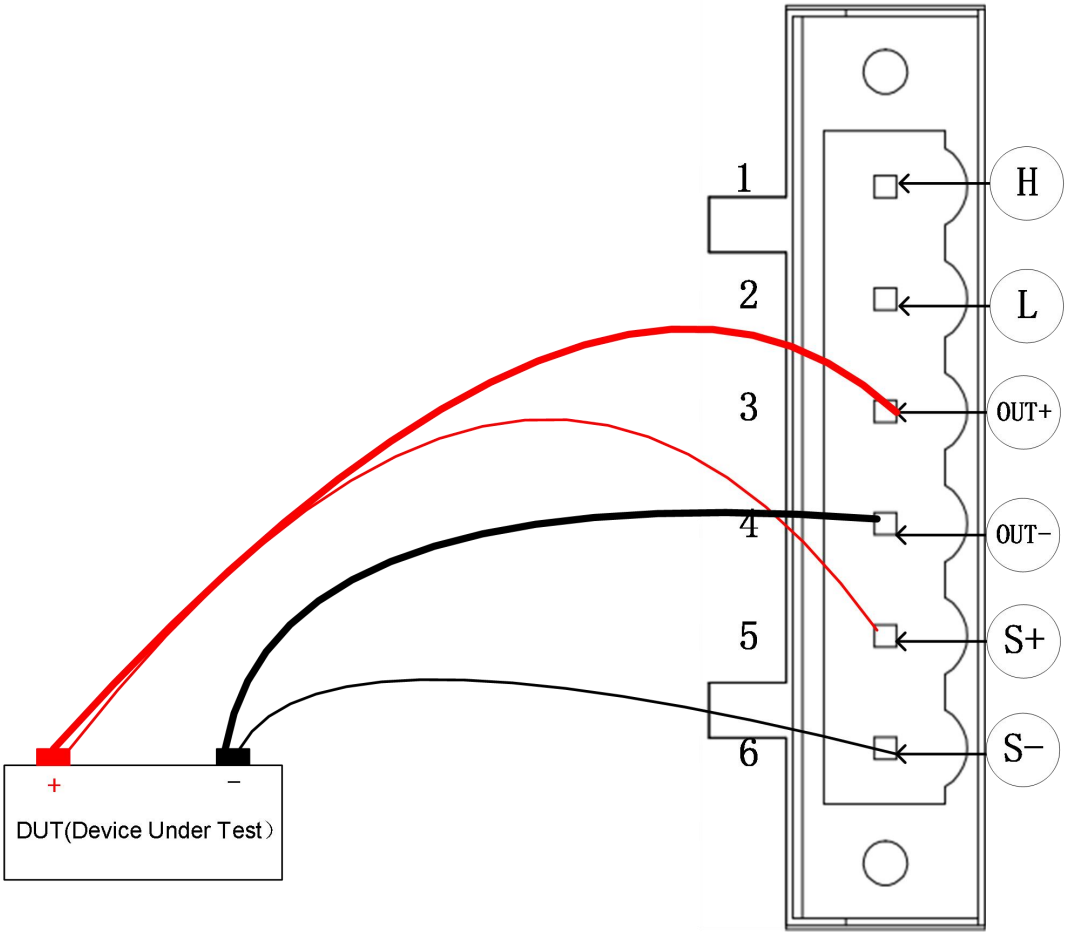


Figure 2- 2 Four wire connection

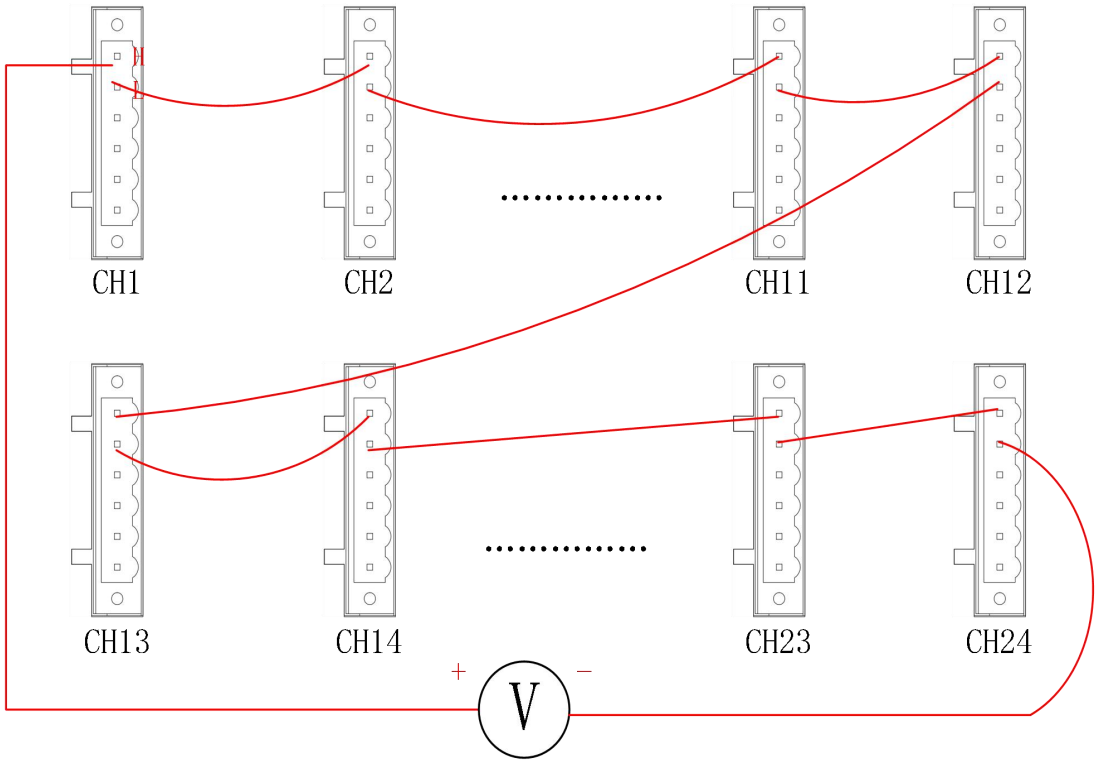


Figure 2- 3 Serial Output Wiring Diagram

2.3 Startup self-test

Before powering on the simulator, please confirm the following items:

1. The AC input range of the AC input socket: 110V～240VAC.
2. The power cord was connected to the AC input socket.

After powering on, the screen will display the device information. If there are not errors, it will enter the voltage and current monitoring interface.

Attention: Due to the characteristics of the simulator, do not start it immediately after the simulator is shut down, with an interval of 3-4 seconds!

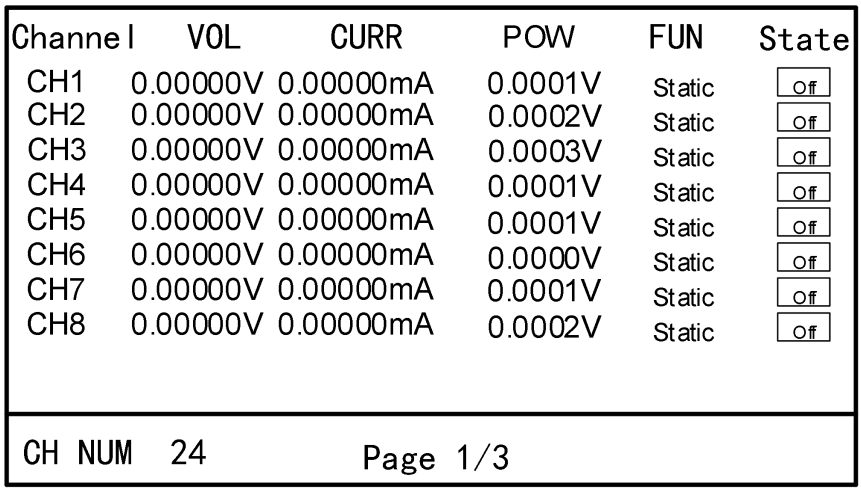


Figure 2-4 voltage and current monitoring interface

If the voltage and current monitoring interface is not entered, it means that the loading information is abnormal and the machine has faults. Please record the error information and immediately contact the authorized dealer or after-sales service department of our company.

If it fails to start normally, the following methods can help you find possible problems:

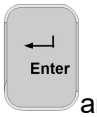
1) Check whether the power line is correctly connected and in the power supply state;

2) Check whether the power switch has been turned on;

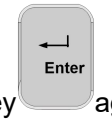
3) Check whether the power supply voltage is within the allowable range of the equipment.

If you need more help, please contact our technical support department.

2.4 Setting the parameters

Press key 

and 

into single channel setting .Turn the knob to change the voltage and current value, or press the number key to input the set value, press key 

again to make input values effective.

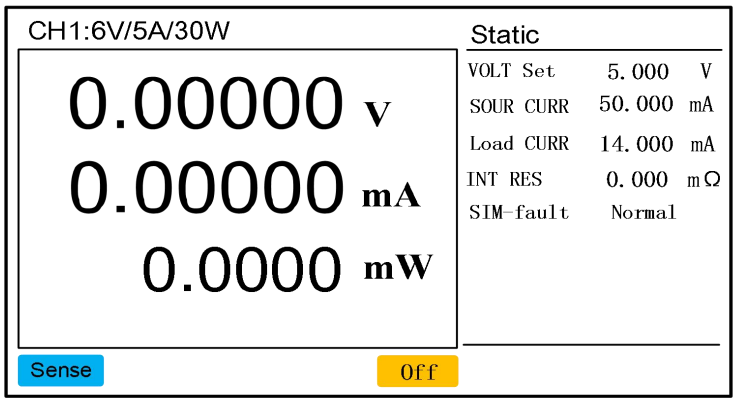


Figure 2-5 single channel setting interface

2.5 Menu Configuration

2.5.1. Set item configuration

Press key 

enter into menu setting interface, press arrow key to select "Set"menu and then press key 

into sub-menu setting, protection setting refer to"2.6 **protection.**"

Table 2-2 Set Menu parameters description

Menu	Option	Function
App Set	Sense(Voltage sampling)	Remote/Local, default: remote
	Prio SLT(Output priority)	VOLT/CURR（voltage/current）default: VOLT
	V.Slew-UP (Voltage up slew rate	Speed setting range for switching between two voltage settings:1～20000 V/S,default:10000 V/S
	V.Slew-DN (Voltage down slew rate	Speed setting range for switching between two voltage settings:1～20000 V/S,default:10000 V/S
	S.I.Slew-UP(Source current up slew rate	Speed setting range for switching between two current settings:1000～2000000 mA/S, default:2000000 mA/S
	S.I.Slew-DN(Source current down slew rate	Speed setting range for switching between two current settings:1000～2000000 mA/S, default:2000000 mA/S
	L.I.Slew-UP(Load current up slew rate	Speed setting range for switching between two current settings:1000～2000000 mA/S, default:2000000 mA/S

	L.I.Slew-DN(Load current down slew rate	Speed setting range for switching between two current settings:1000～2000000 mA/S, default:2000000 mA/S
	CURR range	Auto/High/MIDD/Low，default: Auto
Protect	OVP (Over voltage protection)	OVP protection point, configurable range: MIN~MAX, set 0 to turn off OVP, default: 0V
	OCP (Over current protection)	OCP protection point, configurable range: MIN~MAX, set 0 to turn off OCP,default: 0mA
	OPP (Over power protection)	OPP protection point, configurable range: MIN~MAX, set 0 to turn off OPP,default: 0mW
	LVP (Low voltage protection	LVP protection point, configurable range: MIN~MAX, set 0 to turn off LVP,default: 0V
	Over time	Communication timeout time, range:0～3600s,set 0 to turn off communication timeout protection

Select "App set"(application Set) sub-menu, Press 

key into application setting interface as below:

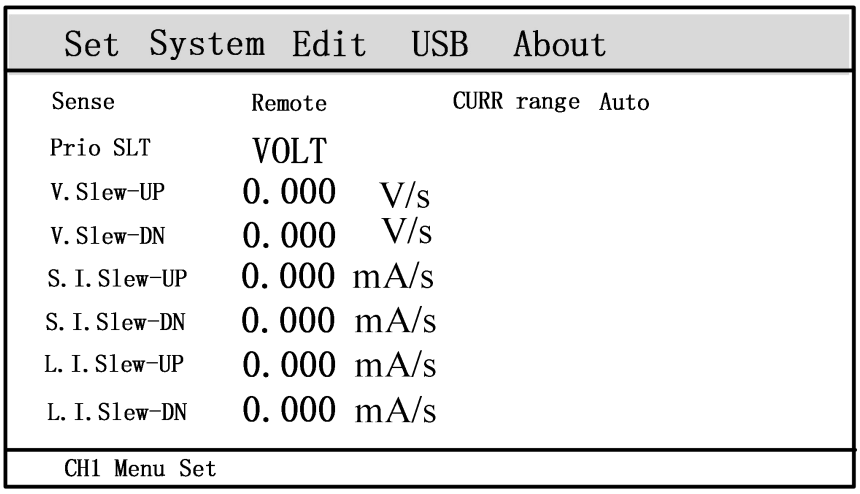
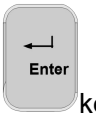


Figure 2-6 App set interface

2.5.2. System menu setting

Press 

key into menu setting interface, Press arrow key to select "System" setting , and then press 

key into sub-menu setting.

Table 2-3 System menu list

Menu	Option	Function

Communication	Address	Device address for Modbus protocol frame,configurable range 1～247, default:160
	Protocol	Switch Modbus/SCPI protocol, default:Modbus
	Baud rate	Optional 9600/19200/38400/57600/115200，default:9600
	TCP port	The device network TCP communication port，default:502
	UDP port	The device network UDP communication port，default:7000
Network	DHCP	on/off, enable automatic acquisition of IP addresses.
	IP	Network communication IP address，default:192.168.0.123
	S-Mask	Network communication subnet mask，default:255.255.255.0
	Gateway	Network communication default gateway，default:192.168.0.1
	MAC	Network communication physical address
Factory (factory setting)	Restore factory setting	Restore system data to factory setting，need to restart your device for it to take effect
Others	Language	Interface language, support Chinese (simplified and traditional) and English，default:simplified
	Sound	On or Off keypad sound，default:On
	Refresh	The interface refresh time for remote communication，default:0 ms

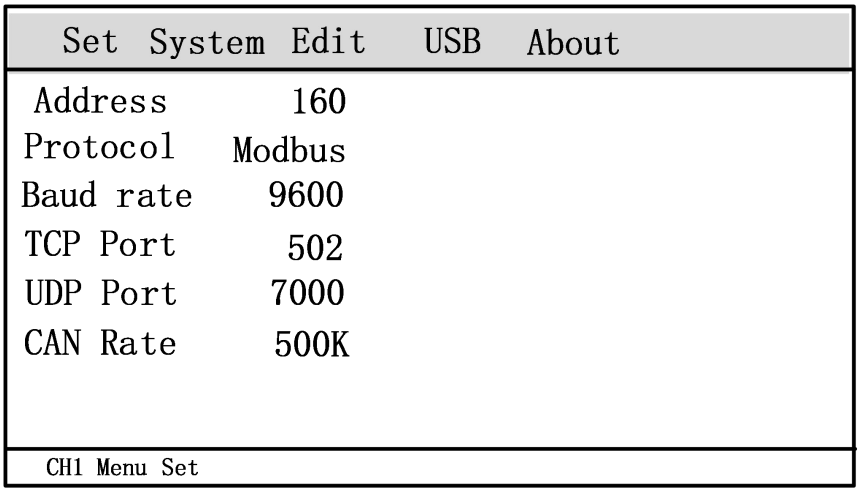


Figure 2-7 communication setting interface

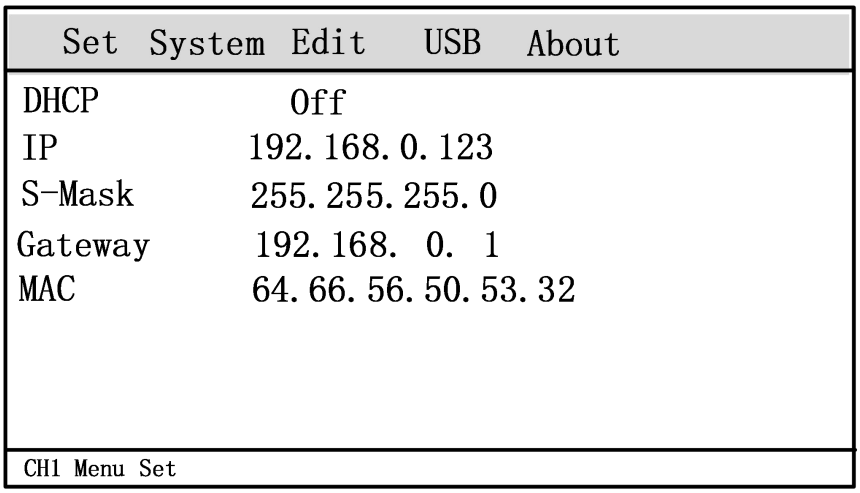


Figure 2-8 network setting interface

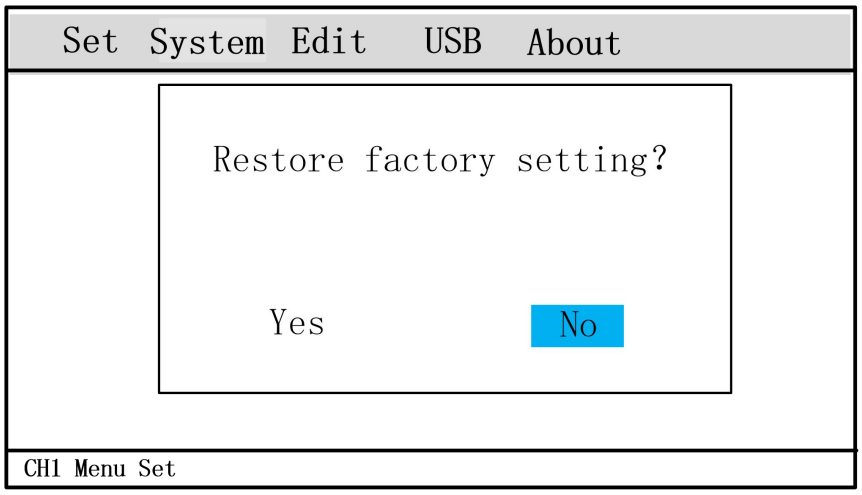


Figure 2-9 Restore factory setting interface

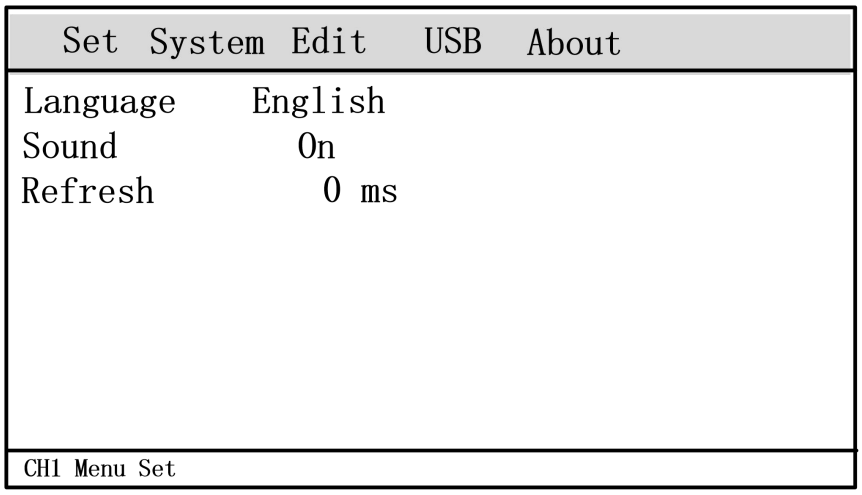


Figure 2-10 other setting interface

2.5.3. Edit item menu

Press Menu key into menu setting interface, select "Edit",and then press Enter key to pop up sub-menu.The Edit items are used for editing battery files and sequence files, for details, please refer to"**3.5.Battery simulation function（BATT）**"and"**3.7. Sequence function.（SEQ）**".

Table 2- 4 edit item menu

Option	Function
BATT file	Select battery file number, range:1～20.
SEQ file	Select sequence file number, range:1～20.
Back	Exit sub-menu.

2.5.4. USB item menu

Press Menu key into menu setting interface, select"USB"menu, Press Enter key to pop up sub-menu. The USB item is used for loading file and exporting file（sequence file and battery file），detail please refer to 2.9 export file and 2.10 load file.

Press Shift + 7 to take screen shot as 2.8 screen shot.

Table 2- 5 USB item menu

Option	**Item**	Function
Load file	File type	Select the file type to load: Sequence File and Battery File
	Open file name	Select opened file name， sequence file:SEQ01~SEQ20, battery file:BATT01~BATT20
	module file number	Select the file number for the present channel loaded:1~20
	Load file	Click Confirm to start loading the file, and click Cancel to exit the submenu
Export file	File type	Select the file type to export: Sequence File and Battery File

	Export file name	Select exported file name，sequence file:SEQ01~SEQ20, battery file:BATT01~BATT20，Export a file with the same name to overwrite
	module file number	Select the file number for the present channel exported: 1~20
	Export file	Click Confirm to start exporting the file, and click Cancel to exit the submenu
Back		Exit sub-menu.

2.5.5. About

Press Menu key into menu setting interface, select "about" menu,Press Enter key to pop up the version of HMI, MAIN, COMM program,as shown in Figure 2-23.

2.6 Protection

FT8350 series devices have the following protection functions.

- over voltage protection
- over current protection
- over power protection
- Low voltage protection
- Over temperature protection
- Communication timeout protection

When the protection condition occurs, the device automatically shuts down the output. The screen shows the specific protection content, while the buzzer emits an alarm.

1. Press PROT -CLR （PROT_CLR）key, you can clear the protection status.

2.6.1. Over voltage protection

The device has two types of over voltage protection: hardware overvoltage and software over voltage.

- Hardware overvoltage protection: when the output voltage exceeds 110% of the rated voltage of the device, the hardware overvoltage protection will be triggered, and the screen will prompt "OV".
- Software overvoltage protection: The device provides the option of "overvoltage protection" for users to set. For the relevant configuration items, refer to the protection Settings of"Set item configuration",as shown in Figure 2-10, Set 5V as overvoltage protection value.Set 0 to turn off software overvoltage protection. When the input voltage exceeds the "overvoltage protection" setting, the software overvoltage protection will be triggered, and the screen will prompt "OVP" as Figure 2-12.

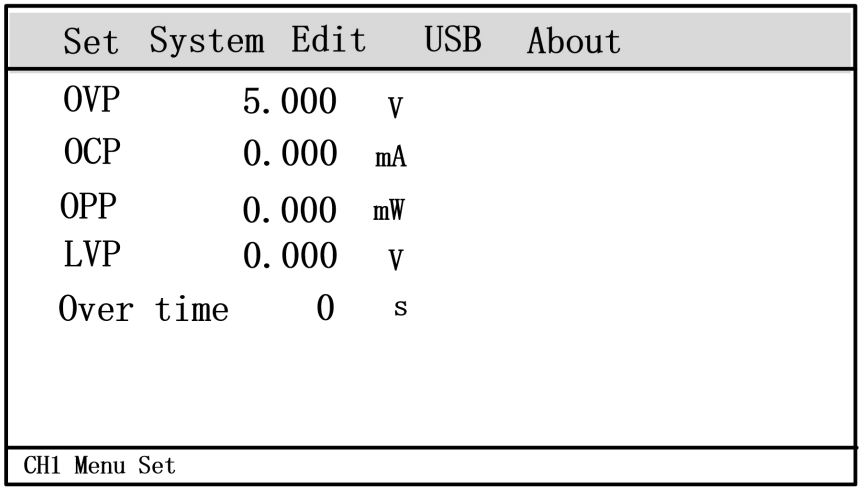


Figure 2-11 OVP setting interface

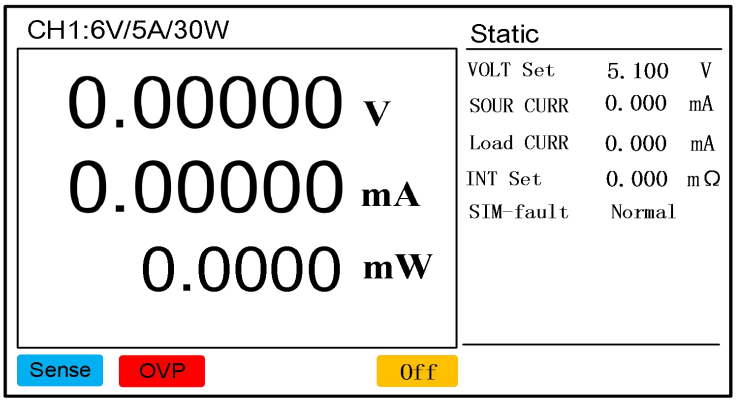


Figure 2-11 OVP display

2.6.2. Over current protection

The device has two types of overcurrent protection: hardware overcurrent and software overcurrent.

- Hardware overcurrent protection: when the output current exceeds 110% of the rated current of the device, the hardware overcurrent protection will be triggered, and the screen will prompt "OC".
- Software overcurrent protection: The device provides the option of "overcurrent protection" for users to set. For the related configuration items, refer to the protection Settings of"2.5.1Set item configuration.",as Figure 2-13 ,Set 1000mA as over current protection value. Set 0 means to turn off software overcurrent protection. When the output current exceeds the value of overcurrent protection, the software overcurrent protection is triggered, and the screen will prompt "OCP" as Figure 2-14.

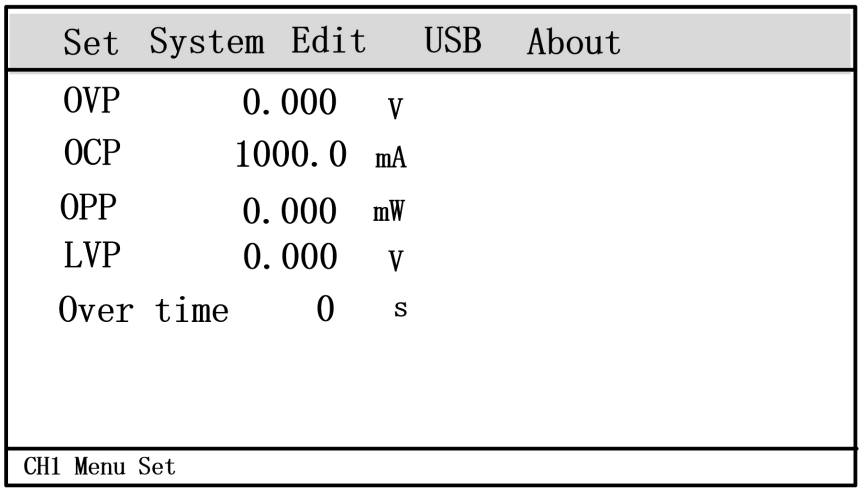


Figure 2-13 OCP setting interface

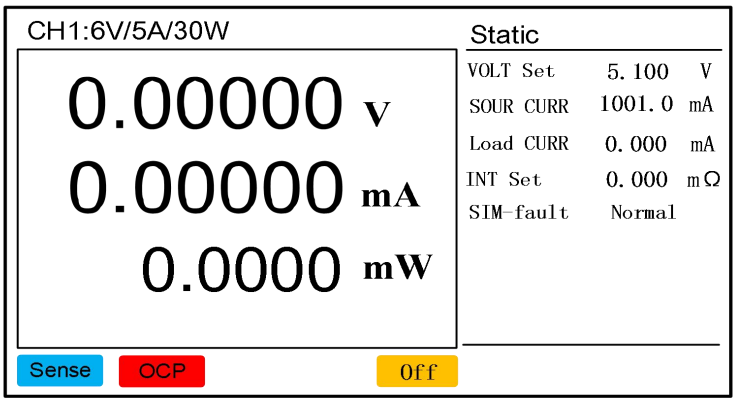


Figure 2- 14 over current protection

2.6.3. Over power protection

The device has two types of overpower protection: hardware overpower and software overpower.

- Hardware overpower protection: When the output power exceeds 110% of the rated power of the device, the hardware overpower protection will be triggered, and the screen prompts "OP".
- Software over power protection:The device provides the option of "over power protection" for users to set. ,the related configuration items refer to the protection settings of"2.5.1 Set item configuration", example for Figure 2-15, set 5000mW as over power protection value, set 0 means to turn off software over power protection. When the input power exceeds the value of over **power protection**, the software over power protection is triggered, and the screen will prompt "OPP" as Figure 2-16.

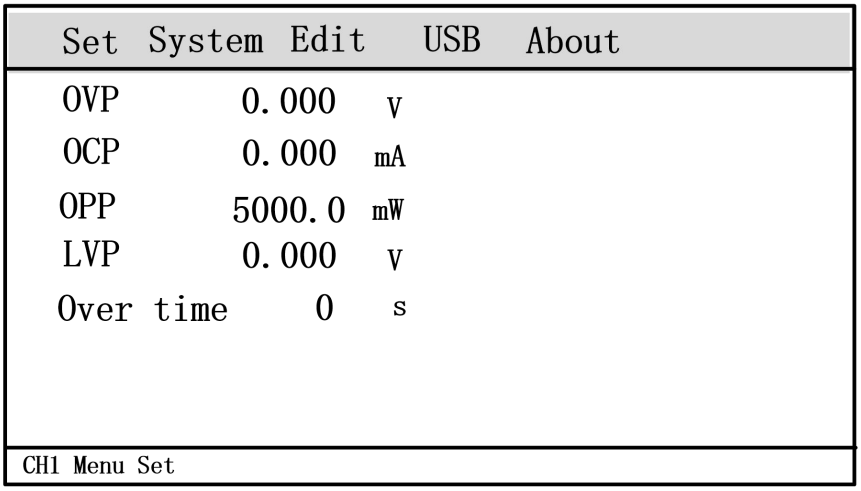


Figure 2-15 OPP setting interface

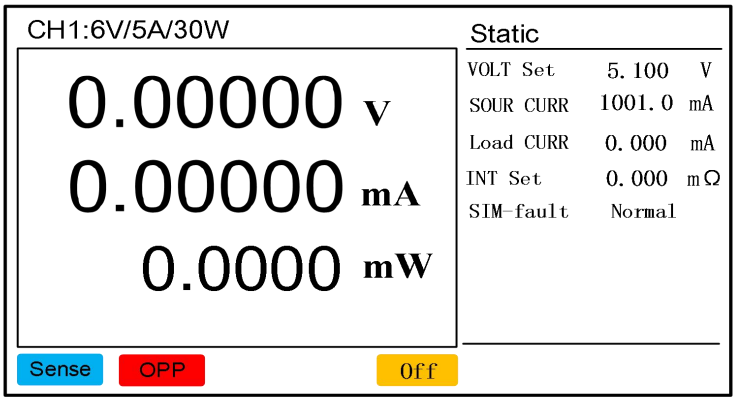


Figure 2-16 OPP

2.6.4. Low voltage protection

The device provides the option of "low voltage protection" for users to set. For the related configuration items, refer to the protection Settings of"2.5.1 Set item configuration "Example for Figure 2-17, Set 2V as low-voltage protection value, Set to 0 means to turn off the low voltage protection. When the output voltage is lower than the "low voltage protection" setting, the low voltage protection will be triggered and the screen will prompt "LVP" as Figure 2-18.

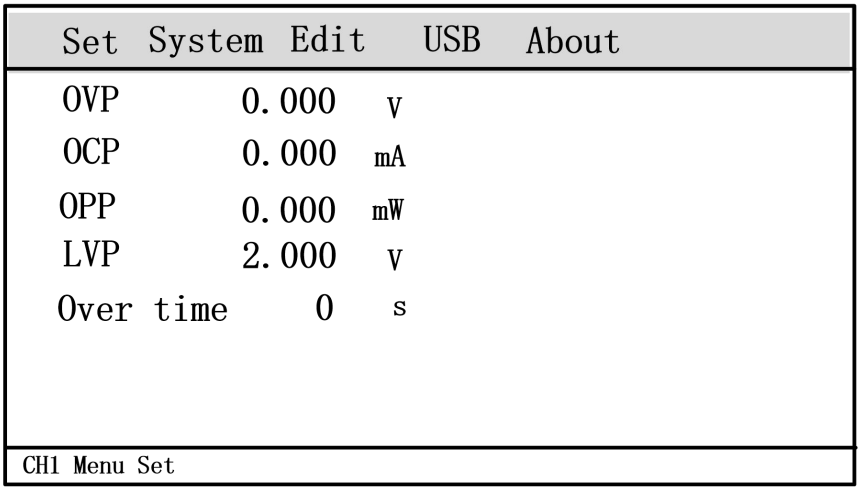


Figure 2-17 LVP setting interface

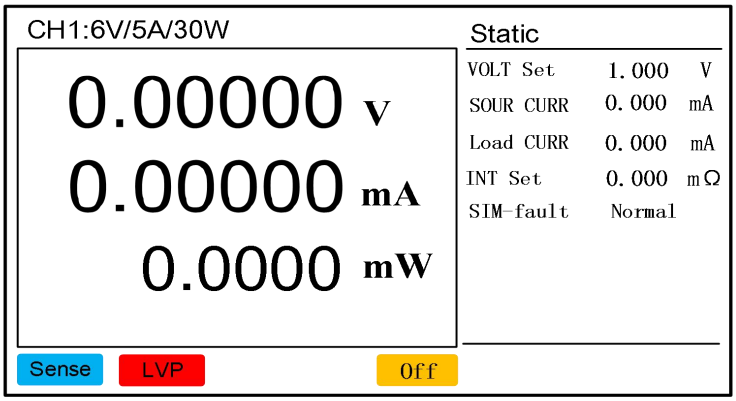


Figure 2-18 LVP

2.6.5. Over temperature protection

When the temperature of the device inside exceeds 65℃ during use, over temperature protection will be triggered ,and the screen will prompt "**OTP**".

2.6.6. Communication timeout protection

When using upper computer software to control the simulator, if the communication link is disconnected or the upper computer software works abnormally, it will cause the simulator to lose control.so this situation may damage the tested equipment. FT8350 provides communication timeout protection as Figure 2-19, Set 60S as the communication timeout time. If the upper computer does not communicate with the simulator for a period

of time, the simulator will automatically shut down the output and the screen will prompt "CMF" as Figure 2-20.

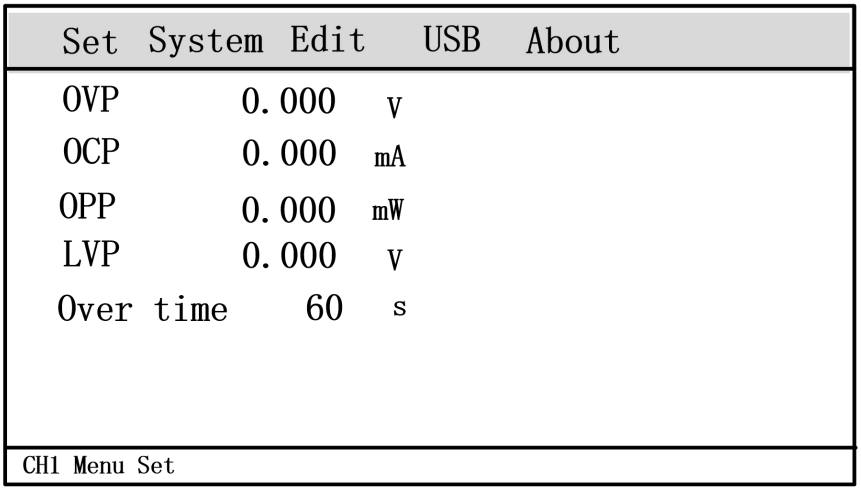


Figure 2-19 CMF setting interface

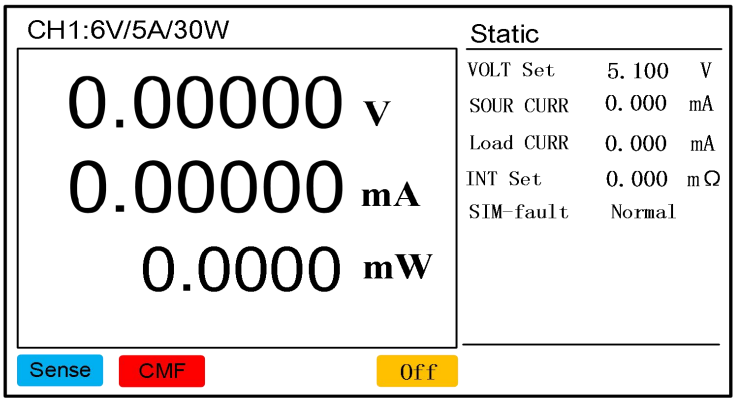


Figure 2-20 CMF

2.7 Save

The channel current, voltage and slope of FT8350 series need to be manually saved by the customer.

Operation steps

1. Switch to the interface where you need to set parameters, and set the parameters;
2. Press Shift + 4 （Save）key to save,the following interface will be displayed in the status area of the display interface:

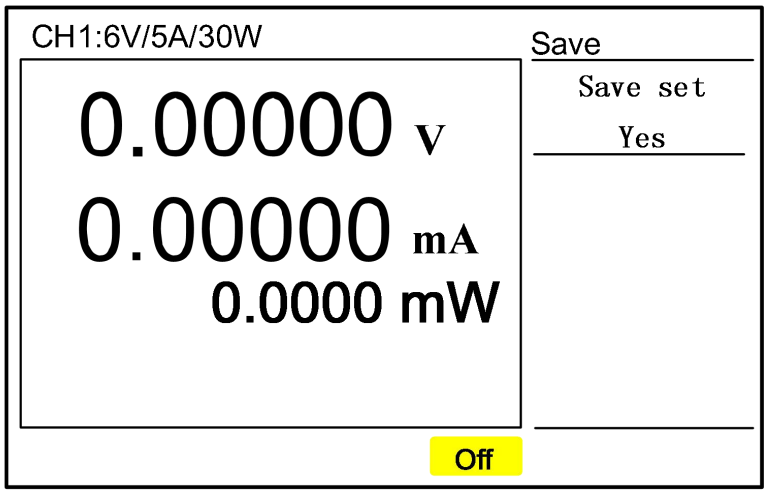


Figure 2-21 Save parameter setting interface

3. Press 

key to confirm save, the lower part of the interface shows that it has been saved.

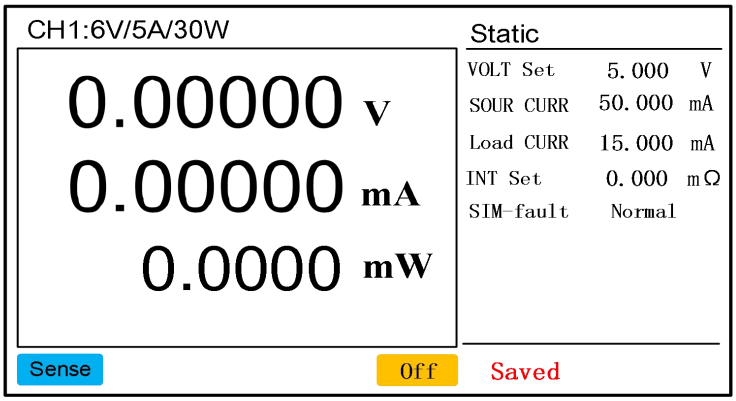


Figure 2-22 Saved parameter interface

2.8 Screen shot

The FT8350 series simulators can be used to take screenshots via the USB interface.

Operation steps

1. Change into interface you need to screen shot;
2. Insert the flash drive into the USB interface (make sure the inserted USB flash drive is in FAT32 format), and the USB icon in the figure below appears;

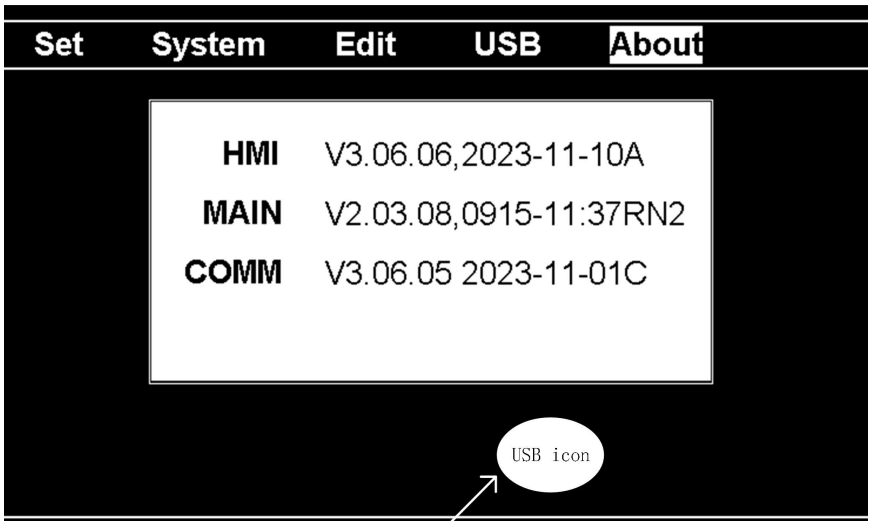


Figure 2-23 insert flash drive interface

3. Press Shift + 7 to take screenshot, a blue camera icon will appear in status area of the display interface, as shown in Figure 2-24 Screenshot Interface. After the screenshot is completed, the picture with form of the BMP is saved in flash drive.

Note:

1.When taking a screenshot, the interface cannot be operated, and the blue camera icon disappears to indicate that the screenshot is complete.

2.Do not pull out the flash drive when taking screenshots.

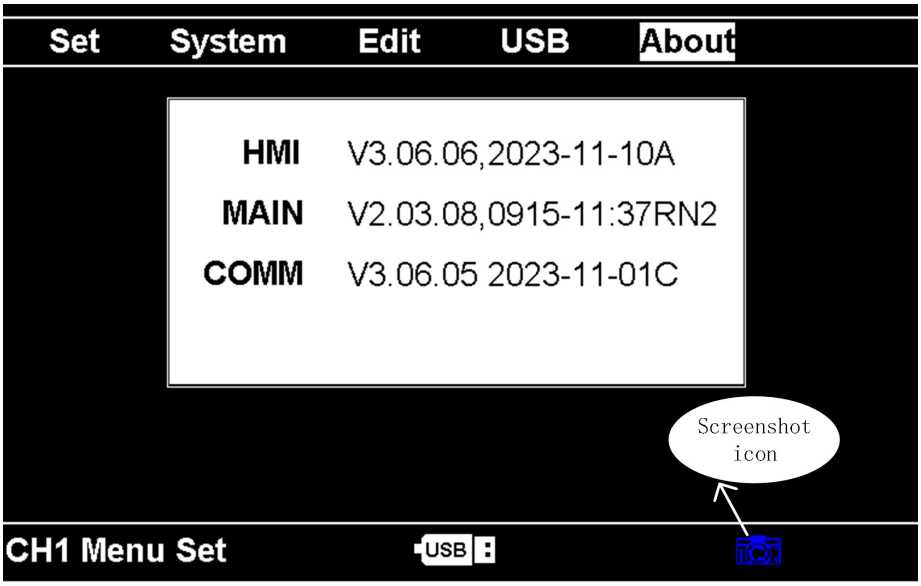


Figure 2-24 screenshot interface

2.9 Export file

The FT8350 series simulator can export files via the USB port while insert a flash drive into the USB port (make sure the flash drive is in FAT32 format).

Export file

1. Change into the channel you need to export file.
2. Press Menu into Menu setting interface, select"USB"item，then press Enter to pop up submenu，select" export file" to the following interface.

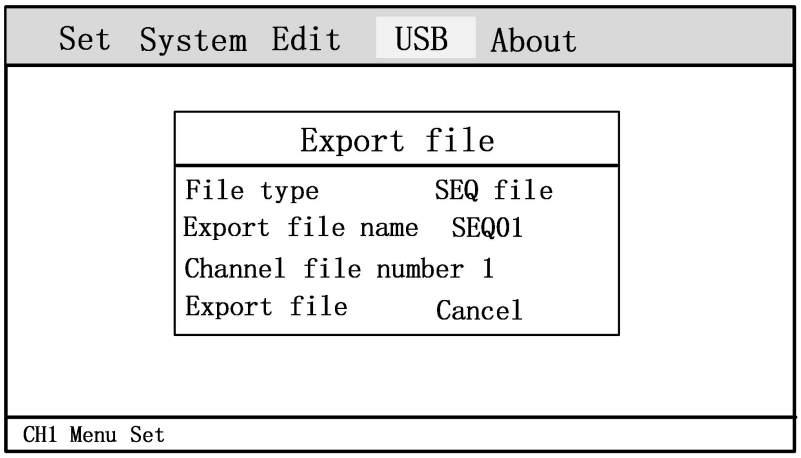


Figure 2-25 export file interface

3. Select file type:SEQ file/BATT file.
4. Select export file name:SEQ01~SEQ20/BATT01~BATT20.
5. Select the sequence/battery file number that needs to be exported for the present channel.
6. After selecting and confirming, it prompts to export the sequence/battery file successfully. (Files with the same name will be overwritten)

2.10 Load file

FT8350 series simulator can import files through the USB interface, before importing the file, you need to export the format of the battery and sequence files, see 2.9 export file for details.The exported battery and sequence file format is shown in the figure below. Edit the battery and sequence files to set the required parameters, and after the settings are completed, insert the flash drive into the USB port to import the file (make sure the inserted flash drive is in FAT32 format).

length	SOUR CURR	Load CURR	
5	2000	2000	
Step	VOLT	CAP	RES
1	1	100	1
2	2	200	0.8
3	3	300	0.6
4	4	400	0.4
5	5	500	0.2

Figure 2-26 battery file format

length	cycle	Link		
5	1	0		
Step	V-Set	S-I-Set	L-I-Set	Time
1	1.1	100	200	1
2	2.2	200	300	2
3	3.3	300	450	3
4	4	400	500	4
5	5	500	350	5

Figure 2-27 sequence file format

Table 2-6 Corresponding relationship of related parameters

Parameter name	Parameter description	Parameter name	Parameter description
Length	File length	Step	Present edited step
SOUR CURR	Output current limited	cycle	Running cycle
Load CURR	input current limited	Link	Link the sequence
VOLT	Single step voltage	V-Set	Single step voltage
CAP	Single step capacity	S-I-Set	Single step source current
RES	Single step internal resistance	L-I-Set	Single step load current
		Time	Single step delay time

Import file

1. Change into the channel you need to import file.

7. Press Menu into Menu setting interface, select"USB"item，then press Enter to pop up submenu，select" import file" to the following interface.

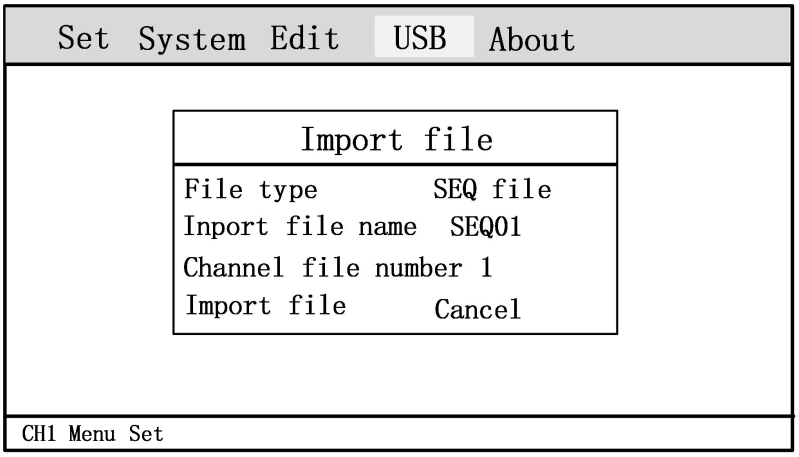


Figure 2-28 import file interface

2. Select file type you need to import.
3. Select sequence/battery file edited.
4. Select the sequence/battery file number that needs to be imported for the present channel.
5. After selecting and confirming, it prompts to import the sequence/battery file successfully.

2.11 Troubleshooting

When the simulator cannot work properly, please check and troubleshoot according to the description in this chapter. If the problem still cannot be solved, please contact the agent or Faith Technology after-sales service.

Table 2-6 Fault self inspection list

Fault	Possible cause	Solution
The measurement accuracy is not within the specification range	Device aging causes characteristic deviation	1.recalibrate 2.contact distributor or Faith technology
Load accuracy is not within the specification range	Device aging causes characteristic deviation	1.recalibrate 2.contact distributor or Faith technology
Over power protection	Carrying power exceeds the setting	Reduce load or increase OPP setting
Over current protection	Carrying current exceeds the setting	Reduce load or increase OCP setting
Over voltage protection	Carrying voltage exceeds the setting	Reduce input voltage or increase OVP setting

Communication timeout	1.communication cable damaged 2.Communication interface damaged	1.check communication cable 2.contact distributor or Faith technology

2.12 Communication Terminals

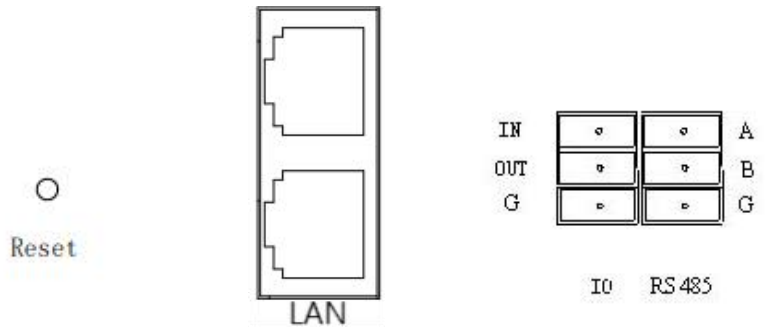


Figure 2- 29 Communication Terminals

The Reset button is used to restore the communication factory address. After being held down for more than 3 seconds, the LAN port is restored to the factory IP address 192.168.0.123, the rate of the RS485 port is restored to 115200bps, and the I/O terminal is reserved and not used.

2.13 System wiring

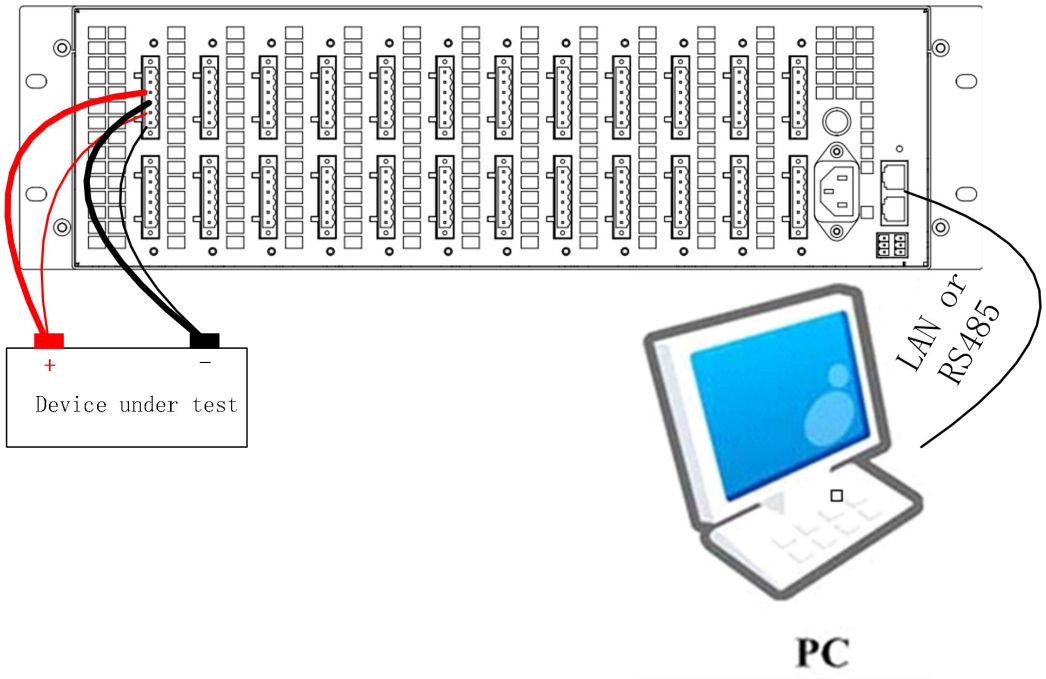


Figure 2- 30 Test system wiring

Before using the FT8350, correctly connect the output line of the battery simulator

to the device under test and connect the network port or RS485 communication interface of the battery simulator to the PC as shown in Figure 2-6 Test System Wiring.

2.14 Control Mode

FT8350 adopts remote control mode. The upper computer software provided by the system controls FT8350 through LAN or RS485, and generates data reports and data analysis.

2.15 Factory Configuration Parameters

FT8350 factory setting parameters are shown in the following table.

Table 2- 6 Configuration parameter table

Setting options	FT8350 Default parameter
Communication interface	LAN
IP	192.168.0.123
Serial port rate	115200
Test switch	OFF
SYSID	0

3. Device functions

3.1 Power supply Output Function（STAT）

FT8350 has a steady state function, this function can set the output voltage, source current, load current ,internal resistance, fault simulation five main parameters. When the voltage of the device to be measured is lower than that of FT8350, it acts as the source function. It is the power supply with the limit values of Set Voltage and Source current. When the voltage of the device under test is higher than the set voltage of FT8350, the load function is displayed externally, and the maximum loading current value is the "load current" set by FT8350. The "Internal Resistance" setting value is same as simulated internal resistance inside the power supply, and the echo voltage = total voltage - echo internal resistance * echo current. The fault simulation is divided into four parts: output short circuit (Short), output reverse (REVER), positive disconnection (P_Open), and negative disconnection (N_Open). For detail, please refer to table 3-1-1 Power output function parameter table:

Table 3- 1-1 The power output function parameter table

Parameter name	Parameter description
Output voltage	Set voltage value
Source current	Output current limiting value in source mode
Load current	Input current limiting value in load mode
Internal resistance	Battery simulation internal resistance, range:0～10mΩ, default: 0mΩ
Fault simulation	Change fault: Normal/Short/REVER/N_Open/P_Open, default:Normal

Table 3-2 fault simulation function description

Parameter name	Parameter description
Short	The positive and negative poles of the analog output terminal are shorted, and the output voltage is 0
REVER	The positive and negative poles of the analog output terminals are reversed, and the output voltage is reversed
P_Open	The positive pole of the analog output terminal is disconnected and the output voltage is 0
N_Open	The negative pole of the analog output terminal is disconnected and the output voltage is 0

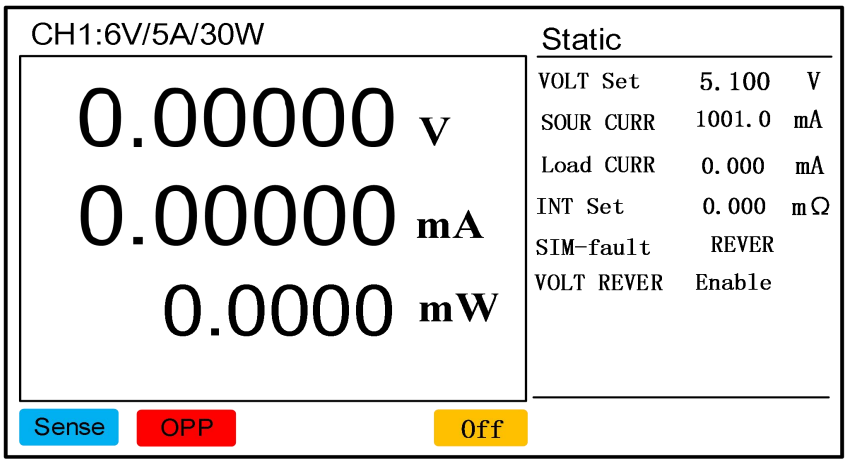


Figure3-1 Fault simulation voltage reverse enabled

3.2 Static power consumption measurement function（SPD）

FT8350 series products can detect standby and static current and power consumption of low-power electrical equipment under the working state of DC power supply, which is convenient for users to analyze the equipment to be tested. It can be widely used in the field of wearable devices and consumer electronics testing. For example, 3-2-1 Static power consumption measurement parameters Table:

Table 3- 2-1 Static power consumption parameter

Parameter name	Parameter description
SPD Output voltage	Output voltage value in power supply mode,range:0～MAX
SPD Output current	Output current limited value in power supply mode,range:0～MAX

Press key Test into **Test** advanced test function interface, select"SPD"，and then press key Enter to enable static power consumption measurement function, running interface as below.

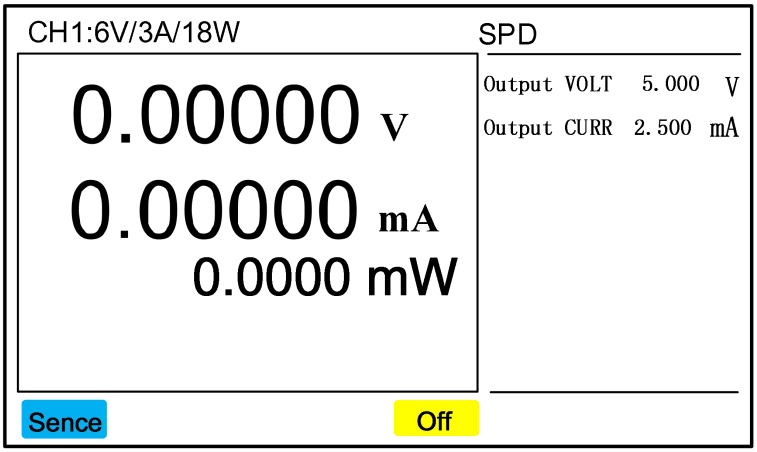


Figure 3-2 static power consumption measurement running interface

1. Set the parameters, press key Enter to enable it;
2. Press key On /Off to start static power consumption measurement.

3.3 Battery charging Function（CHAR）

FT8350 series products can charge the battery and super capacitor products under

the working state of DC power supply. Parameter description is shown in 3-3-1 Charging Function Parameter Description:

Table 3- 3-1 Charging function parameter description

Parameter name	Parameter description
Voltage	Charging voltage Set value. The value ranges from 0 to maximum voltage. The default value is 0.
SOUR CURR	Charging current setting. The value ranges from 0 to the maximum current. The default value is 0.
End VOLT	The voltage value that is judged when charging is completed, the charging is completed when the battery voltage is higher than the END voltage. range: 0 ~ maximum voltage value, 0 is to turn off the judgment, the default is 0.
End CURR	Judging current value when charging is completed,the charging is completed when the battery current is lower than the END current. range: 0 ~ maximum current value, 0 is to turn off the judgment, default is 0.
End CAP	The energy capacity value that is judged when charging is completed, range: 0.0～1000000mAh, 0 is to turn off the judgment, and the default is 0.
End Time	The time that is judged when charging is completed, range: 0～360000s, 0 indicates that the judgment is closed, and the default value is 0.

Press key 

to advanced test function selection interface,select "CHAR"， and then press key 

to enable battery charge function,the display interface as below.

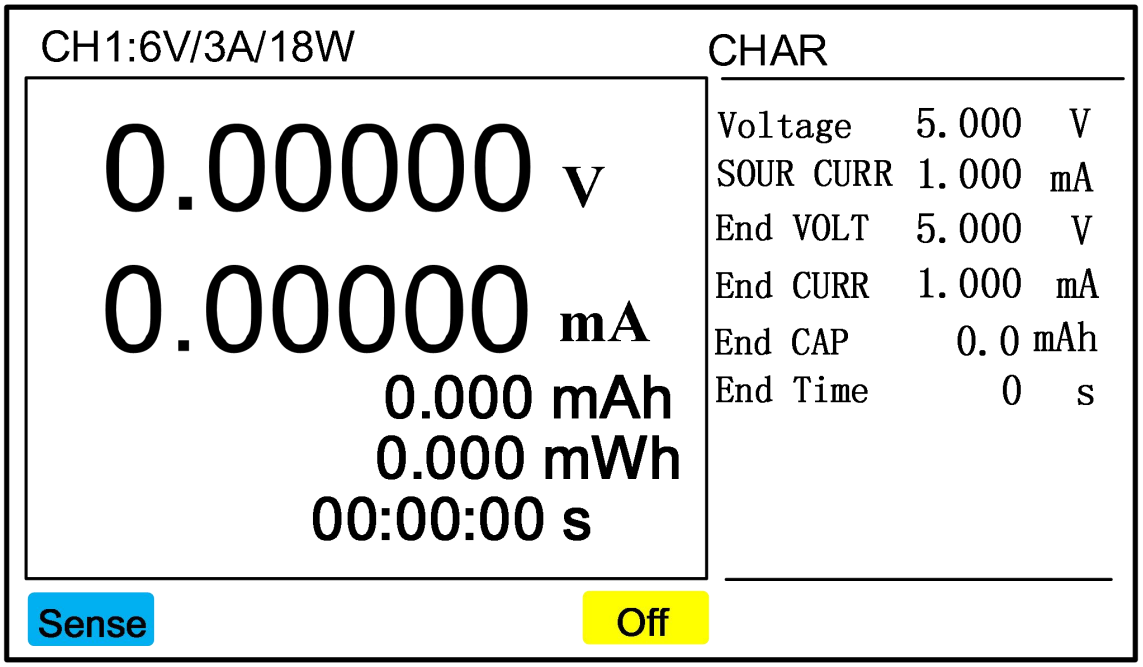


Figure 3-3 battery charge running interface

1. Set the parameters，press key 

to enable it；
2. Press key 

to start battery charging function test.

Note:

1. Charging completion judgment conditions such as "End voltage", "End current", "End CAP", "End time"， if one of the conditions is reached, the charging will be terminated.

2. The electricity and time value can be reset and accumulated again after the charging is started.

3.4 Battery Discharge Function（DISC）

FT8350 series products with discharge function can be used for battery and super capacity products discharge test. For example, 3-4-1 Discharge function parameters:

Table 3-4-1 Discharge function parameter description

Parameter name	Parameter description
Load CURR	Discharge current set value, range: 0 ~ maximum current value

End VOLT	The voltage value that is judged when charging is completed, the charging is completed when the battery voltage is lower than the END voltage. range: 0 ~ maximum voltage value, 0 is to turn off the judgment, the default is 0.
End CAP	The capacity value that is judged when discharging is completed, range: 0.0 ～ 1000000mAh, 0 is to turn off the judgment, the default is 0mAh.
End Time	The time that is judged when discharging is completed, range: 0 ~ 360000s, 0 is to turn off the judgment, the default is 0.

Press key Test into **Test** advanced test function interface, select"DISC"，and then press key Enter to enable battery discharge function, running interface as below.

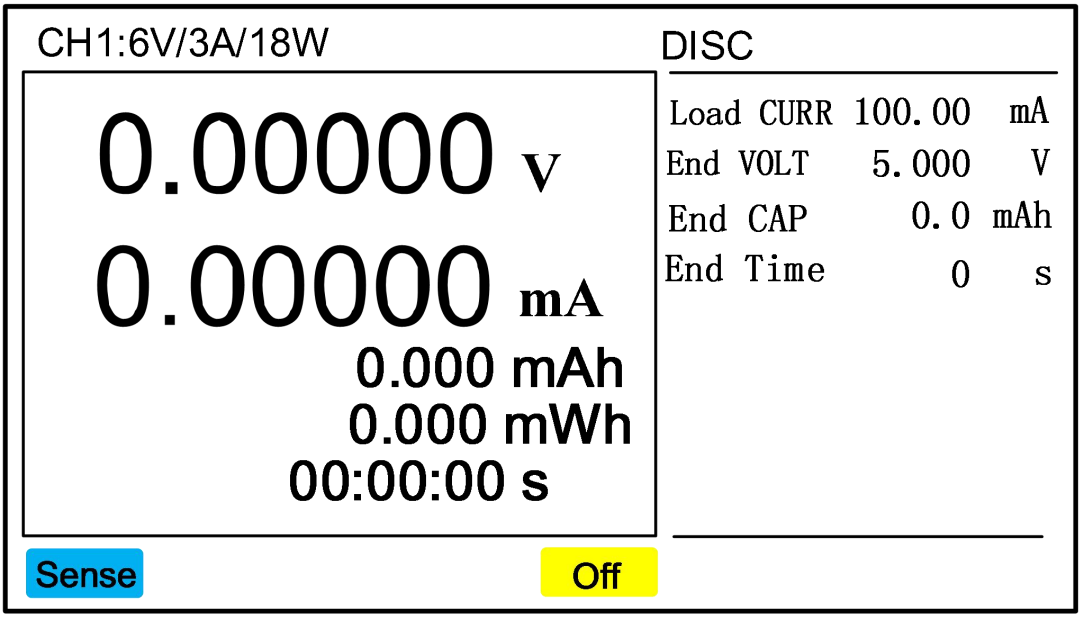


Figure 3-4 battery discharge running interface

1. Set the parameters，press key Enter to enable it；
2. Press key On /Off to start battery discharge function test；

Note:

1. Discharge completion judgment conditions such as "termination voltage", "termination quantity", "termination time" if one of them reaches the conditions,

the discharge will end.

2. The electric quantity and time value will be reset and accumulated again after the charging is started.

3.5 Battery simulation function（BATT）

FT8350 series products can simulate the battery output by setting the battery parameter curve and then setting the voltage output value and capacity value under different conditions according to the actual demand, such as different voltage and capacity or SOC percentage, so as to facilitate the user to simulate the battery characteristics and test the products to be tested.

Open-circuit voltage, battery internal resistance, and battery energy capacity are three basic elements of battery simulation function. In other words, the more battery energy capacity, the higher the open-circuit voltage, and the smaller battery internal resistance; The lower battery energy capacity, the lower the open-circuit voltage, and the greater the internal resistance of the battery. In this system, we use multiple points (open-circuit voltage, battery internal resistance, battery energy capacity) to describe the battery characteristics, and linear interpolation is used between the two points, for example，as shown in Figure 3-5 battery characteristics curve.

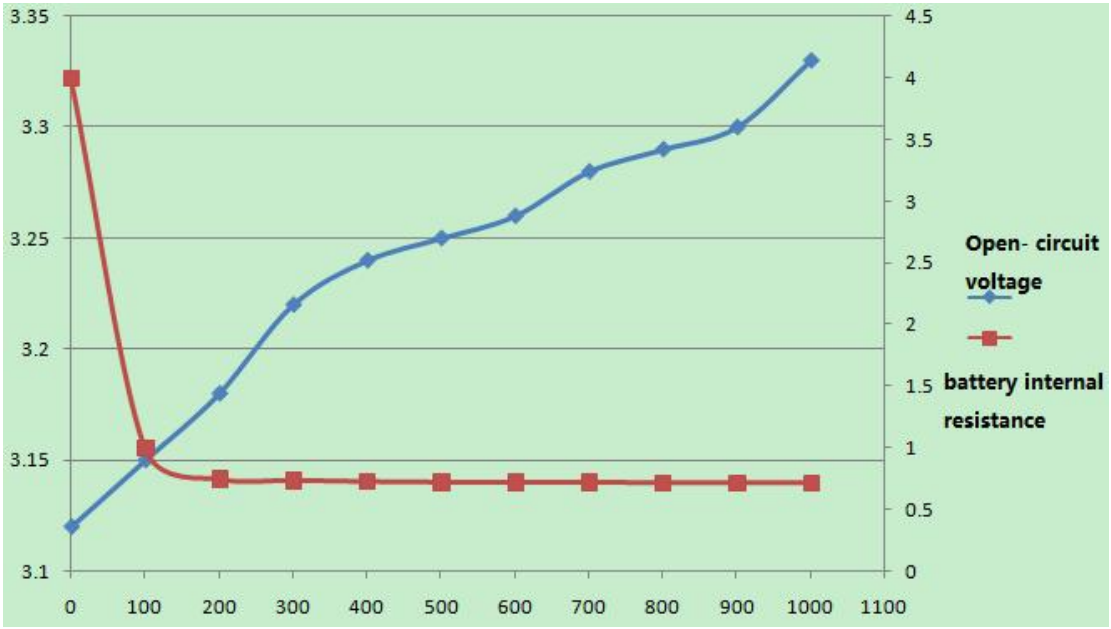


Figure 3-5 battery characteristics curve

It should be noted that at the critical point (when the battery is charged to 100%, continue to charge, and when the battery is discharged to 0%, continue to discharge),

the system can continue to charge and discharge, and its characteristic parameters are still calculated according to the curve. The SOC will exceed 100% or be lower than 0%, which is used to simulate the battery characteristics. In the battery file, the voltage and capacity of each step increase, while the internal resistance decreases.For example, the parameter description as table 3-5-1.

Table 3-5-1 Battery simulation function parameter description

Parameter name	Parameter description
Initial condition options	The options include the initial voltage, initial capacity, and initial SOC percentage. The default option is SOC percentage.
Initial voltage	Voltage output setting at the start of battery simulation operation,range:0～MAX
Initial capacity	The capacity value of the battery simulation at the beginning of operation, range: 0.0～1000000mAh
SOC Percentage	SOC percentage when the battery simulation starts running,range:0～100%，default: 0
The file no.	File editing serial number of battery simulation, include 20pcs battery file
File length	Total length of file steps, range:1~20
Output current limit	Current limit value of battery simulation output in all steps,range:0~MAX current
Input current limit	Current limit value of battery simulation input in all steps,range:0~MAX current
Sequence editing step	The serial number of current edit step
Single-step capacity	Current step battery capacity，range:0.0～1000000mAh
Single step voltage	The voltage value of the battery open circuit at the current step,range:0~MAX voltage
Single step internal resistance	Current battery internal resistance value, range:0.0～10mΩ

Edit battery file

1. Select "Edit"->"BAT-SIM"->"BATT File",Press 

key into battery file choice interface;
2. Rotate the knob or enter numbers, select file number you want to edit,

Press Enter key into editing file interface;

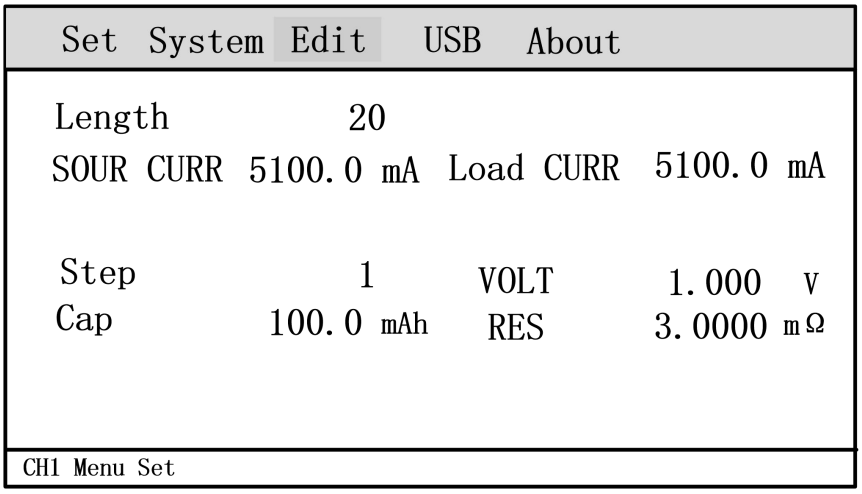


Figure 3-5 battery file editing interface

3. Set up "Length"(file length),Press Enter key to confirm,editing cursor will automatically move to next"SOUR CURR";
4. Set up "SOUR CURR",(output current) Press Enter key to confirm, editing cursor will automatically move to next"Load CURR";
5. Set up"Load CURR"(input current),Press Enter key to confirm, editing cursor will automatically move to next "Step";
6. Set up"Step",Press Enter key to confirm,editing cursor will automatically move to next"VOLT"(voltage);
7. Set up "VOLT" (voltage),Press Enter key to confirm,editing cursor will automatically move to next"Cap"(capacity);
8. Set up"Cap",Press Enter key to confirm,editing cursor will automatically move to next"RES"(internal resistance);
9. Set up"RES"(internal resistance),Press Enter key to confirm,editing cursor will

automatically move to"Step",and add 1 to the editing step;

10. Repeat 7～10 step,until all steps of programming are completed;
11. Press Shift + 4 （Save）key, save the edited sequence file;
12. Press Esc key to exit battery file editing interface.
13. The battery file can also be edited through USB import. Refer to 2.10 Import File.

Note:

1. It is not allowed to edit the battery file when the input is turned on.

2. When editing the file, set the parameters in the order of SOC from small to large. The energy capacity at the first point is the smallest, and the energy capacity at the last point is the energy capacity when the battery is fully charged (SOC is 100%)

Running battery file

Press Test key into **Test** advanced test function interface, select"BATT", Press Enter key to enable battery simulation function,the screen displays the running interface of battery simulation function;

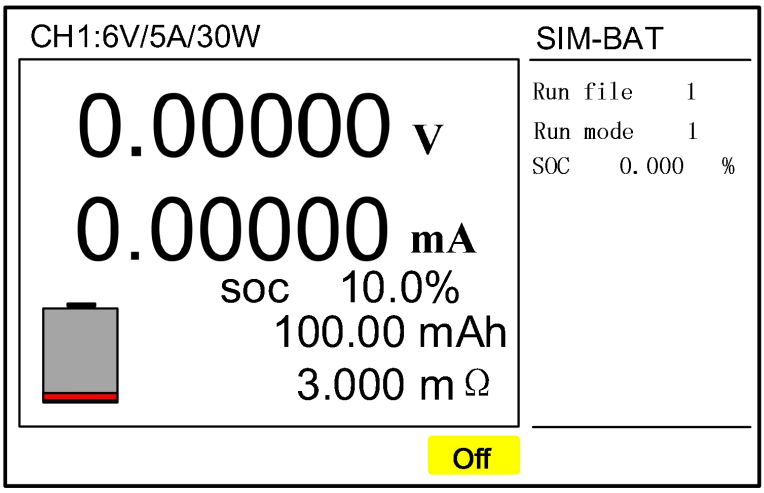


Figure 3-6 battery simulation running interface

1. Set up"Run file",Press Enter key to enable it;
2. Options include initial voltage, initial capacity and initial SOC percentage. The default option is SOC percentage;

3. According to the initial options to set the voltage, capacity or SOC percentage ;

4. Press On /Off key to start battery simulation testing.

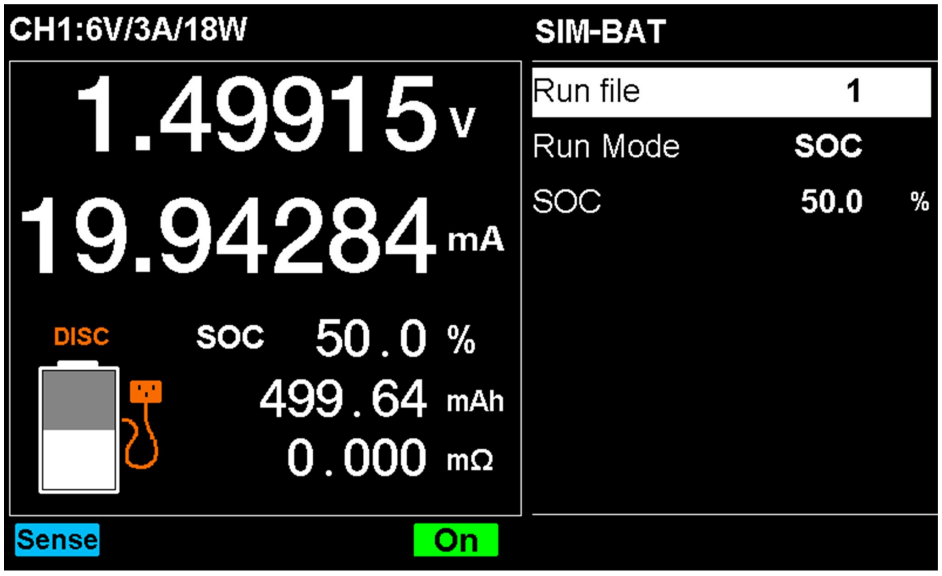


Figure 3-8 battery simulation discharge interface

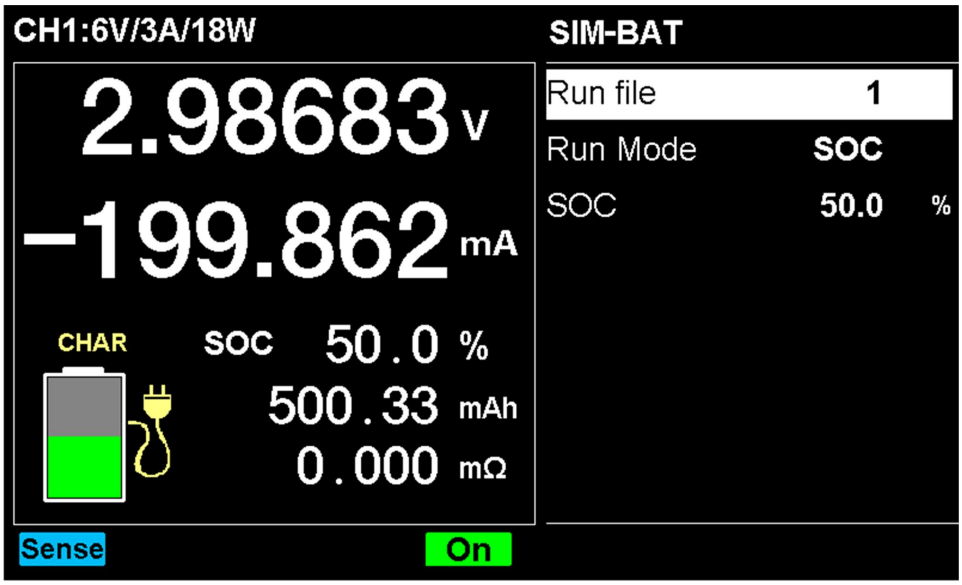


Figure 3-9 battery simulation charge interface

3.6 Pulse function（Pulse）

FT8350 series Pulse function can be tested in load mode, After maintaining the main value pulse width time, the load switches from the main value current to the instantaneous current, and returns to the main value after maintaining the instantaneous pulse width time. "Cycle" refers to the cycle times of the pulse, and 0 refers to the infinite cycle times. the parameters as below:

Table 3- 6 pulse function parameter description

Parameter name	Parameter description
DISC CURR1	Main current setting value,range:MIN～MAX,default:0.
DISC CURR2	Transient current setting value,range:MIN～MAX,default:0.
PULSE_T1	Main current duration, range:0.05～60000ms,default:1mS.
PULSE_T2	Transient current duration,range:0.05～60000ms, default:1mS.
Cycle	The pulse cycle numbers,range:0～21600000,0 indicates the number of infinite cycles,default:0.

Press Test key into advanced test function interface,select"**Pulse**",Press Enter key to enable pulse function, the screen displays pulse function running interface;

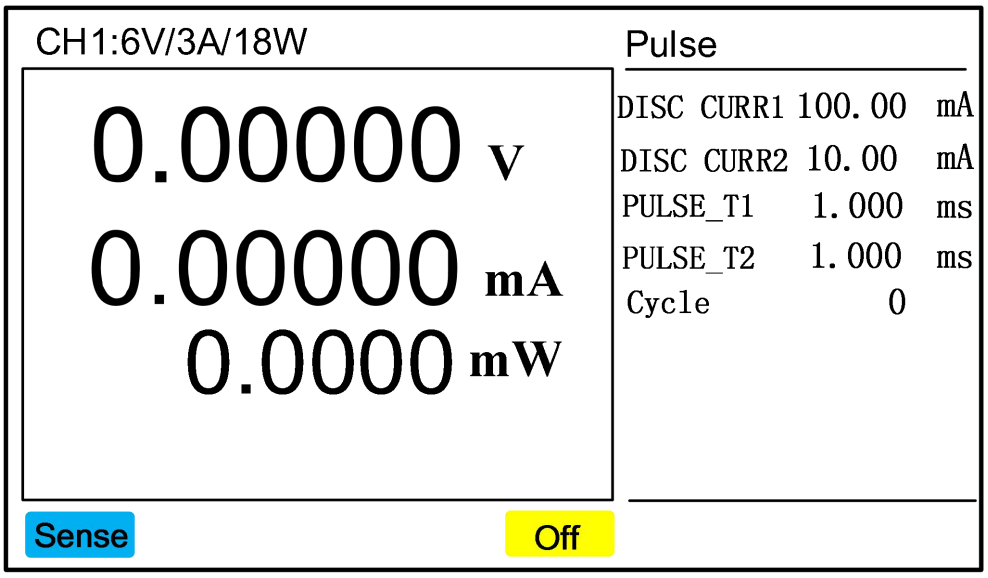


Figure 3-10 pulse function running interface

1. Set up parameters,Press Enter key to enable it;
2. Press On /Off key to start pulse function testing;

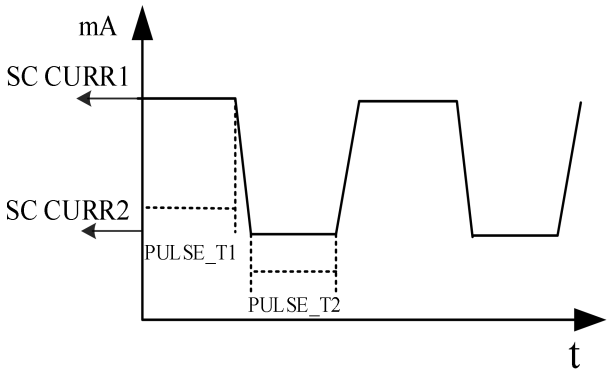


Figure 3- 8 Pulse mode

3.7 Sequence function（SEQ）

Sequence output function is used to simulate high-speed, accurate voltage and current waveform. FT8350 series provides 20 sequence files, each file supports up to 20 steps, In the operation step, the single step voltage, single step source current, single step load current and single step delay can be set. The "Run Times" and "Linked File" attributes are supported. "Cycle" can control the cyclic operation of the sequence. If it is set to 0, it means infinite cycle. "Link File" can add file running steps. If it is set to 0, there is no link. detail as below:

Table 3- 7 sequence function parameters description

Parameter name	Parameters description
Edit file	The current editing sequence file, range:1～20.
Length	Sequence file running steps, range:1～20.
Cycle	Set up sequence file cycle times, range:0～60000 ,0 indicates the number of infinite cycles,default:0.
Link	Range 0～20,Call different sequence files to run in this step, set 0 indicates not link,default:0.
SEQ Step	Order number of current editing step,range:1～20.
V-Set	Current step voltage,range:MIN～MAX,default:0.
S-I-Set	Current step source current, range:MIN～MAX, default:0.
L-I-Set	Current step load current,range:MIN～MAX,default:0.
Time	Current step delay time,range:0.001 ～ 86400. Delay time refers to the time from the execution of the current step to the end.

Edit sequence file

1. Press Menu key to menu setting interface;
2. Select "Edit"->"Sequence",Press Enter key into sequence file select interface;
3. Rotate the knob or input numbers, select the file number you want to edit, Press Enter key to edit file interface;

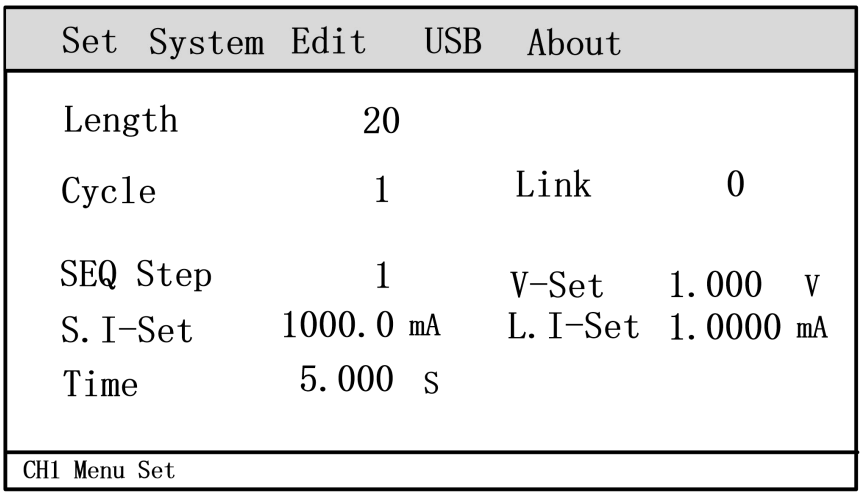


Figure 3-9 sequence file editing interface

4. Set up"Length",Press Enter key to confirm, edit cursor will automatically move to next"Cycle";
5. Set up"Cycle",Press Enter key to confirm, edit cursor will automatically move to next"Link";
6. Set up"Link",Press Enter key to confirm, edit cursor will automatically move to next"SEQ Step";
7. Set up"SEQ step",Press Enter key to confirm, edit cursor will automatically move to next"V-Set";
8. Set up"V-Set",Press Enter key to confirm, edit cursor will automatically move to

next"S.I-Set";

9. Set up"S.I-Set",Press Enter key to confirm, edit cursor will automatically move to next"L.I-Set";
10. Set up"L.I-Set",Press Enter key to confirm, edit cursor will automatically move to next"Time";
11. Set up"Time",Press Enter key to confirm, edit cursor will automatically move to "SEQ Step",and add 1 to the editing step;
12. Repeat step 7～11 , until all steps of programming are completed;
13. Press Shift + 4 （Save）key, save the edited sequence file;
14. Press Esc key, exit sequence file editing interface.
15. The sequence file can also be edited through USB import, please refer to 2.10 Import File.

Note: It is not allowed to edit the sequence file when the input is turned on.

Running sequence file

Press Test key to advanced test function interface,select"SEQ",Press Enter key to enable sequence testing, the screen will display running interface as below;

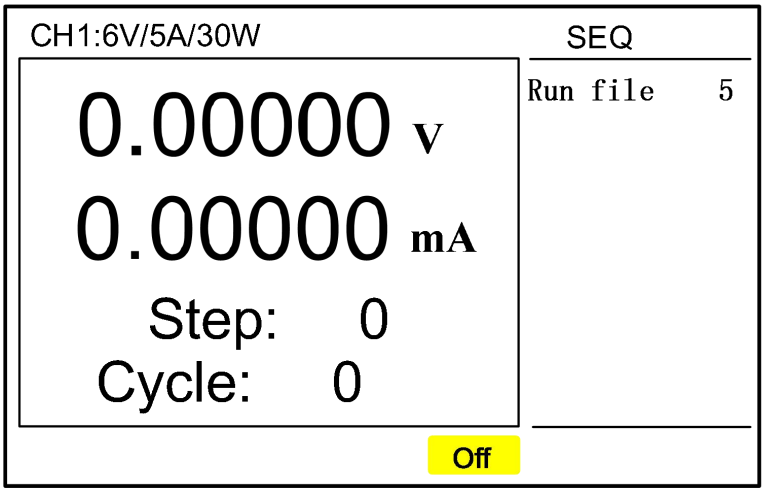


Figure 3-10 sequence testing running interface

1. Select"Run number",Press 

key to enable it;
2. Press 

key to start sequence function test.

The Echo area "Step:XX" display as which step the sequence is currently running to, "Cycle:XXXXX"displayed as the complete running number of the sequence file. The SEQ output function can achieve more complex waveform, such as the waveform described in the figure 3-11, easy to achieve it by using the sequence function.

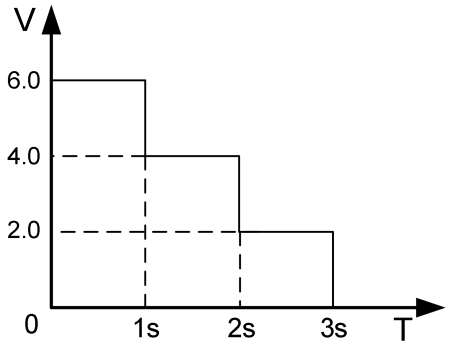


Figure 3- 11 Output waveform for sequence function

4. Software installation

4.1 Software operating environment

In order to better run the FT8350 software, the following computer configurations are recommended:

- CPU: Core duo 2.0G or above;
- Memory: more than 4G;
- Hard disk: more than 40G;
- Communication port: network port;
- Monitor: The minimum display resolution is 1024*768;
- Operating system: XP, WIN7, WIN8, WIN10 32-bit and 64-bit system;
- Office Excel software;
- .NET Framework 2.0 or later.

4.2 Install

Find the "install2.04.exe" file from the CD, and double-click to install, enter the system

installation interface in Figure 4-1.

Figure 4-1 System installation interface

Click "Next" with the mouse to enter "Figure 4-2 Installation Path Selection interface". The user can choose to install the software to the specified location of the computer and click "Next" to complete the installation.

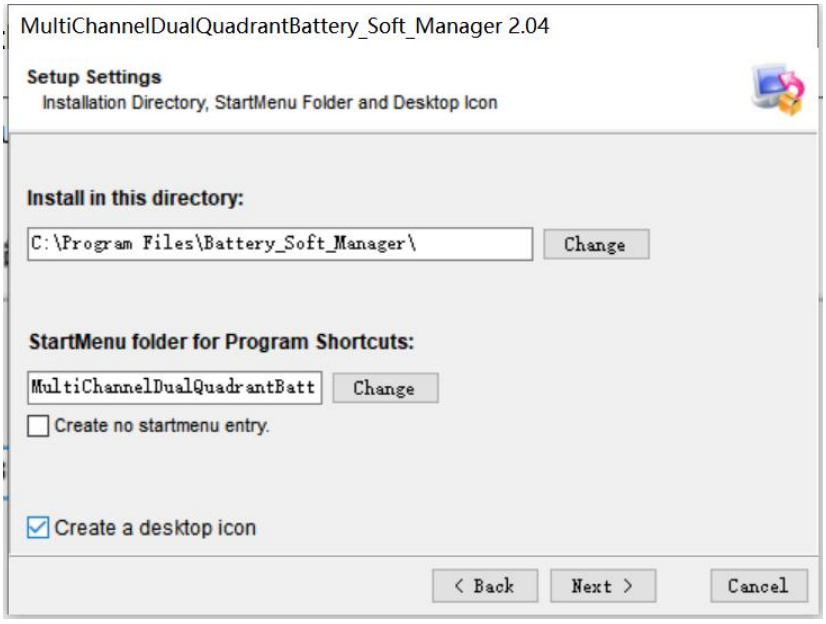


Figure 4-2 System installation path selection interface

4.3 Computer Settings

4.3.1. Network Settings

Before using the FT8350 power management system, you need to set the computer's network IP address and default gateway.The IP address needs to be in the same network segment as the IP address of the power device, otherwise the communication will be unsuccessful; The factory default IP address of the power device is 192.168.0.123. Therefore, you can set the local IP address to 192.168.0.XXX (XXX is any value ranging from 2 to 254 except 123).

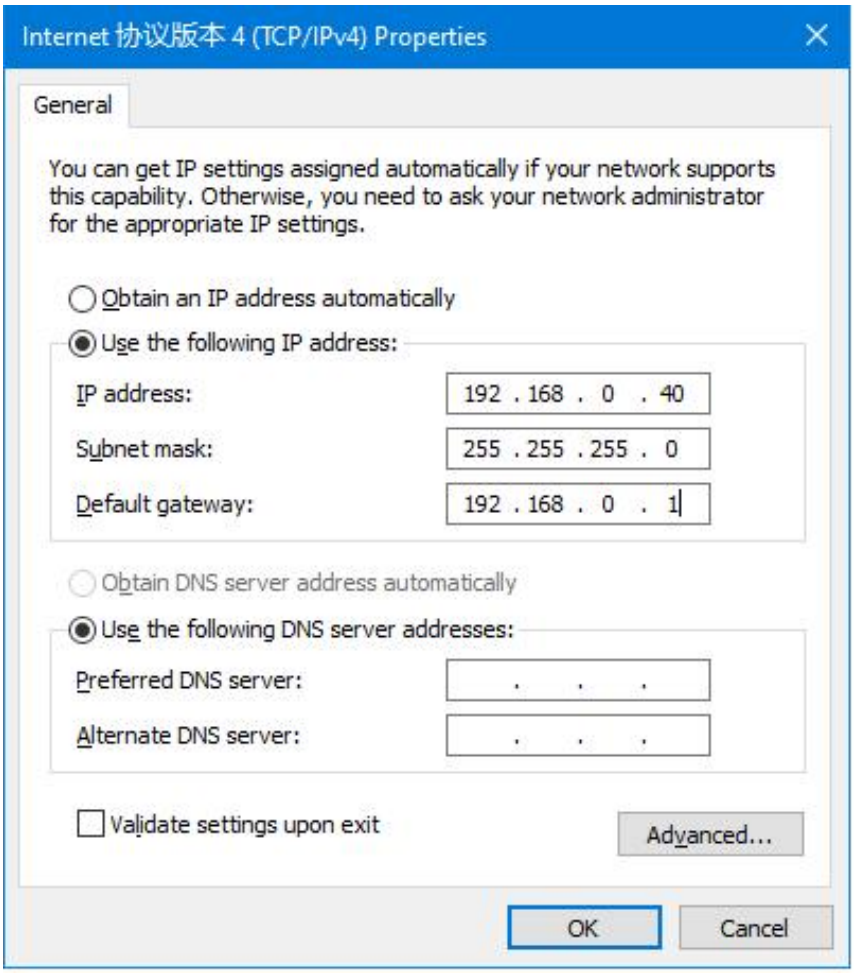


Figure 4-3 Computer IP address setting

4.3.2. Communication debugging

After the PC network setup is completed, click the Windows system "Start" menu, enter the "CMD" command in the search bar, enter the "DOS" interface and enter "ping

192.168.0.123" to execute, such as "Figure 4-4 DOS command".

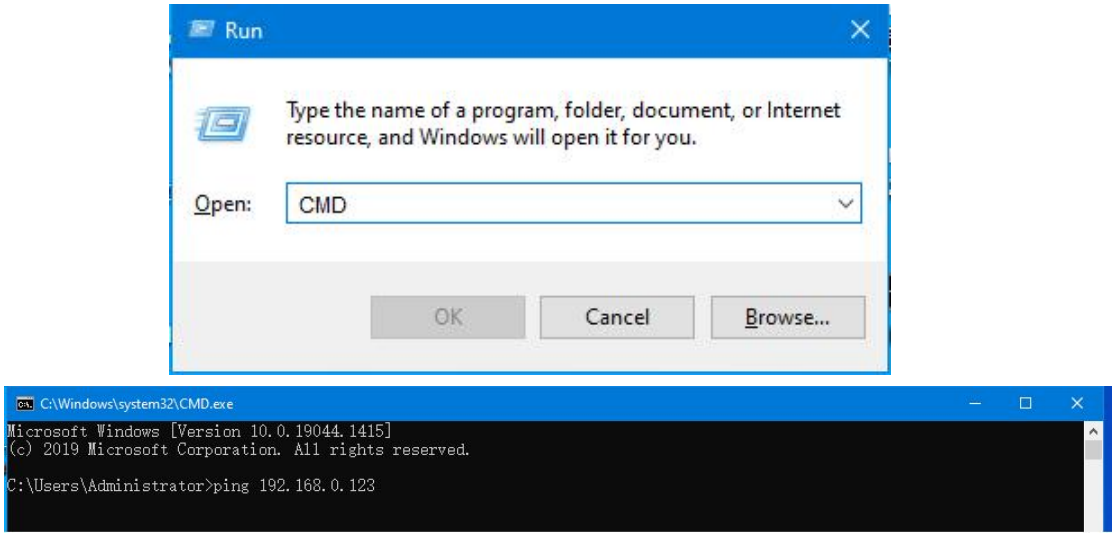


Figure 4-4 DOS command

If the communication between PC and FT8350 is normal, it will appear as "Figure 4-5 Communication return Information", otherwise it will show "Request timeout".

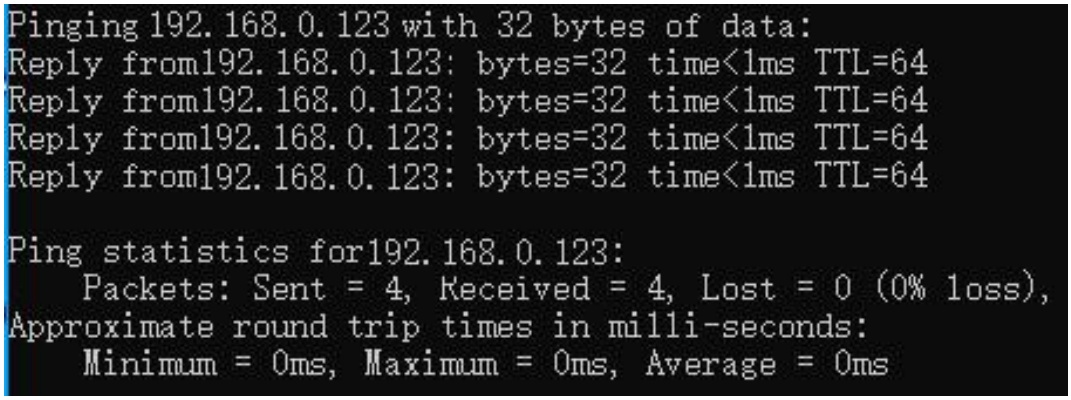


Figure 4-5 Communication return Information

4.4 Disable sleep setting

If the computer is set with the automatic sleep function, the Windows system will close the network and other background applications after the computer enters the sleep state, resulting in the disconnection of the communication connection of the FT8350 power management system and the inability to operate and read the device. You can go to the Control Panel of the operating system and set the PC state to Never in the Power Options column.

5. Software function introduction

5.1 System main interface

The main interface of the system consists of five parts: menu bar, quick operation toolbar, channel information list box, operation log/exception log information prompt box and channel operation box.

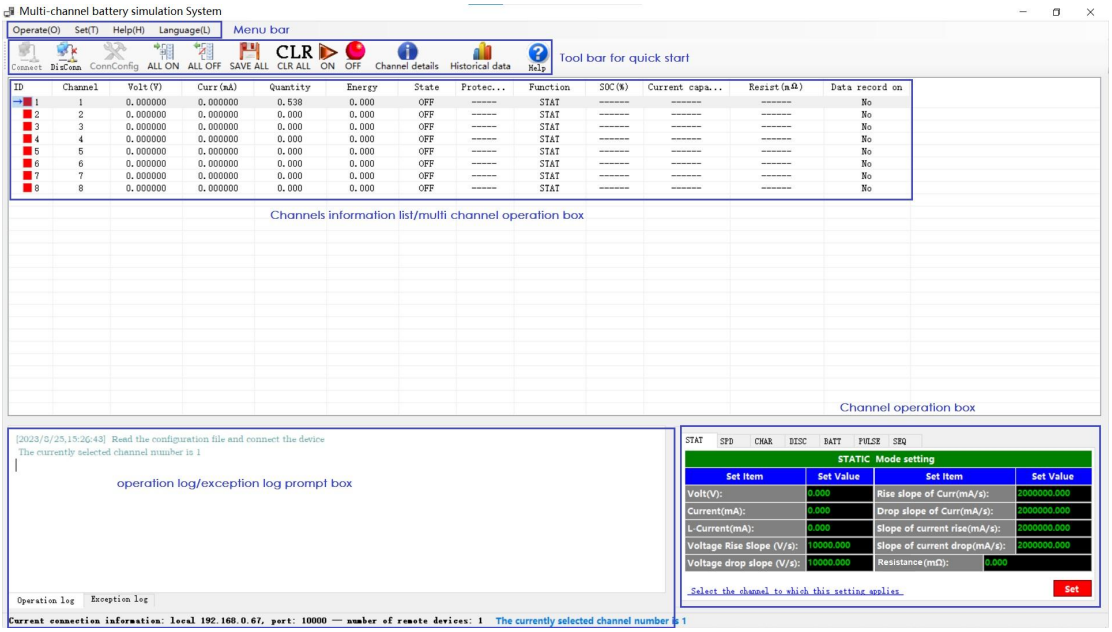


Figure 5-1 System main interface

5.1.1. Menu bar

The menu bar contains five menus: Operation, Settings, history, help and language. The sub menu items of each menu are shown in Table 5-1.

Table 5-1 Menu bar list

Menu bar	Sub menu item	description
operation	On line	Communication between computer and power supply is established
	disconnect	Communication between computer and power supply is disconnected
	Channel detection	Detects the number of channels currently connected to the software
	View the channel curve	View the output channel curves and waveforms
Set up	software Settings	Echo data display digits Software title
	Communication setting	Communication Settings and find equipment
	Device Settings	Set the device communication mode and related parameters
	Protection setting	Set protection point parameters
History	Query historical data	Query voltage, current, and other historical data.Support historical data query for the past month
Help	Power supply version	Check the device version information

Language	about	Software version information
	Simplified Chinese	Change language to Simplified Chinese
	English	Change language to English

5.1.2. Quick toolbar

The quick toolbar provides quick operation of the power device, such as communication operation, multi-channel operation, query history, etc. For details, see Table 5-2.

Table 5-2 Quick toolbar list

Quick toolbar	description
Connect	Communication between computer and power supply is established
Disconn	Communication between computer and the power supply is disconnected
ConnConfig	Set communication parameters between computer and power supply
ALL ON	All channel output operations within the channel list
ALL OFF	Close All channel in the channel list
SAVE ALL	Save all channel data
CLR ALL	Clear all errors and alarms
ON	Enable output of the current channel
OFF	Disable the current channel output
Channel details	Voltage and current waveform of the current channel
Historical data	Query voltage, current and historical data, etc
Help	Open the software operation manual

5.1.3. Channel Information List Box

The channel information list box shows the currently online power channels: voltage, current, power, output status information.

Table 5-3 Description of all channel information list information

List	Description
Number	Channels number
Physical channel number	The physical channel number is shown
Voltage（V）	The collected voltage data is displayed
Current（mA）	The acquisition current data is displayed
Electric quantity（s*mA）	Collection of electricity data display
Energy(s*mW)	Collect energy data display
Running state	The operating status information is displayed, including ON and OFF
Protection state	Whether channel output is protected
Test function	Real-time working mode display

Battery simulation SOC	Real-time battery power ratio display
Present capacity（mAh）	Battery present real-time capacity display
Batteries simulate internal resistance	Battery real-time internal resistance display
Data record enabled status	Data record enabled status

5.1.4. Operation log information prompt box

The information prompted by the operation log information box includes online information, parameter Settings and operation information.

5.1.5. Channel operation box

1. Channel mode switching, which mainly includes seven modes: STAT, SPD, CHAR, DISC, BATT, Pulse and SEQ.

2. Output voltage value, current value, slope and Electric quantity range, etc. After setting, click Set and apply to select the set channel.

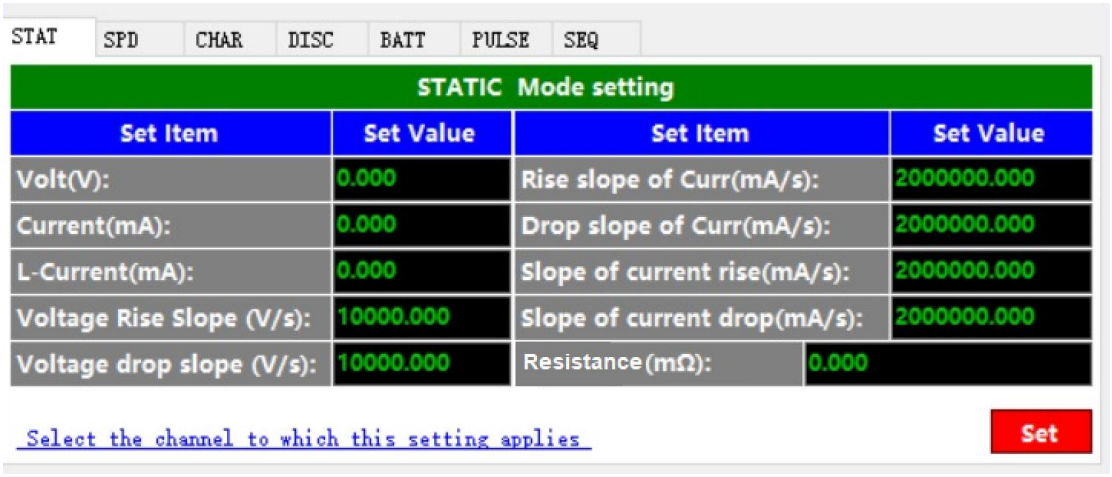


Figure 5-2 Single channel operation box

5.2 Device version information

The FT8350 device version information can be found in the help bar.

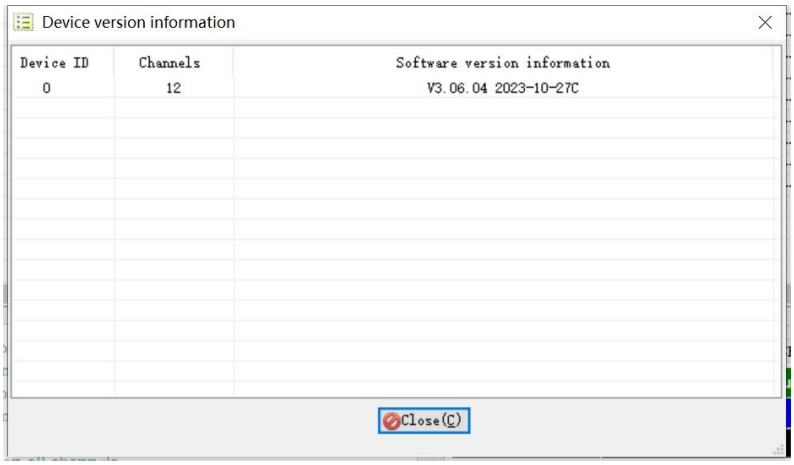


Figure 5-3 Device version information

Right-click the channel information to view the channel version information

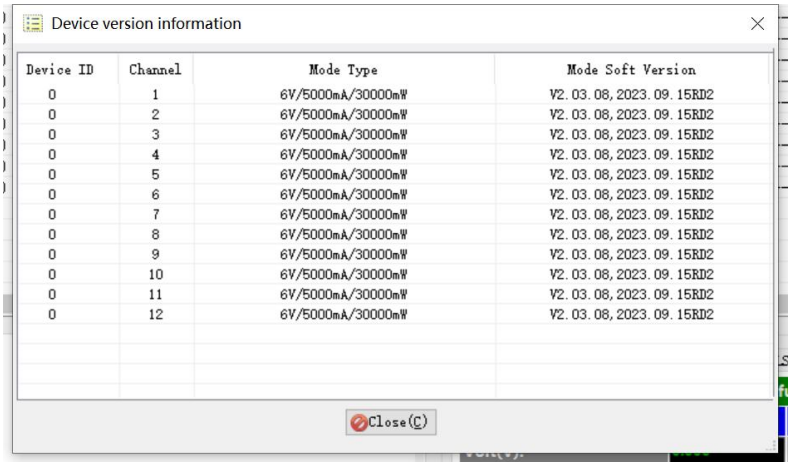


Figure 5-4 Channel version information

5.3 Software communication Settings

When the user starts the software, it is in the offline state (not connected to the FT8350 power supply device). The user needs to set the communication parameters of the FT8350 power management system when using the system for the first time. The user clicks the "ConnConfig" button in the toolbar to enter the setting interface; The management system supports UDP network and RS485 communication modes. Select the IP address of the computer and click the "Find Device" button to automatically find the communication information of the power device currently connected.

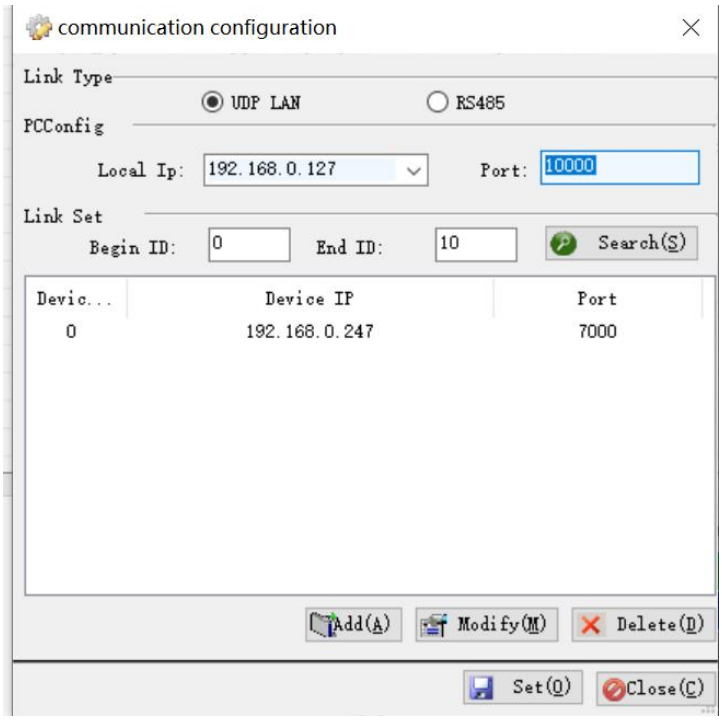


Figure 5-5 UDP Network communication configuration interface

UDP network communication, need to set the local communication IP address, the local network communication port.Please ensure that the port is not occupied by other applications of the system. It is recommended to set it to any value of 7000 ~ 10000. Click "OK" to save it after setting. Exit the Settings screen.

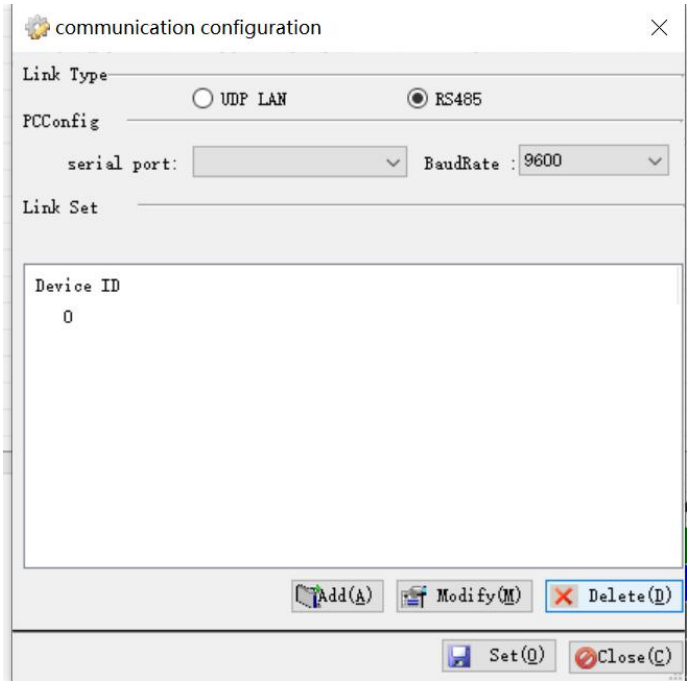


Figure 5-6 RS485 Communication configuration interface

RS485 communication needs to set the serial port number of the machine, and the serial port baud rate and the number of channels. The baud rate needs to correspond to

the device setting of the lower machine in order to communicate correctly. Click "OK" to save the Settings, exit the Settings screen.

5.4 Software setting function

Before or after the connection, the user can set the number of reflected decimal places in the system through the "Software Settings" under the "Settings" menu. Click "Save" when the Settings are complete. Exit the Settings screen.

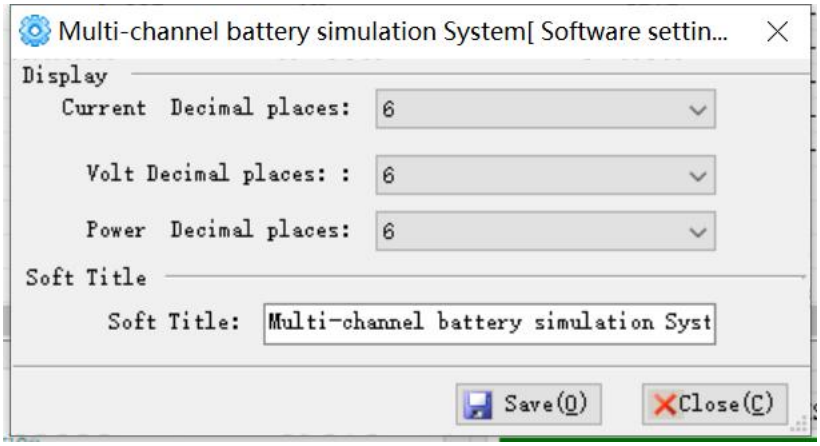


Figure 5-7 Software setting interface

5.5 Device Settings

After connecting the device, the user can set the communication address of the lower computer through the "Device Settings" under the "Settings" menu. Click "Settings" when the Settings are complete. The Settings screen is closed.

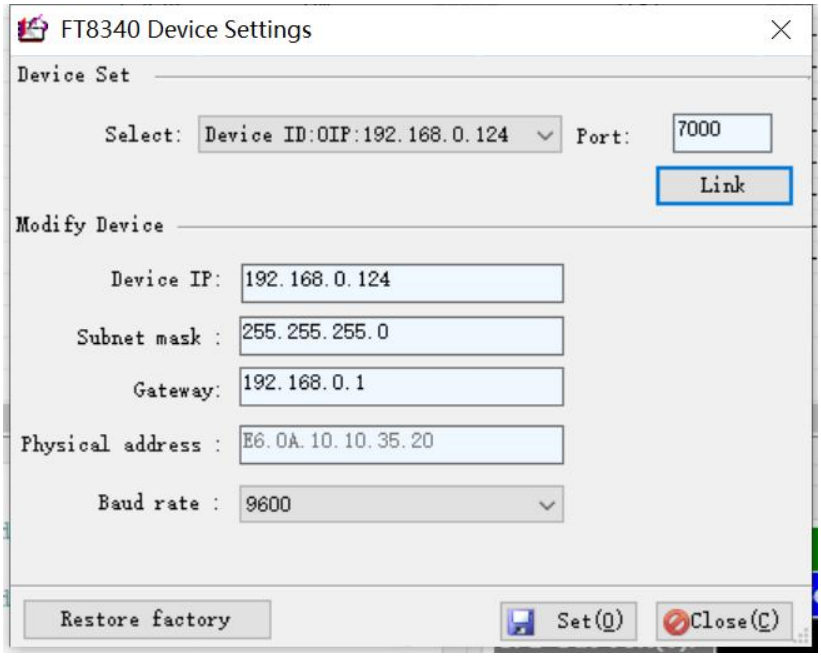
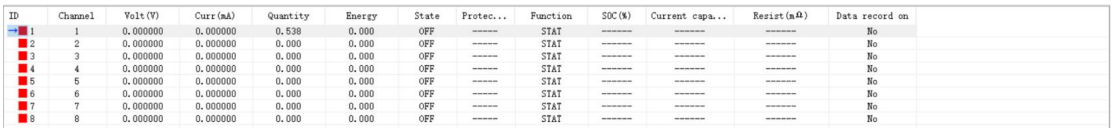


Figure 5-8 device setting interface

5.6 Introduction for single channel operation

5.6.1 Channel selection

In the "All Channel information list box", select the channel to operate.



ID	Channel	Volt(V)	Curr(mA)	Quantity	Energy	State	Protec...	Function	SOC(%)	Current capa...	Resist(mΩ)	Data record on
1	1	0.000000	0.000000	0.538	0.000	OFF	------	STAT	------	------	------	No
2	2	0.000000	0.000000	0.000	0.000	OFF	------	STAT	------	------	------	No
3	3	0.000000	0.000000	0.000	0.000	OFF	------	STAT	------	------	------	No
4	4	0.000000	0.000000	0.000	0.000	OFF	------	STAT	------	------	------	No
5	5	0.000000	0.000000	0.000	0.000	OFF	------	STAT	------	------	------	No
6	6	0.000000	0.000000	0.000	0.000	OFF	------	STAT	------	------	------	No
7	7	0.000000	0.000000	0.000	0.000	OFF	------	STAT	------	------	------	No
8	8	0.000000	0.000000	0.000	0.000	OFF	------	STAT	------	------	------	No

Figure 5-9 All channel information list box

5.6.2 Output parameter setting

1. STAT mode: Conventional mode, set voltage, voltage slope, current, current slope and internal resistance etc. Click "Set" to apply this setting to the present channel.

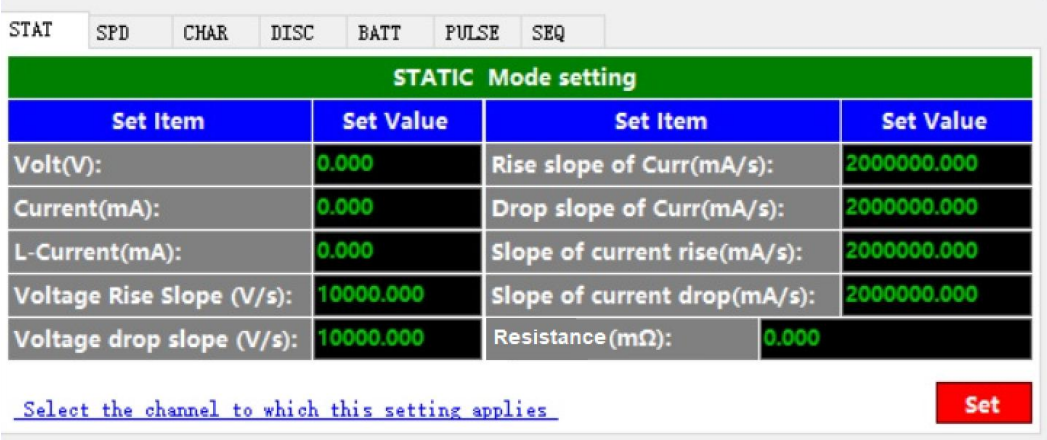


Figure 5-10 STAT parameters setting

2. SPD mode: Static power consumption measurement function, set SPD voltage and current, click "Set" to apply this setting to the present channel.

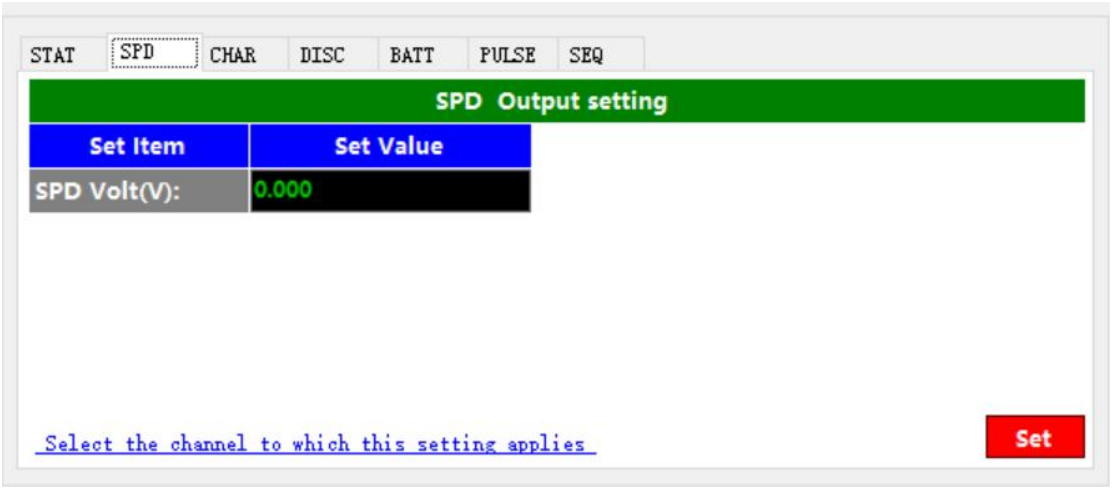


Figure 5-11 SPD parameters setting

3. CHAR mode: battery Charging function, set the charging voltage, current, stop voltage, current, quantity and time. Click "Set" to apply this setting to the present channel.

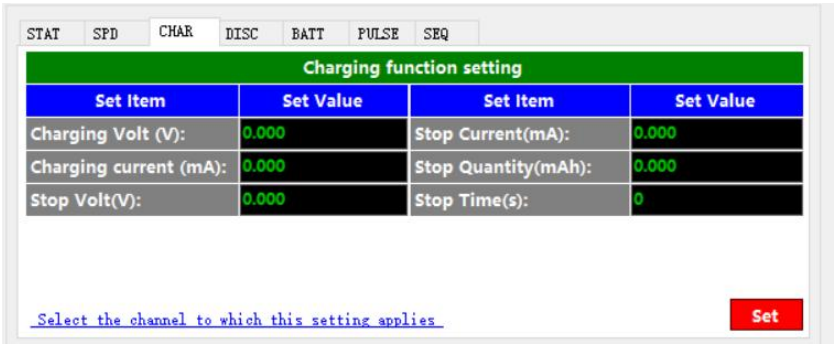


Figure 5-12 CHAR parameters setting

4. DISC mode: battery Discharge function, set discharge current, stop voltage, quantity and time. Click "Set" to apply this setting to the present channel.

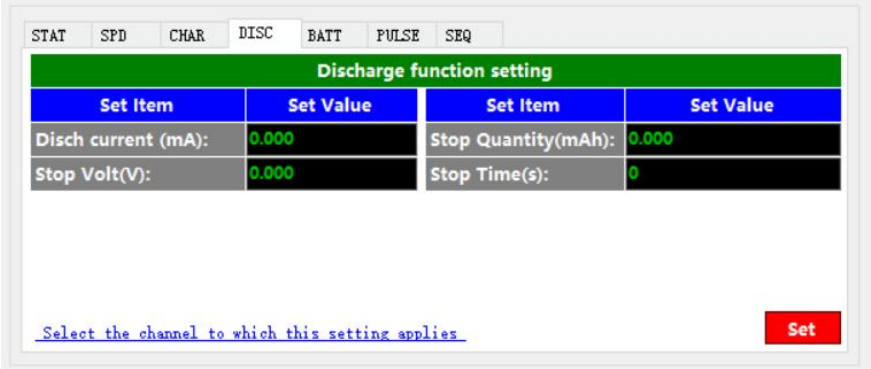


Figure 5-13 DISC parameters setting

5. BATT mode: Battery simulation function, set the SOC, click "Set" to apply this setting to the present channel.

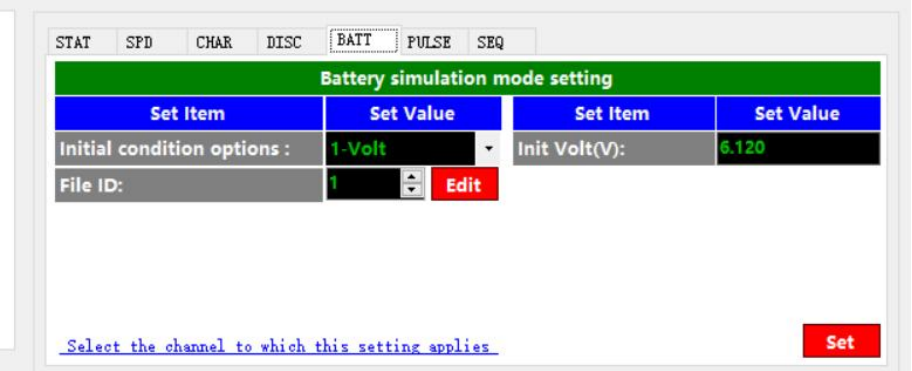


Figure 5-14 BATT parameters setting

6. Pulse function:can set main current, transient current, main width, transient width, loops, click"Set"to apply the setting to present channel.

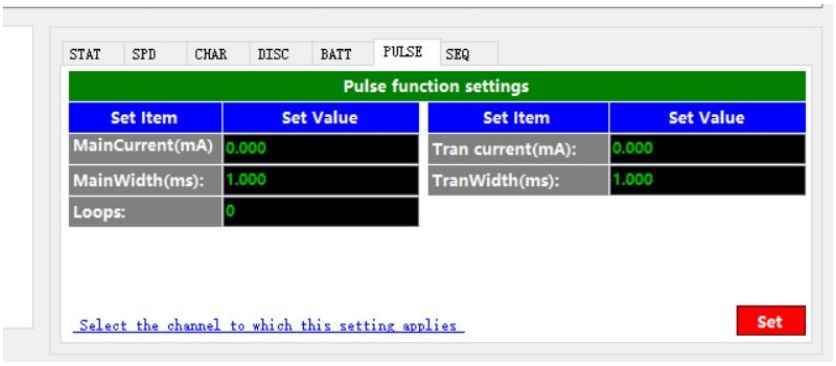


Figure 5-15 Pulse parameters setting

7. SEQ function:Sequence function, select file number, click"Set"to apply the setting to present channel.

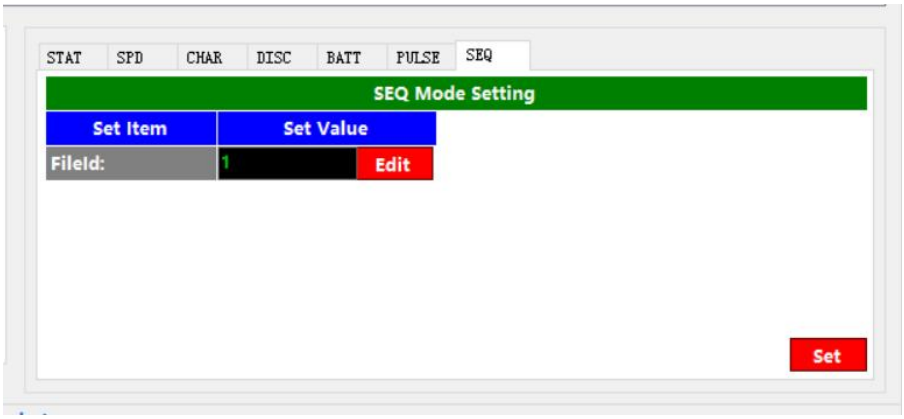


Figure 5-16 SEQ parameters setting

5.6.3 Protection parameter setting

Select the protection Settings in the "Set" menu column to set the protection parameters.The user can fill in and modify the parameters according to the actual needs, and click the "Write" button to open the protection. If the protection value is set to 0, the protection is disabled.

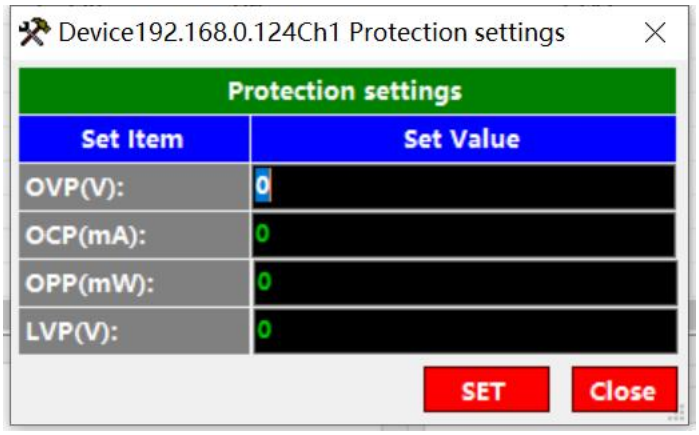


Figure 5-17 Protection parameter setting

5.7 Multi-channel operation introduction

5.7.1 Channel selection

In the "All Channel information list box", select the channel to operate. The options are as follows: Ctrl+ left mouse click; Multiple options: Shift+ left mouse button. The selection method is consistent with EXCEL.

5.7.2 Function Selection

In the "All Channel information list box", place the mouse over the selected channel area and right-click the mouse to operate. Select the function to be operated in the "Multi-channel operation box" that pops up.

The multi-channel operation supports the following operations: channel ON/OFF, clear protection state, enable data recording, end data recording and change test function.

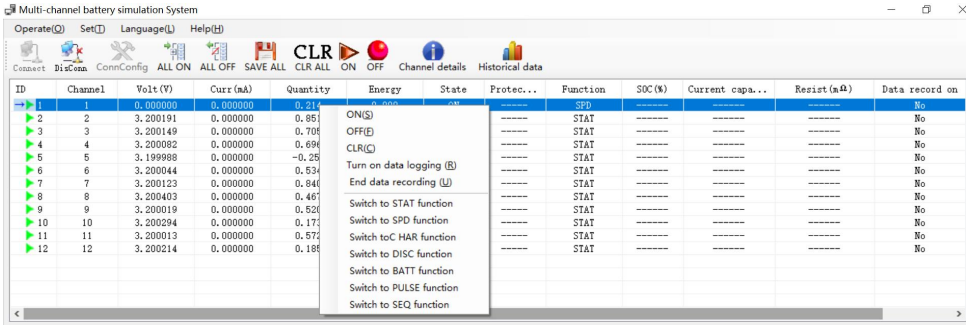


Figure 5-18 Multi-channel operation box

5.7.3 Output Operations

In the "Multi-channel Operation box", select "Switch to ON state" to enable the output operation.Select "Switch to OFF state" to turn off the output operation.

5.8 View and export history data

Select "Channel Details" in the shortcut toolbar to monitor the current, voltage, waveform and other details of the channel in real time. According to the user's needs, you can choose different test function to edit and change, and click "Set" to apply to this channel.

Figure 5-19 Channel details

Click "History" in the menu bar to enter the historical data and view the export function as shown in Figure 4-16. The system supports the query of historical data in the past day.Users can set the query time period, query waveform length, query waveform type (including voltage, current, power), query channel. At the same time, this software provides the function of exporting EXCEL data table and waveform chart. Notice The export file is stored in the "excelExport" folder in the installation directory.

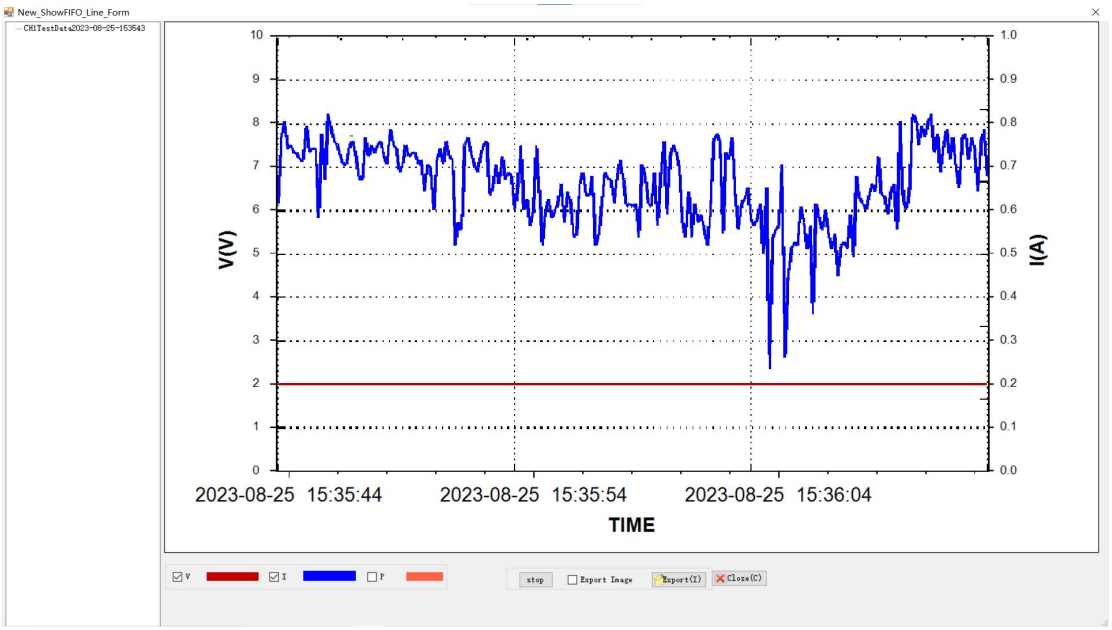


Figure 5-20 The historical data query box