

Manual: N83580 Series

High Performance Multi-channel
Battery Simulator



Version: 27.01.2026

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Hunan Next Generation Instrumental T&C Tech. Co., Ltd. (NGI for short)

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If you have any questions about this product, please contact us in the following way.
export@ngi-tech.com

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1. Preface

Dear Customers

First of all, we greatly appreciate your choice of N83580 Series High Performance Multi-channel Programmable Battery Simulator (N83580 for short). We are also honored to introduce our company, Hunan Next Generation Instrumental T&C Tech. Co., Ltd.(NGI for short).

About Company

NGI is a professional manufacturer of intelligent equipment and test & control instruments, committed to developing, manufacturing battery simulators, power supplies, electronic loads, and many more instruments. The products can be widely used in the industries of battery, power supply, fuel cell, consumer electronics, new energy vehicle, semiconductor, etc.

NGI maintains close cooperation with many universities and scientific research institutions, and maintains close ties with many industry leaders. We strive to develop high-quality, technology-leading products, provide high-end technologies, and continue to explore new industry measurement and control solutions.

About User Manual

This manual is applied to N83580 series battery simulator, including installation, operation, specifications and other detailed information. Due to the upgrade of instrument, this manual may be revised without notice in future versions.

This manual has been reviewed carefully by NGI for the technical accuracy. The manufacturer declines all responsibility for possible errors in this operation manual, if due to misprints or errors in copying. The manufacturer is not liable for malfunctioning if the product has not correctly been operated.

To ensure the safety and correct use of N83580, please read this manual carefully, especially the safety instructions.

Please keep this manual for future use.

2. Safety Instructions

In the operation and maintenance of the instrument, please strictly comply with the following safety instructions. Any performance regardless of attentions or specific warnings in other chapters of the manual may impair the protective functions provided by the instrument.

NGI shall not be liable for the results caused by the neglect of those instructions.

2.1. Safety Symbols

Please refer to the following table for definitions of international symbols used on the instrument or in the user manual.

Table 1

Symbol	Definition	Symbol	Definition
	DC (direct current)	N	Null line or neutral line
	AC (alternating current)	L	Live line
	AC and DC	I	Power-on
	Three-phase current		Power-off
	Ground		Back-up power
	Protective ground		Power-on state
	Chassis ground		Power-off state
	Signal ground		Risk of electric shock
WARNING	Hazardous sign		High temperature warning
Caution	Be careful		Warning

2.2. Safety Precautions

- **Confirm the AC input voltage before supplying power.**
- **Reliable grounding:** Before operation, the instrument must be reliably grounded to avoid the electric shock.
- **Confirm the fuse:** Ensure to have installed the fuse correctly.
- **Do not open the chassis:** The operator cannot open the instrument chassis. Non-professional operators are not allowed to maintain or adjust it.
- **Do not operate under hazardous conditions:** Do not operate the instrument under flammable or explosive conditions.
- **Confirm the working range:** Make sure the DUT is within N83580's rated range.

3. Product

3.1. Brief Introduction

N83580 is a programmable battery simulator with low power, high accuracy and multi-channel. By adopting dual-quadrant design, the current can be charged and discharged, which can satisfy the needs of BMS test. N83580 standalone supports up to 8 channels, which can offer four-station test and meet the demands of ATE test in consumer electronics. The voltage & current of each channel can be set on application software. It supports source mode, charge mode, battery simulation, internal resistance simulation, SOC simulation, fault simulation and other test functions. N83580 software is easy to use, which can meet demands of battery simulators in multi-channel, multi-parameter, and complex test environments.

Features

- Voltage range: 0~5V/0~6V/0~15V
- Current range: $\pm 1\text{A}/\pm 2\text{A}/\pm 3\text{A}/\pm 5\text{A}$
- Dual LAN port and RS232/CAN interface
- Voltage ripple noise low to 2mVrms
- Single device up to 8 channels
- 8 channels DVM measurement, accuracy up to 0.1mV
- Supporting battery simulation, internal resistance simulation, SOC simulation, fault simulation
- Voltage accuracy up to 0.6mV
- 3 groups of battery SOC model
- Supporting active/passive balancing test
- nA level current measurement

3.2. Overview

3.2.1. Inspection

After receiving N83580, please check the instrument according to the following steps:

1. Check whether the instrument is damaged during transportation. If any severe damage to the package, please contact our authorized distributor or NGL.
2. Check accessories.
3. Check the whole instrument. If N83580 chassis is damaged or has abnormal operation, please contact our authorized distributor or NGL.

Table 2

Item	pc	Description
Power Cord	1	Connect to 110~240V AC power supply
Fuse (250V/10A)	2	fuse
5.08-8pin female connector with lugs	8	Terminal Wiring
RS232 Serial Cable	1	Connect to PC
network cable	1	Connect to PC
USB flash drive	1	User manuals, software and technical information
Test Report	1	Product test report

Note :

1. If there is missing or damaged, then please contact NGL authorized distributor or after-sales service department immediately. Please do not send back the equipment before getting a positive answer.
2. After confirming that the contents of the package are the same and there is no problem, please keep the related contents in a safe place, and the instrument needs

service.

3.2.2. Power-on Test

Warnings

1. Before connecting the power cord, please make sure that the power supply voltage matches the rated power supply voltage of this instrument.
 2. To prevent electric shock and fire, use the power cord supplied by us.
 3. To prevent electric shock, be sure to take protective grounding. Connect the power cord to a three-pronged socket with a protective earth terminal.
-

When the device cannot start normally, please try the following solutions:

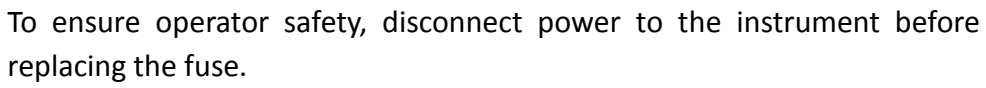
1. Check whether the power cord is connected properly, whether the device has been powered normally, and whether the equipment switch is turned on;
2. Check whether the fuse is blown, if the it is, then please replace it with the same specification type fuse to avoid causing accidents.

Table 3

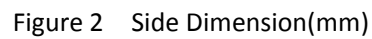
Model	N83580 Series
Specification	250V/16A/20×5/Ceramic

The fuse replacement can be performed as follows:

1. Turn off the instrument and remove the power cord.
2. Insert a small screwdriver into the groove at the power socket and gently pry out the fuse holder.
3. Remove the fuse and replace it with one of the specified size.



N83580 Series dimension: 88.0mm(H)*482.0mm(W)*557.0mm(D)



3.4. Front Panel Introduction

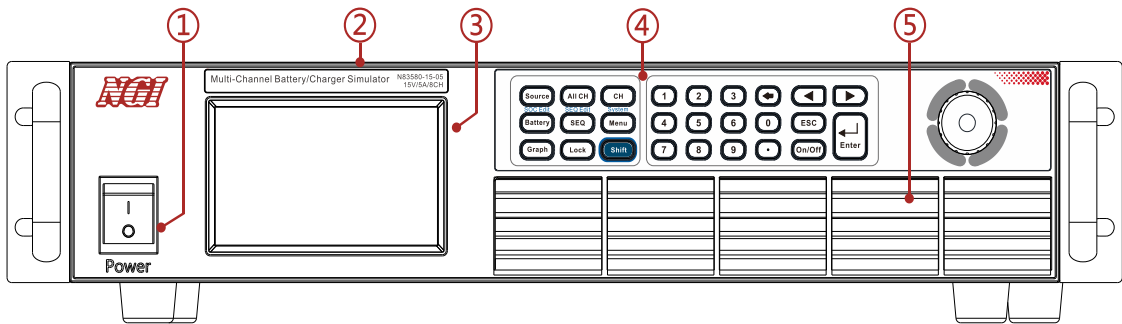


Figure 4 Front Panel

Table 4

Number	Name	Function
1	Power switch	Power control
2	Device model	Displaying model number
3	Screen	Displaying data
4	Buttons	Operation mode and parameter setting
5	Air outlet	Exhaust outlet, cooling

3.4.1. Button & Knob

Users can control N83580 via button and knob.

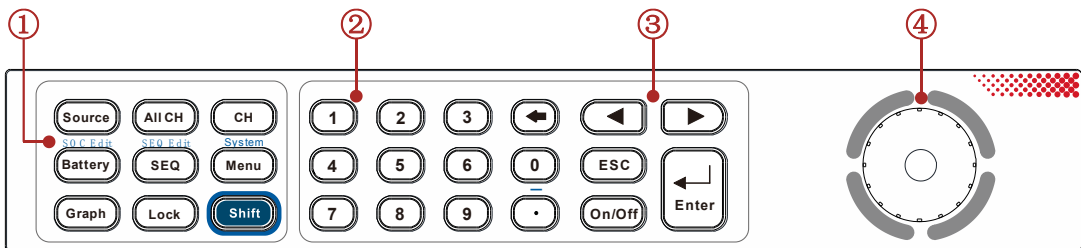


Figure 5 Button & Knob

Number	Name
1	Function buttons
2	Numeric buttons
3	ON/OFF, selection buttons
4	Knob

3.4.2. Function Button

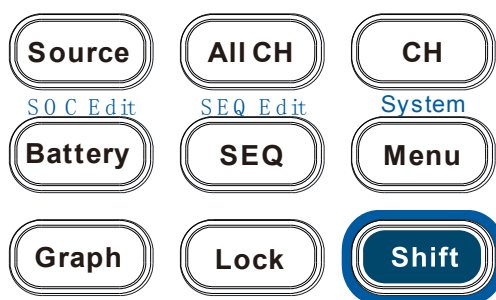


Figure 6 Function Button

Table 6

Button	Function
	To enter Source mode
	To enter all channels readback interface
	Channel switch
	To enter battery simulation /SOC Edit
	To enter SEQ Test /SEQ Edit
	Menu or system setting
	To enter Graph interface
	To lock/unlock
	Compound button, Shift+Battery/SEQ/Menu to enter SOC Edit or SEQ Edit/System

3.4.3. Numeric Button

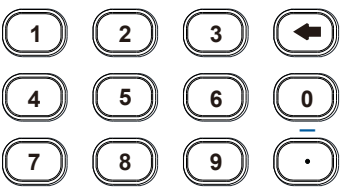


Figure 7 Numeric Button

Table 7

Button	Function
 ~  , 	Digit input
	To delete

3.4.4. Power Button, Selection Button

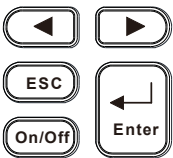


Figure 8 Power Button, Selection Button

Button	Function
	1. To shift or select the required item in menu 2. To control the cursor scrolling when setting parameter
	To enter the required item, confirm the input, exit from setting or remote operation
	To exit from setting
	To turn on/off the power output for the selected channel

3.4.5. Knob

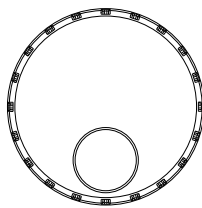
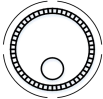


Figure 9 Knob

Table 9

Knob	Function
	By rotating: to select the required item, adjust the parameter By pressing: to enter the edit interface, confirm the input

3.5. Rear Panel Introduction

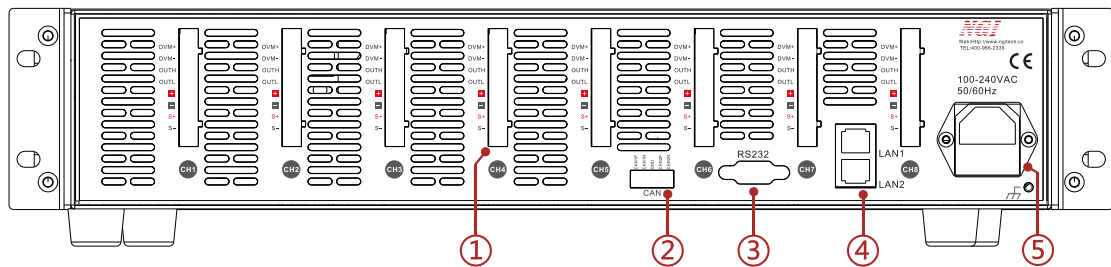


Figure 10 Rear Panel

Table 10

Number	Name	Function
1	Channel Port/DVM Input Port	Input/output port
2	Channel interface	Channel output
3	CAN interface	For remote control
4	RS232 interface	For remote control
5	LAN port	For remote control
6	Power Wiring Port	Power the device

3.5.1. Channel Interface

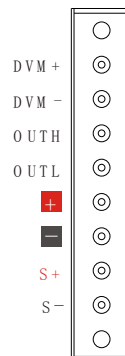


Figure 11 Channel Interface (Regular)

When the instrument outputs a high current, a voltage drop occurs on the output wire. In order to ensure the measurement accuracy, N83580 adopts the four-wire output mode to compensate the wire voltage drop.

Symbol	Definition
DVM+	DVM (Digital Voltmeter) positive terminal
DVM-	DVM (Digital Voltmeter) negative terminal.
OUTH	Two-wire local positive output terminals (no fault simulation)
OUTL	Two-wire local negative output terminals (no fault simulation)
OUT+	Four-wire system output +
OUT-	Four-wire system output -
S+	Four-wire system sense +
S-	Four-wire system sense -

Note:

Maximum input voltage between input terminals (+) and (-) is the product specification voltage*1.5.

Maximum input current between input terminals (+) and (-) is the product specification current.

3.5.2. RS232 Interface

On the rear panel, there is a male DB-9 interface with 9 pins.

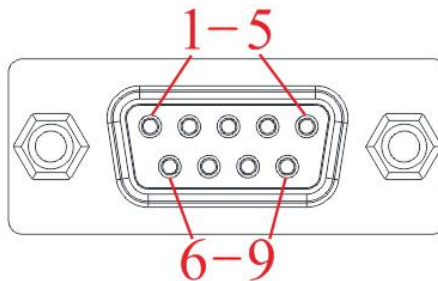


Figure 12 RS232 Interface

Table 12 RS232 Pin Definition

Pin	Definition
1	NC
2	RXD, receive data
3	TXD, transmit data
4	NC
5	GND, ground
6	NC
7	NC
8	NC
9	NC

3.5.3. LAN Port

There are two LAN ports at N83580 rear panel. Users can choose either LAN port to connect N83580 with computer by an Ethernet cable.

The double LAN design offers feasibility of one computer controlling multiple devices. Below figure shows one computer controlling two devices.

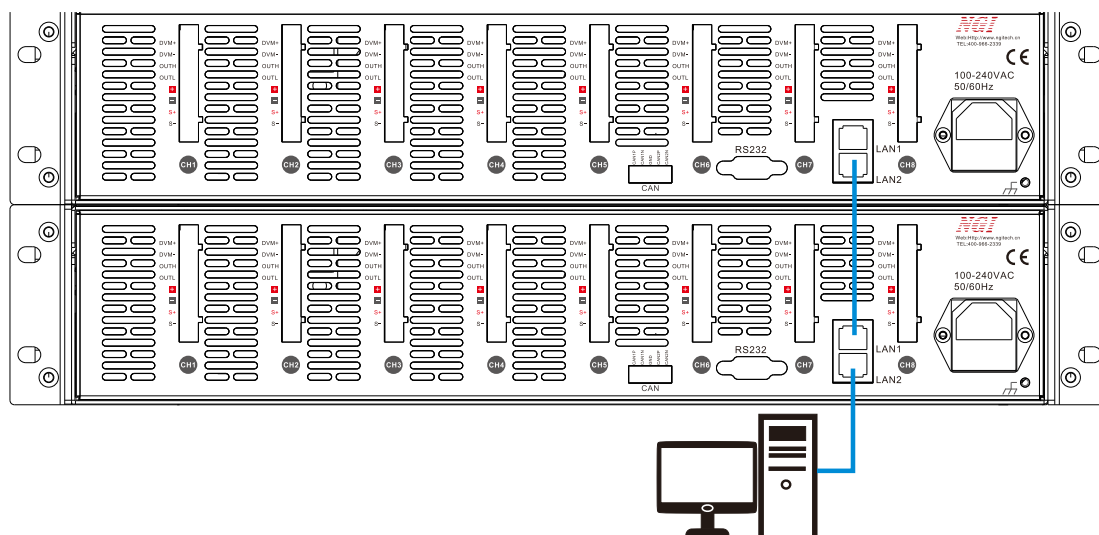


Figure 13 Multiple Devices Connection Diagram

Note: N83580 is equipped with three communication interfaces, RS232, LAN and CAN. Users can choose any one to communicate with the computer

3.5.4.CAN Interface

N83580 is equipped with a CAN bus interface.

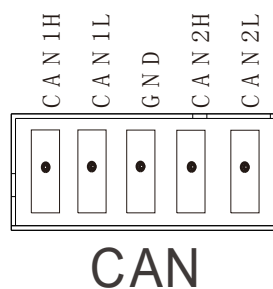


Figure 14 RS232 Interface

Table 13 CAN Pin Definition

Pin	Definition
CAN1P	CAN communication high level
CAN1N	CAN communication low level
GND	Ground
CAN2P	CAN communication high level
CAN2N	CAN communication low level

Users can realize PC communication control through the USB to CAN converter. The connection diagram is shown below.

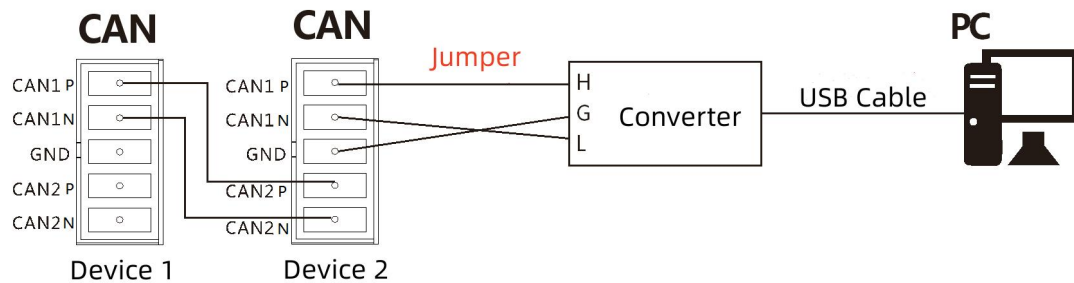


Figure 15 Connection Diagram

3.5.5. Default Communication Parameter

Table 14

Parameter	N83580 Series Default Value
Default IP Address	192.168.0.123
Default Baud Rate	115200

3.6. Wiring

Precautions

- When connecting the product, please turn off the device output to avoid the danger of electric shock during connection.
- Please connect the power plug to a power outlet with protective grounding.
- Ensure that the output wires are connected securely, please tighten the fixing screws to prevent the wires from falling off or loosening.
- When changing the output connection, please turn off the channel output.

3.6.1.2-Wire

Connect the OUTH and OUTL terminals of the rear panel channel port to the measurement device with wires. The two-wire measurement wiring schematic is shown below:

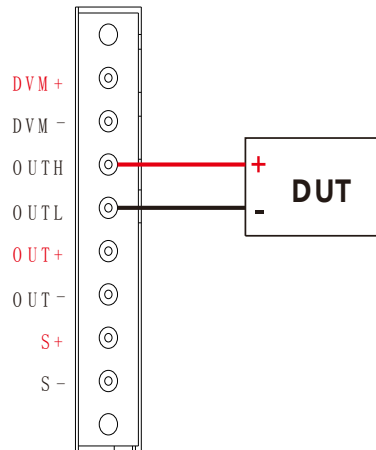


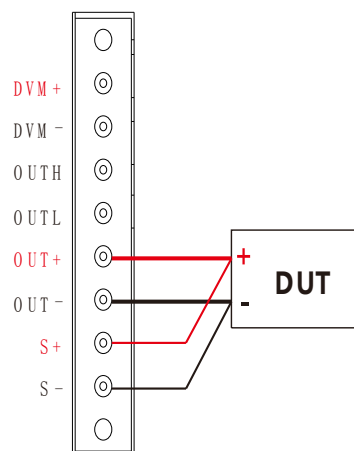
Figure 16 2-wire

3.6.2.4-Wire

The N83580 series four-wire remote measurement compensates for voltage drops across the leads connecting the battery simulator output terminals to the equipment to be measured. The operating procedure is shown below:

1. Connect a pair of sense leads from S+ and S- to the DUT.
2. Connect a pair of drive leads from the rear panel OUT+ and OUT- terminals to the DUT.

The four-wire remote measurement wiring schematic is shown below:



Note: When using 4-wire remote measurement, users need to set S/Mode (Sampling Control) to Remote in the system configuration.

3.6.3. DVM Wiring

The N83580 series battery simulator has a built-in DVM that can measure DC voltage. The DVM measurement wiring method is shown below:

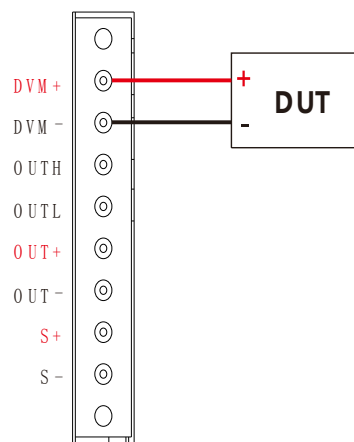


Figure 18 DVM wiring

3.7. Remote Mode

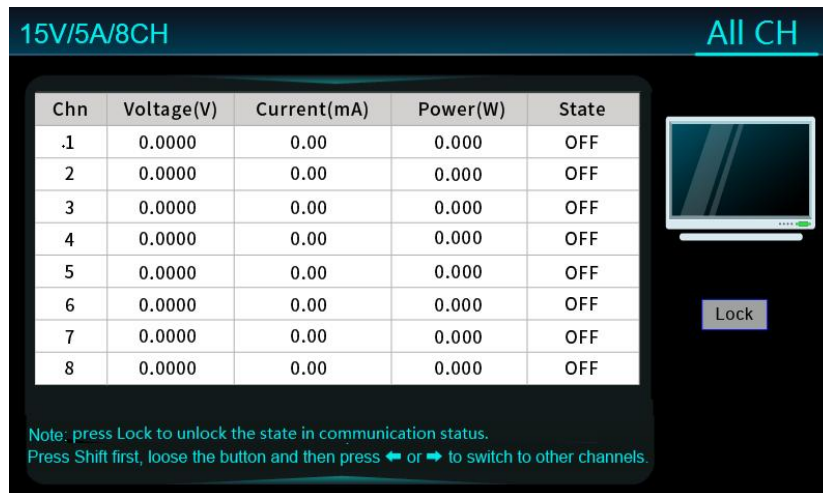


Figure 19 Remote Control

When device is disconnected from computer, users can press **Lock** to unlock the device.

3.7.1. LAN Communication

LAN communication refers to the use of local area network communication (LAN) to communicate with the instrument, connected via a network cable.

When using a LAN connection, the user can use the host computer to perform an IP scan on the instrument, save the IP and then access it remotely.

3.7.2. RS232 Communication

RS232 serial communication refers to the communication by connecting to the PC terminal through the serial cable.

Before using RS232 communication, please check the baud rate configuration in the

3.7.3. CAN Bus Communication

CAN bus communication can be realized by USB to CAN converter for computer communication control.

3.7.4. LAN Fault Clearing

Please check the following items if the master computer cannot control the instrument remotely:

1. Please check whether the network cable connection between the PC side and the instrument is loose.
2. Please check if the correct Ethernet configuration information is set.
3. The PC network is enabled.
4. Is the IP address of the instrument and the IP address of the PC side in the same gateway.

4. Application Software Installation & Configuration

4.1. PC Software Configuration

To make better use of the system performance, the following computer configuration is recommended:

- ◆ CPU: 2.0G, dual-core and above
- ◆ Memory: 4G and above
- ◆ Hard disk: 160G and above
- ◆ Port: Ethernet port
- ◆ Operating system: Microsoft Windows 7 and above
- ◆ Display resolution: 1440x900 and above

4.1.1. Port Connection

Please plug the Ethernet cable to PC Ethernet port and the other side to N83580 LAN port. After N83580 series is turn on, enter the system configuration interface to check the network IP. PC needs to keep the same network segment with N83580 in order to search the device. As shown in the following figure.

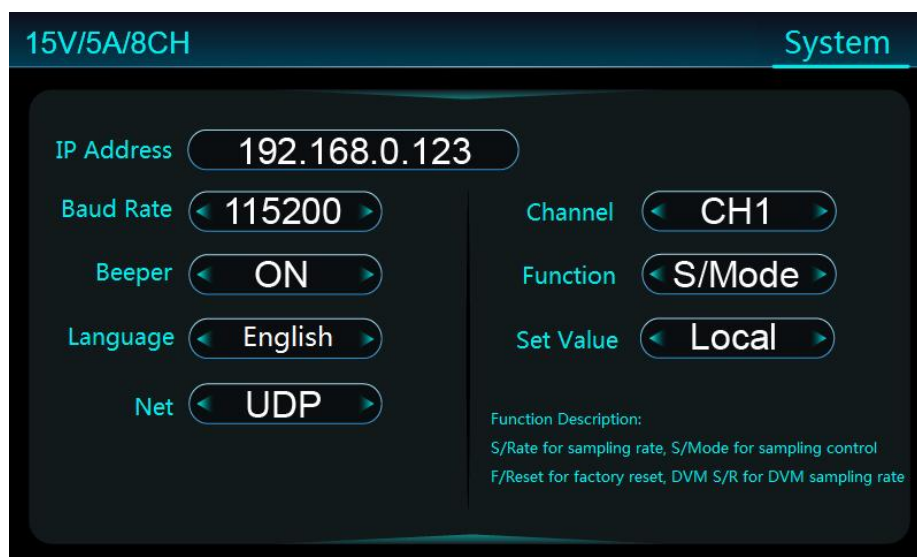


Figure 20 System

4.1.2. Disabling operating system standby mode

■ Windows 7 settings

Click **Start** → Click **Control Panel** → Click **Power Options** → Click **Change Computer Sleep Time**.

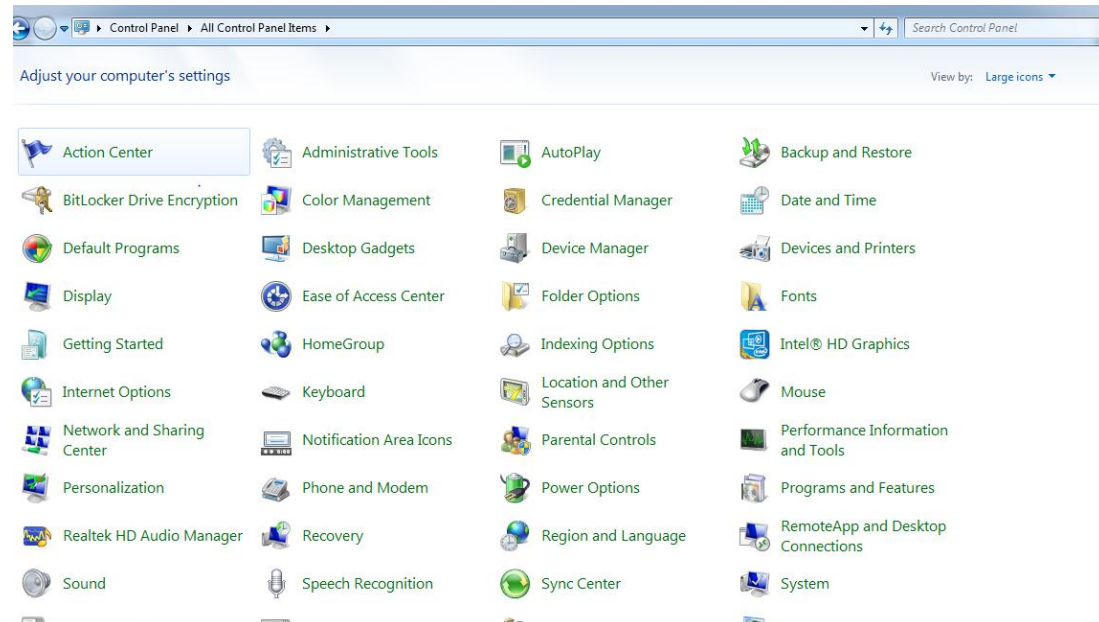


Figure 21 Windows 7 settings

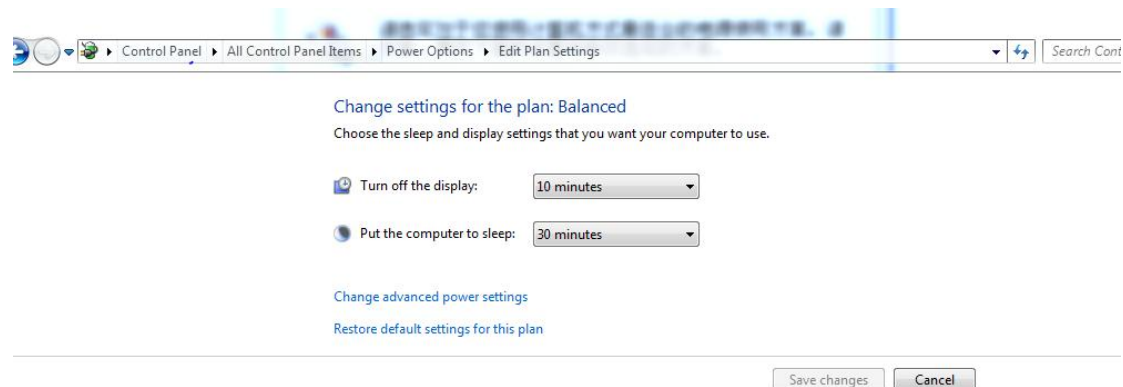


Figure 22 Windows 7 settings

Set **Turn off the display** and **Put the computer to sleep** to Never.

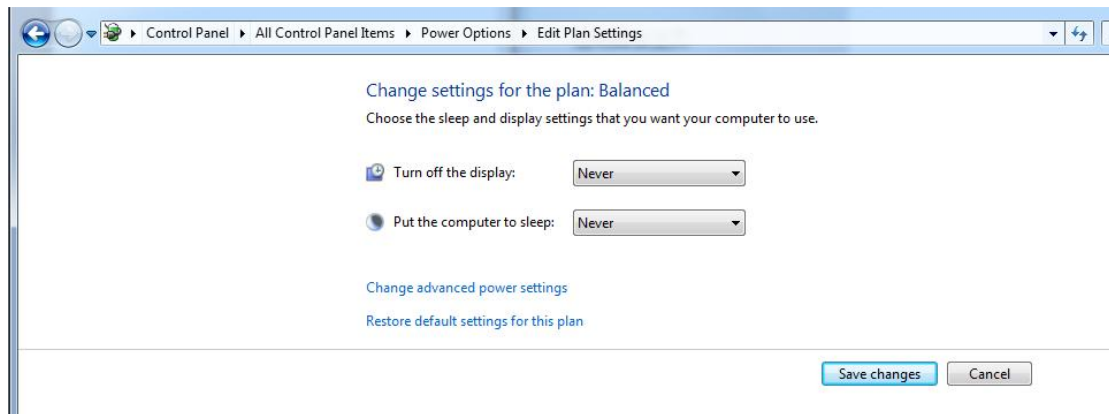


Figure 23 Windows 7 settings

■ Windows 10 settings

Click **Start**→Click **Settings**.

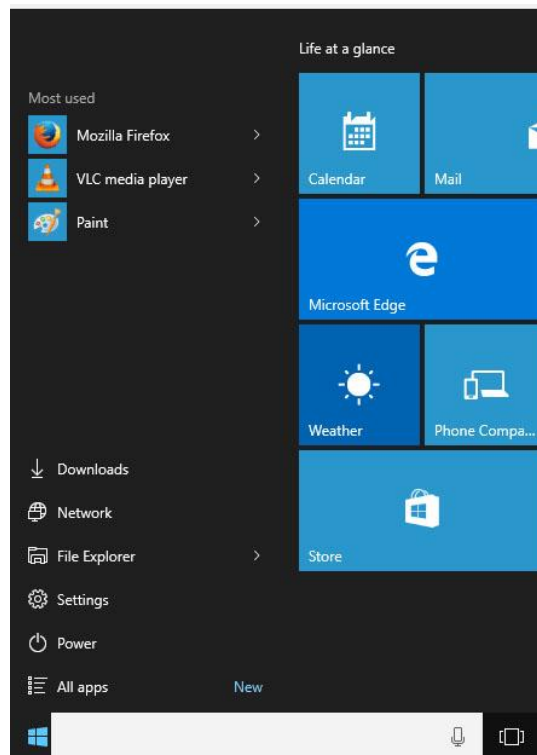


Figure 24 Windows 10 settings

Click **System**.

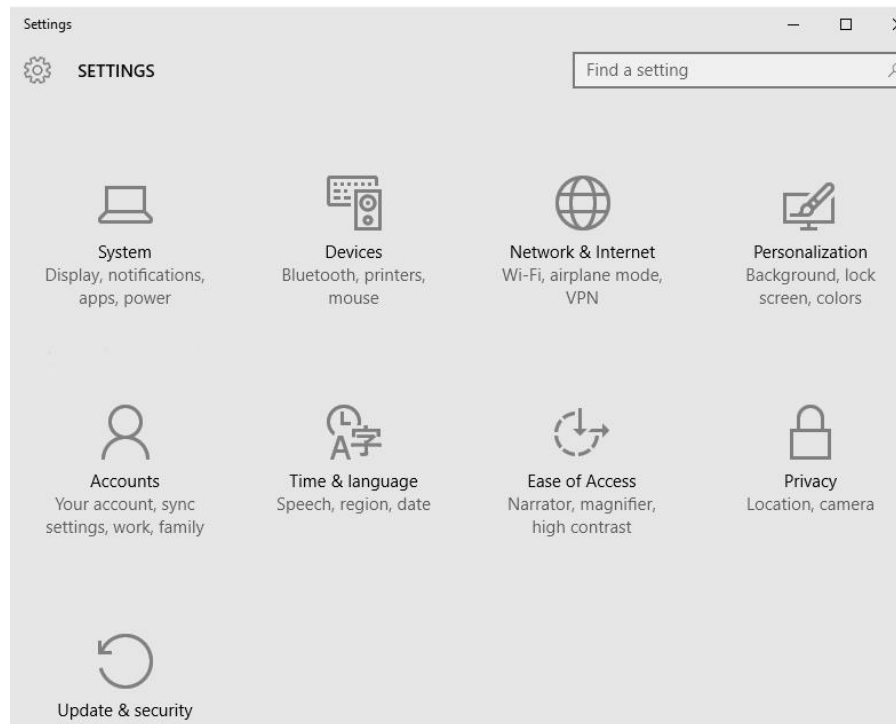


Figure 25 Windows 10 settings

Click **Power & sleep**.

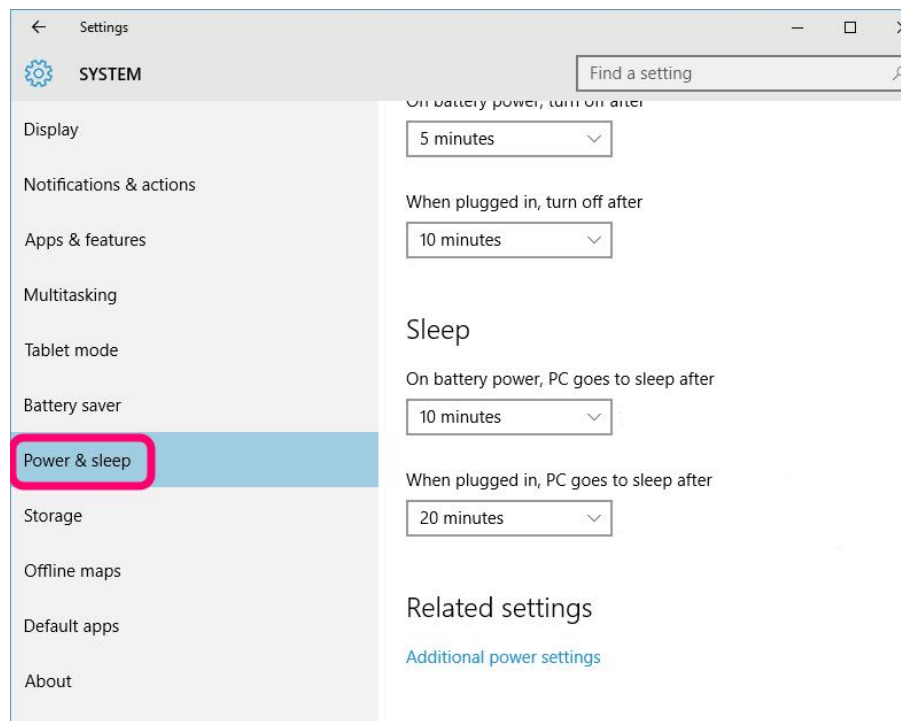


Figure 26 Windows 10 settings

Select **Never** for both options under **Sleep**.

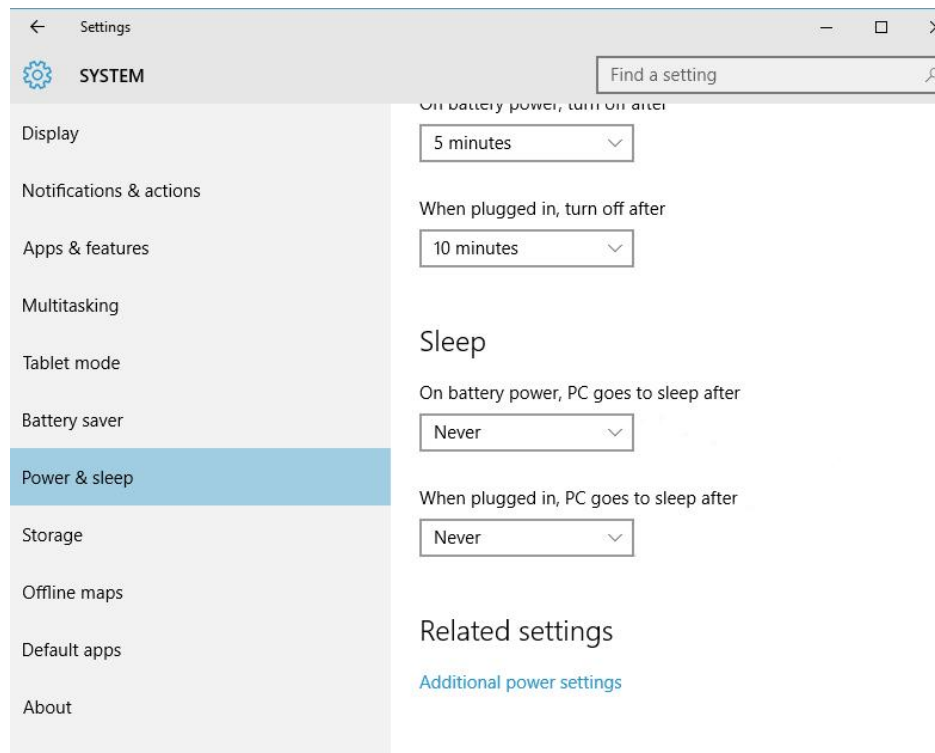


Figure 27 Windows 10 settings

4.1.3. Network IP Address Setting

The default IP of LAN port is 192.168.0.XXX (range from 0 to 255). Before operation, the computer IP should be assigned to the same network segment of N83580. But IP addresses should be different.

■ Windows 7 Setting

Click **Start**→Click **Control Panel**→Click **Network and Sharing Center**.

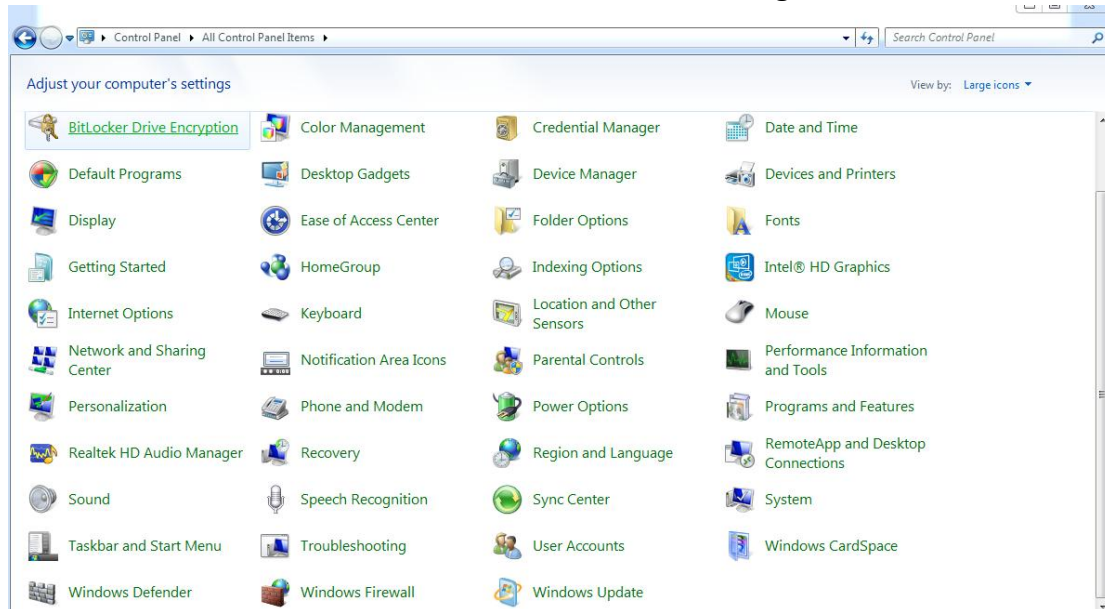


Figure 28 Network IP Address Setting

Click **Change adapter settings**.

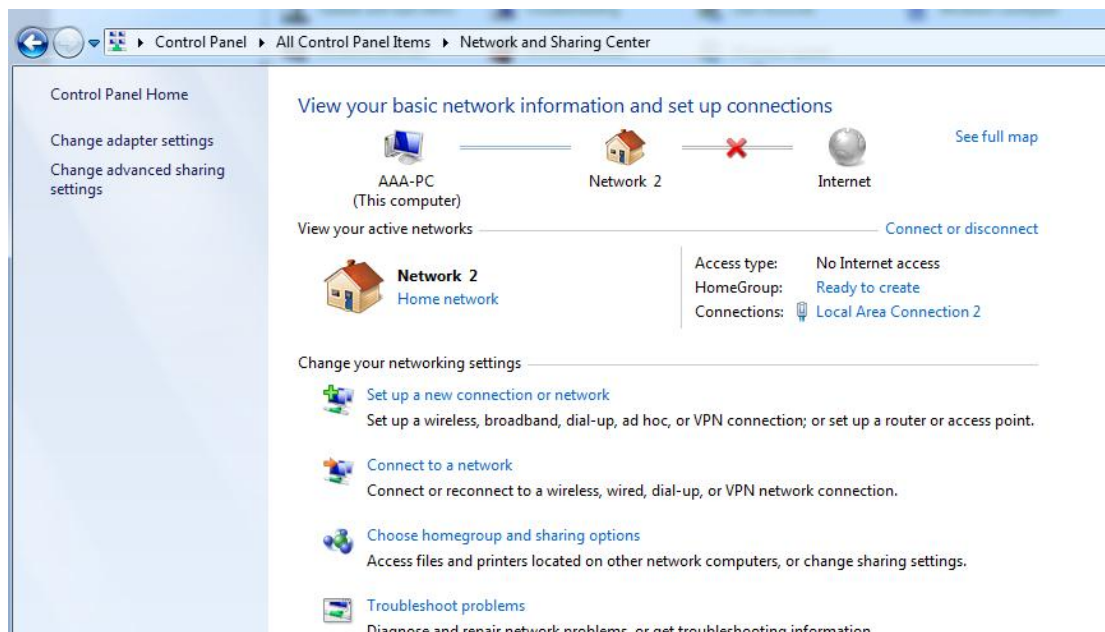


Figure 29 Network IP Address Setting

Select the network→Right click and choose **Properties**.

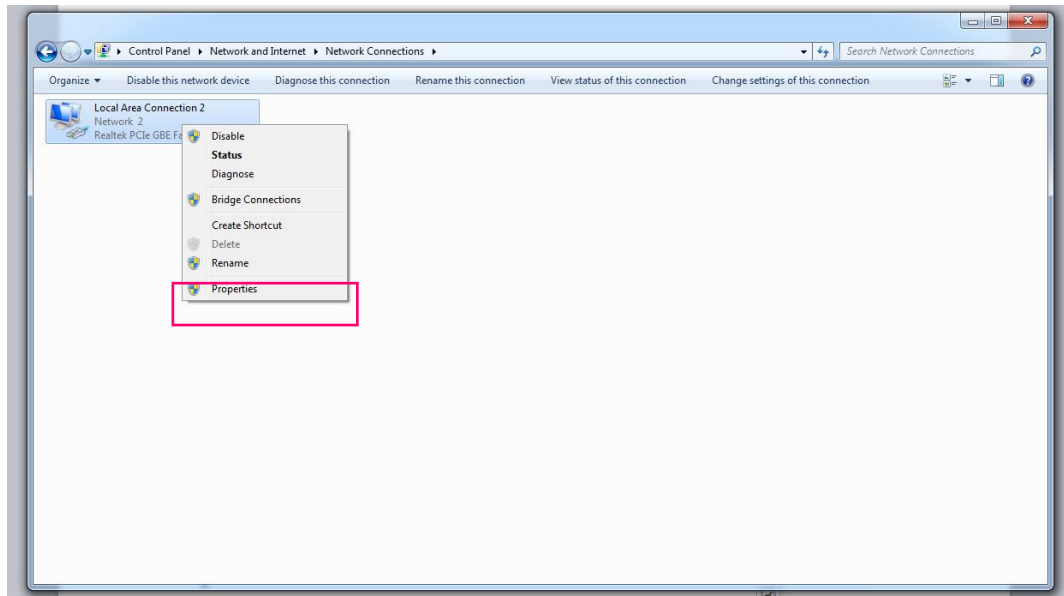
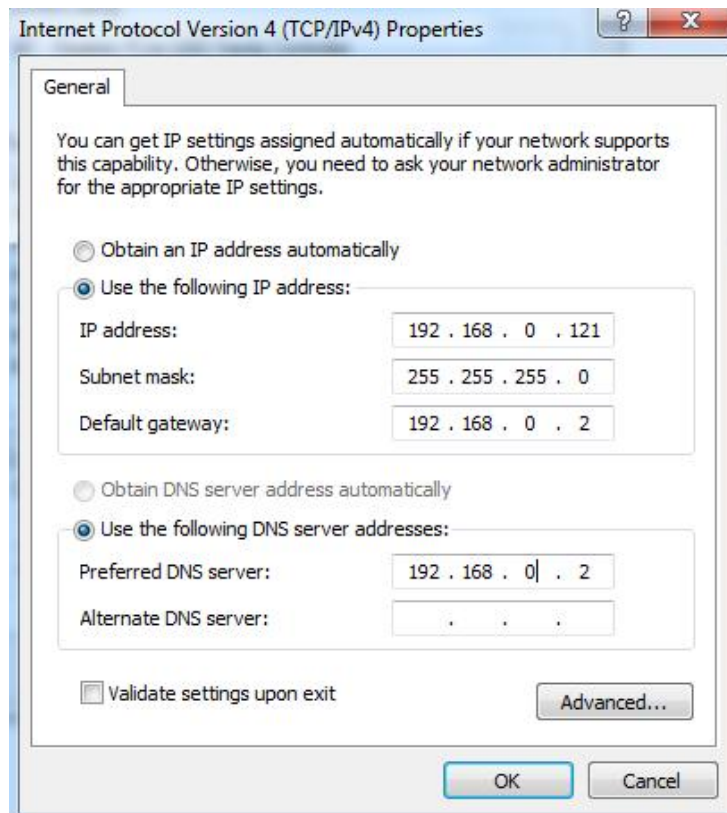


Figure 30 Network IP Address Setting

Click Internet Protocol Version 4(TCP/IPv4) and fill the below information and press **OK**.



Click **Start**→Input **cmd**.

Input ping 192.168.0.123(default IP of N83580) and check if N83580 can communicate properly.



Figure 32 Run Command

If communicating properly, the below information will be reverted.

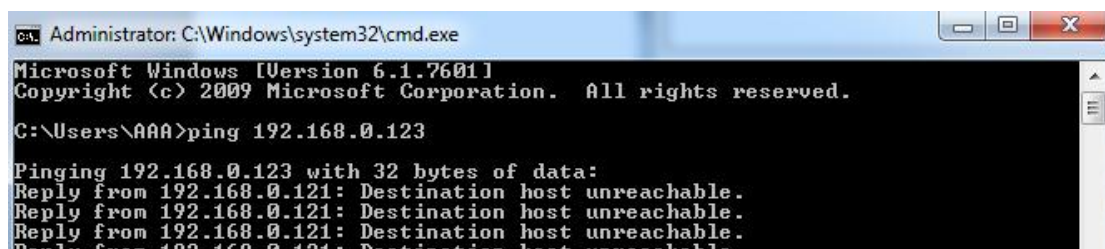


Figure 33 Communication Test

■ Windows 10 Setting

Click **Start**→Click **Set**→Click **Network & Internet**.

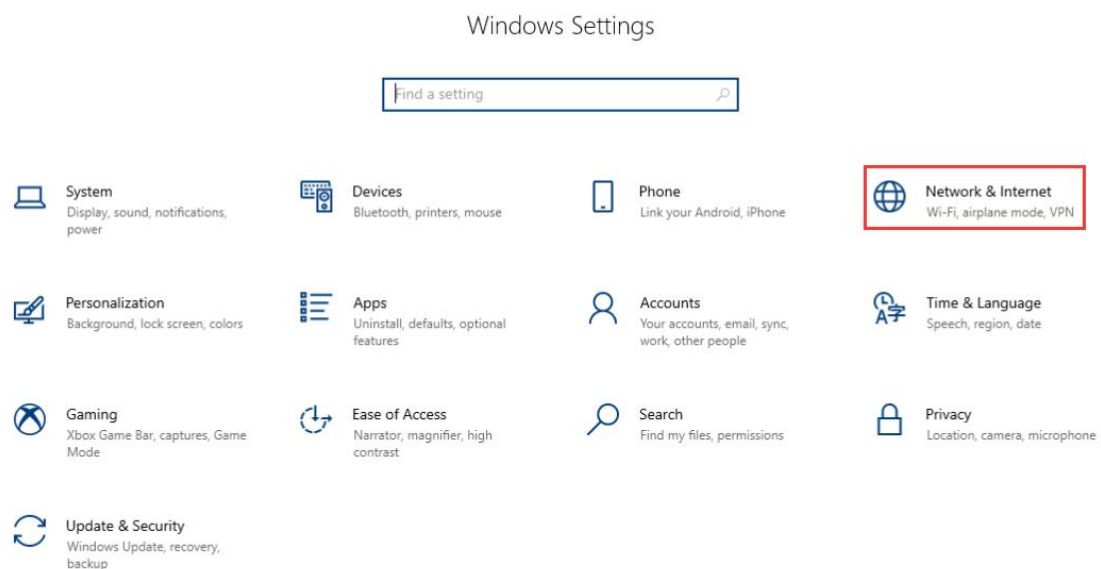


Figure 34 Network IP Address Setting

Click **Change adapter options**.

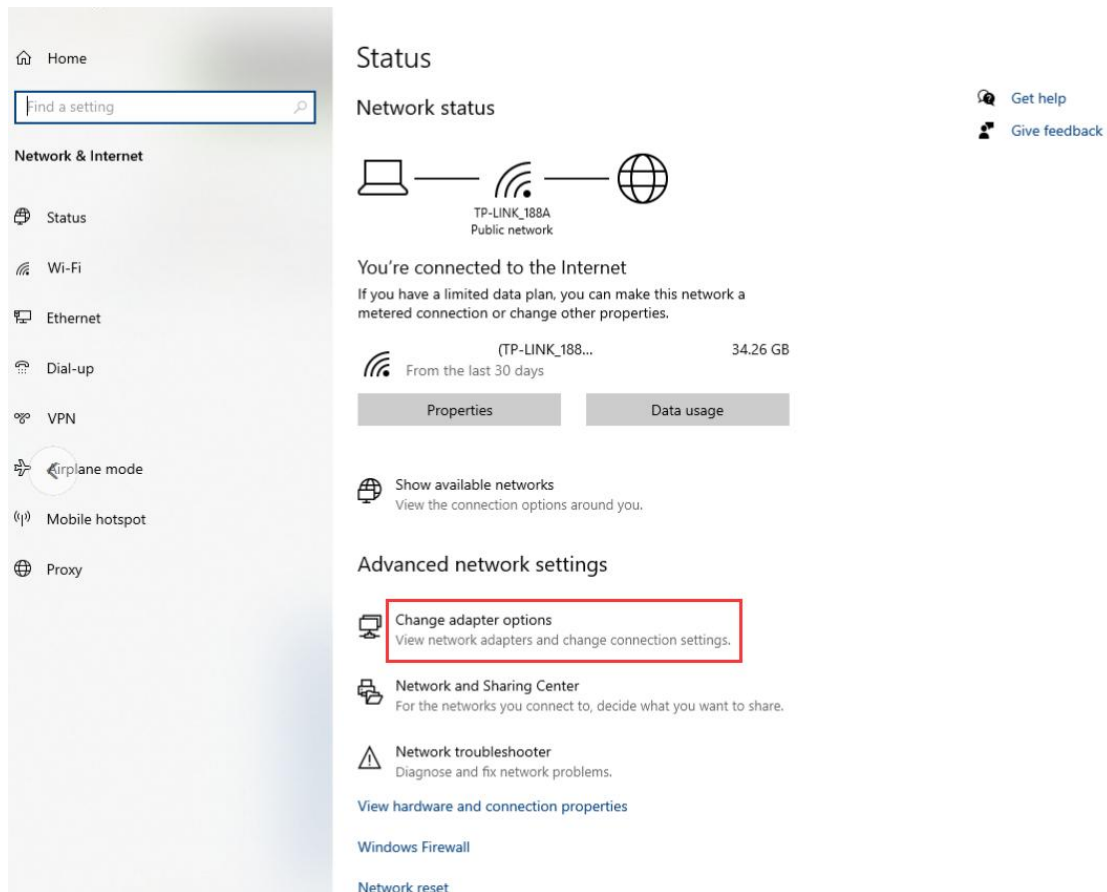


Figure 35 Network IP Address Setting

Select the network→Right click and choose **Properties**.

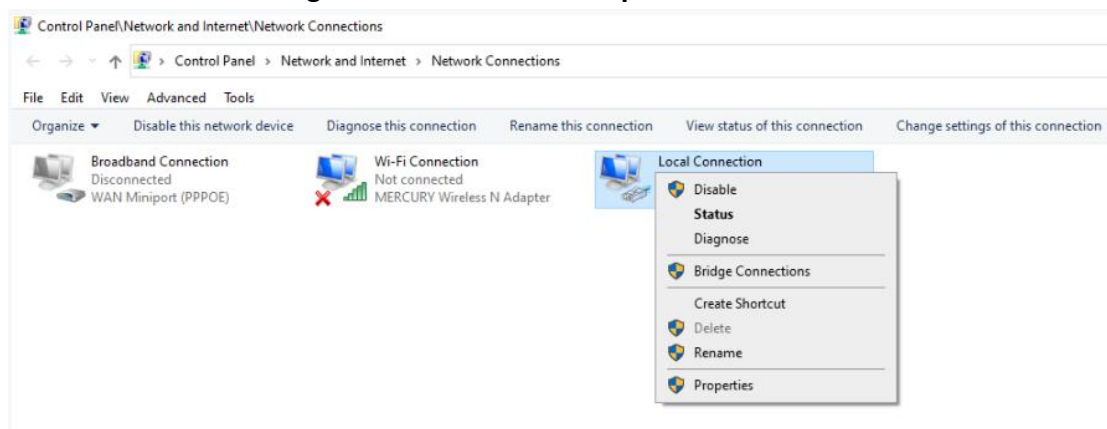


Figure 36 Network IP Address Setting

Click Internet Protocol Version 4(TCP/IPv4) and fill the below information and press **OK**.

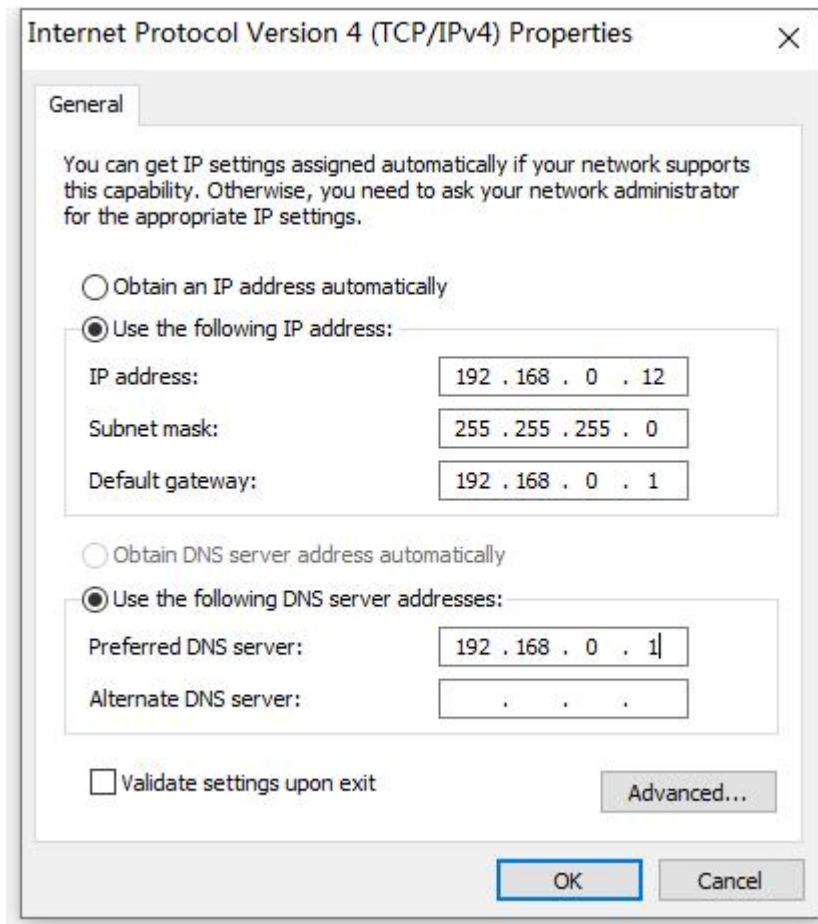


Figure 37 Network IP Address Setting

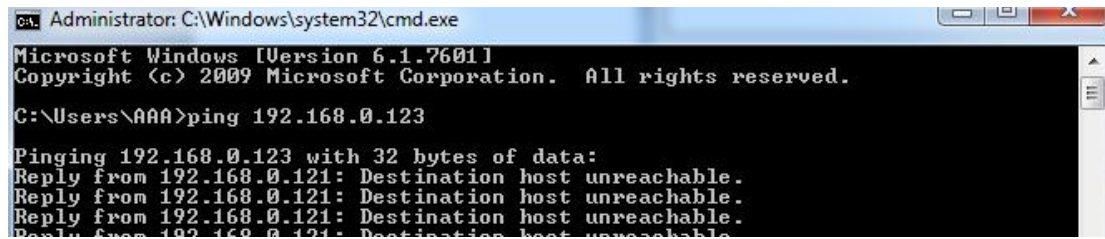
Click **Start**→Input **cmd**.

Input ping 192.168.0.123(default IP of N83580) and check if N83580 can communicate properly.



Figure 38 Run Command

If communicating properly, the below information will be reverted.



```
Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\AAA>ping 192.168.0.123

Pinging 192.168.0.123 with 32 bytes of data:
Reply from 192.168.0.121: Destination host unreachable.
Reply from 192.168.0.121: Destination host unreachable.
Reply from 192.168.0.121: Destination host unreachable.
Reply from 192.168.0.121: Destination host unreachable.
```

Figure 39 Communication Test

4.2. Application Software Installation and Uninstallation

4.2.1. Installation

- 1) Find the installation program "N83580_setup.exe" from the USB flash drive in accessory bag.
- 2) Make double-click on the file and begin installation.

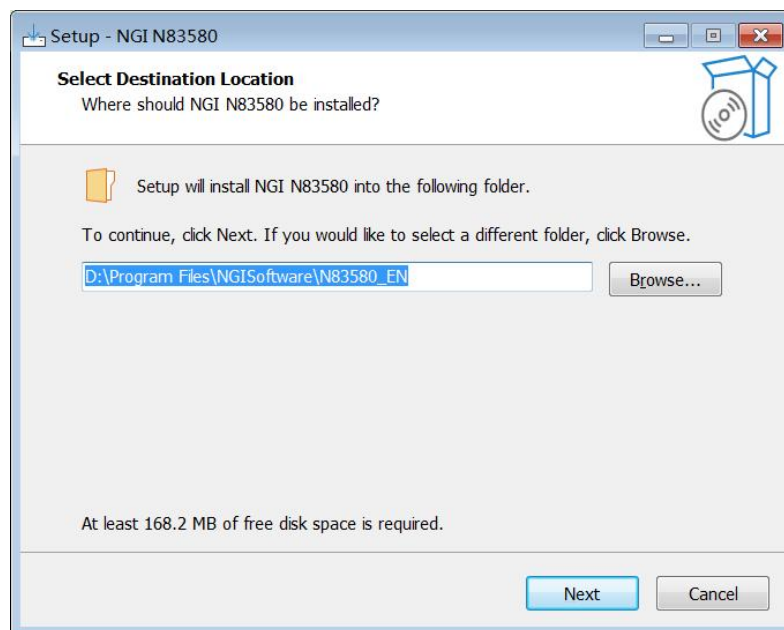


Figure 40 Program Installation

- 3) Click Next as prompted until the installation is completed. The software will automatically create a shortcut on the desktop.

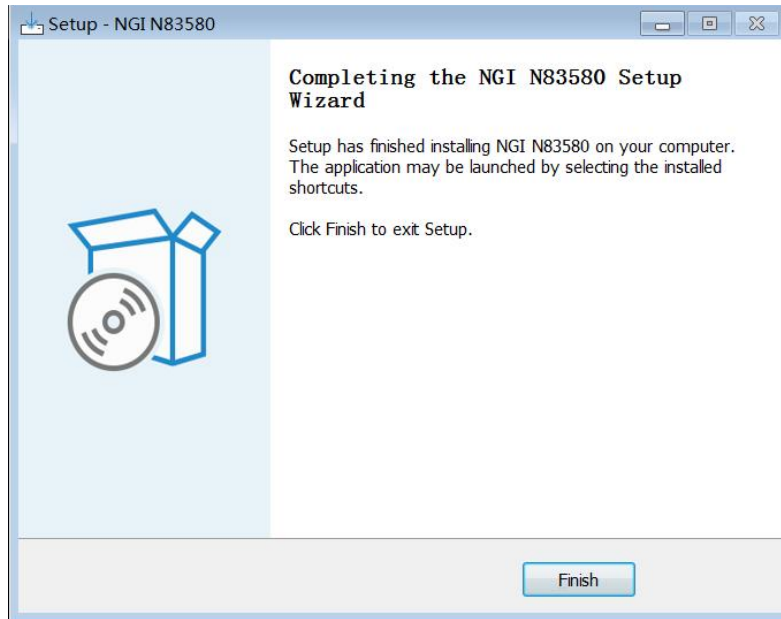


Figure 41 Installation Completed

4.2.2. Uninstallation

Methods for uninstallation:

Method 1: Program uninstallation can be completed through **Uninstall Program** in **Control Panel** of the operating system, or by right-clicking the shortcut and selecting uninstall.

Method 2: Find the setup program in your computer disk and delete.

4.3. Operation

After the application software is successfully installed, a shortcut icon will be generated on the desktop. Please click the shortcut to enter the menu.



Figure 42 Shortcut

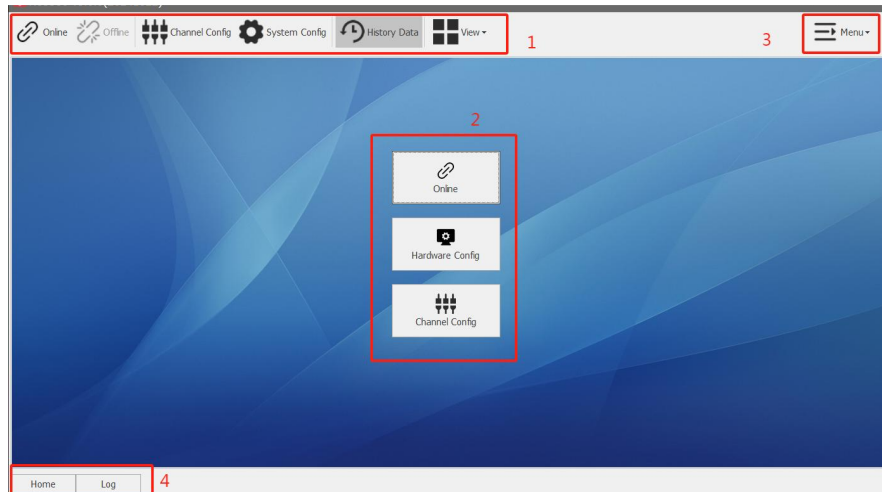


Figure 43 Main Interface

1. Toolbar

Including online, offline, channel configuration, system configuration, history data, View.

2. Menu

Including hardware configuration, advanced configuration, catalog, About, Exit.

3. Shortcut menu

Configuration before online.

4. Log

Displays abnormal information of the device.

4.4. Configuration before Operation

4.4.1. Hardware Configuration

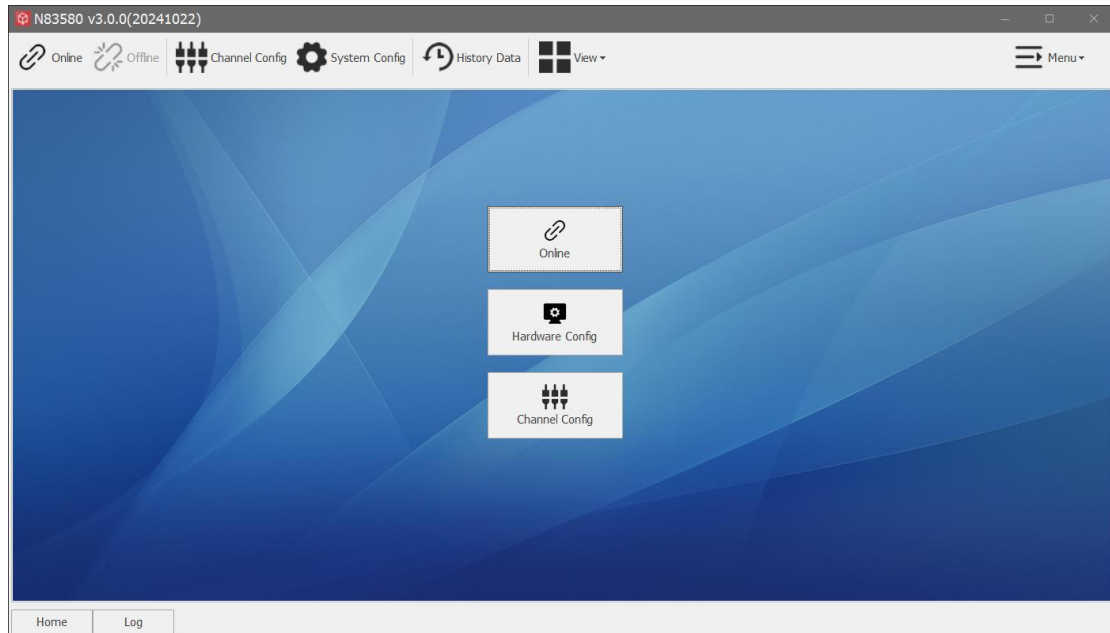


Figure 44 Hardware Configuration

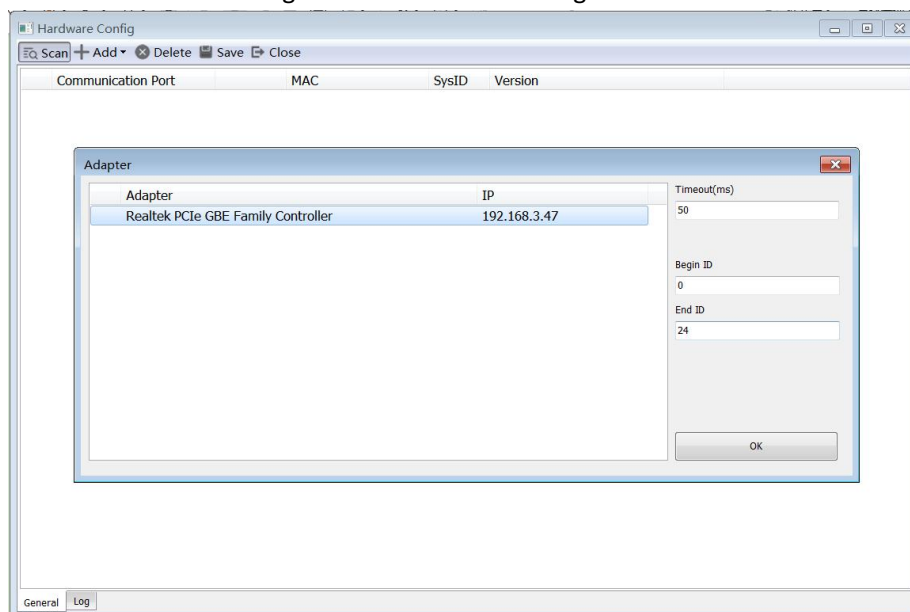


Figure 45 Scan

Operation steps:

1. Click Hardware Configuration to enter the interface and click Scan.
2. Select LAN as the communication method and enter the target IP address.

4. Wait for the scan to complete and the available devices to appear.
5. Click Save.

4.4.2. Advanced Configuration

Click Menu→Click Advanced Configuration to enter the interface.

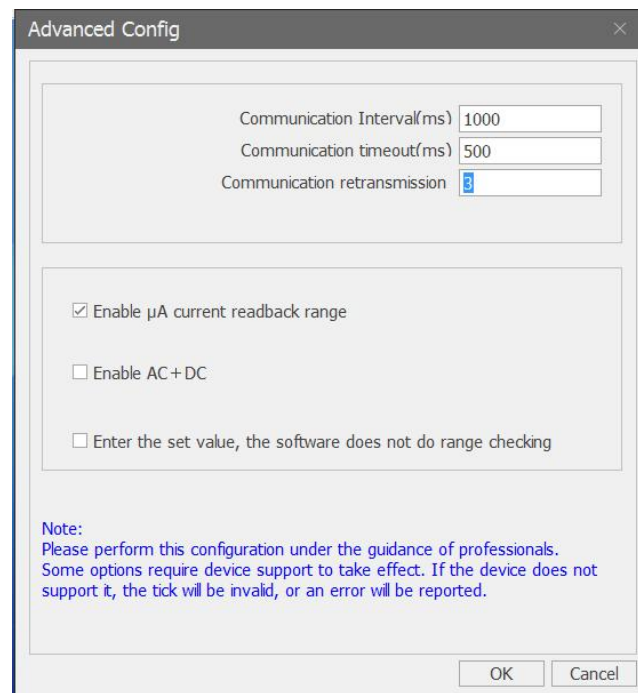


Figure 46 Advanced Configuration

- Communication Interval: Set the time interval for updating voltage and current data.
- Communication Timeout: The timeout for sending request and reading response, when the data transmission exceeds the preset time limit and fails to complete, the system will terminate the communication automatically.
- Communication Retransmission: The number of times the system re-transmits commands when the communication is abnormal.

4.4.3. Online/Offline



Figure 47 Online/Offline

Online means that the software establishes a connection with the device, and the device can be controlled normally only in the online state.

Offline means that the connection is interrupted, i.e. the communication is interrupted.

5. Operation

After the device is switched on, it will enter Source mode directly. Users can enter menu by pressing [Menu]. There are fourteen options on the menu: Source, Charge, Battery, SOC Test, SOC Edit, SEQ Test, SEQ Edit, All CH, Fault, Graph, System, Protection, CAN Set and About Us.

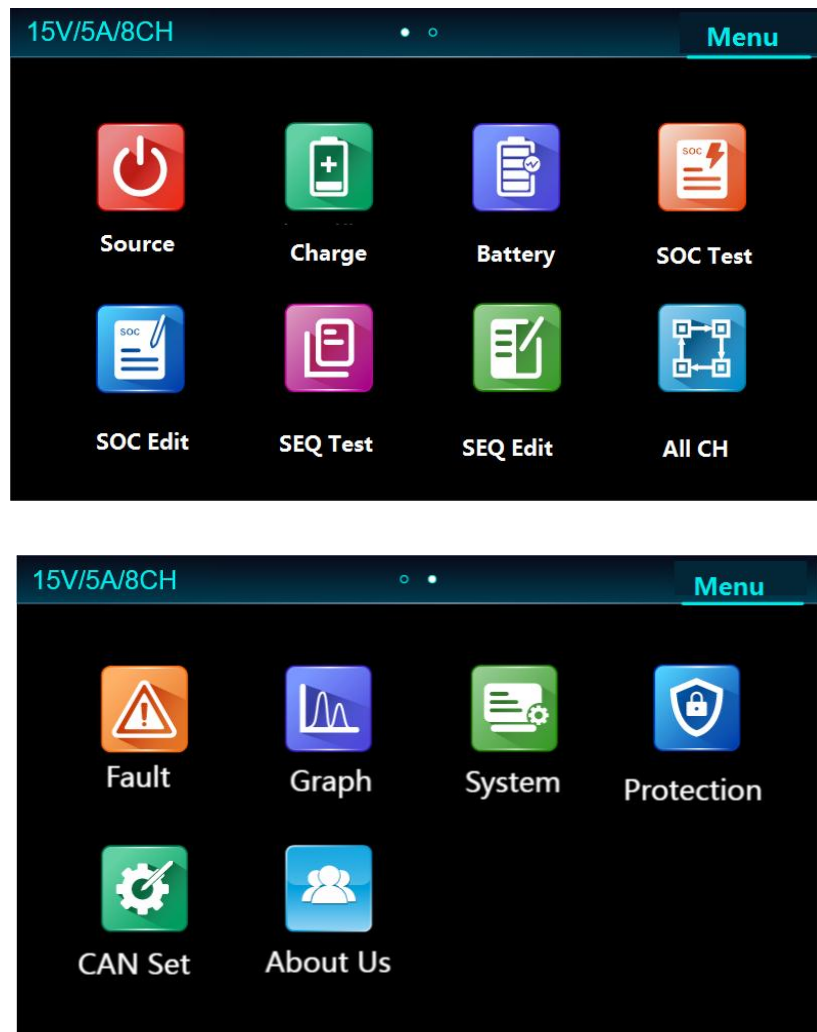


Figure 48 Menu

This chapter mainly describes the following functions of N83580.

- **Source**
- **Charge**
- **Battery**

- SOC Test
- SEQ Edit
- SEQ Test
- Graph
- All CH
- System
- Protection
- Fault (Optional)
- CAN Set
- About Us

5.1. Interface

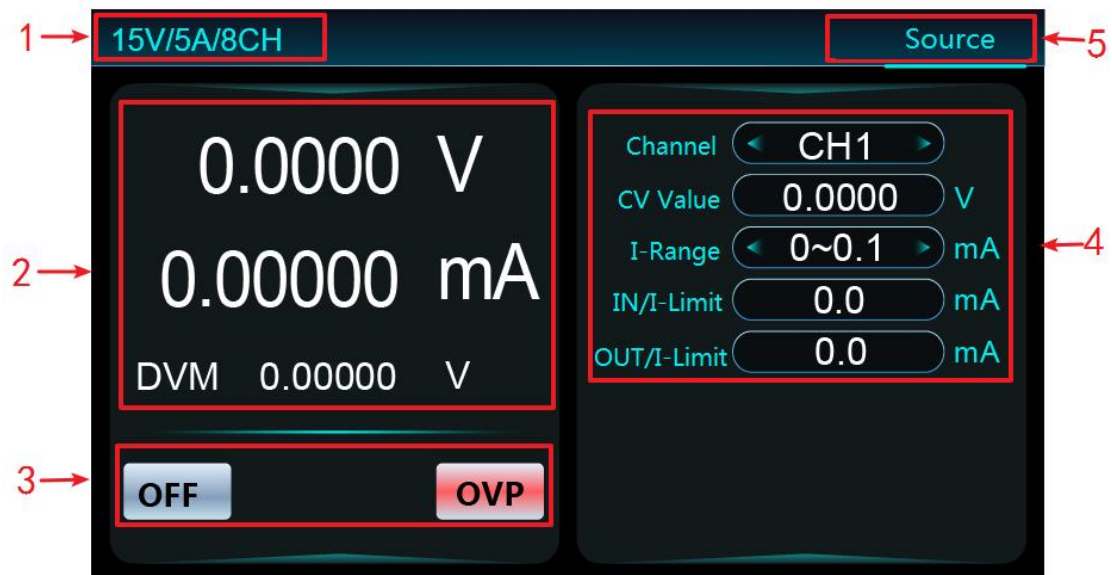


Figure 49 Interface Introduction

Number	Instruction
1	Specification
2	Readback area, including voltage, current, power, capacity, temperature. Please press [Shift] first, release the button and then press ◀▶ to switch the parameters.
3	Channel status, including ON/OFF, function mode, OVP/OCP/OPP, etc.
4	Parameter setting area
5	Function mode

5.2. Source Mode

N83580 source mode is constant voltage and current limit.

Methods to enter **Source** mode:

Method 1: It will directly enter **Source** mode after power-on.

Method 2: Press **[Source]** on the front panel directly.

Method 3: Press **[Menu]**→ Select **[Source]** by pressing ◀▶ or rotating the knob→ Press the knob or **[Enter]**.

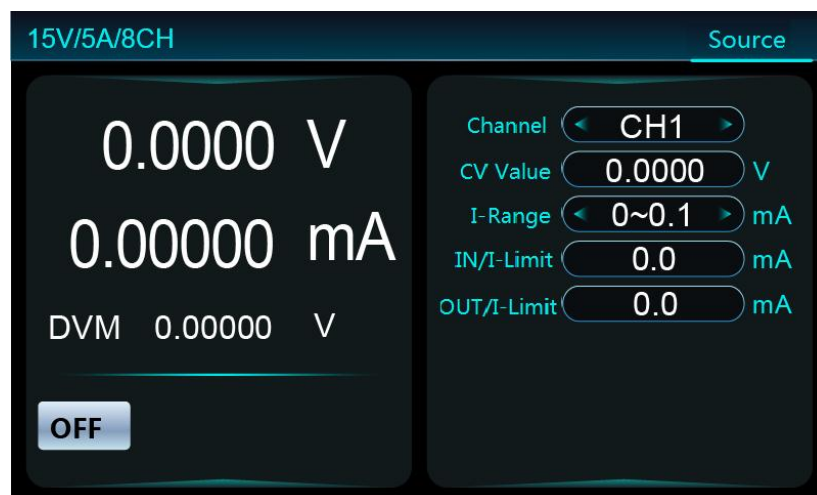


Figure 50 Source Mode

Parameter	Description
Channel	To select channel number
CV Value	To set constant voltage value
I-Range	To select current readback range
IN/I-Limit	To set input current limit
OUT/I-Limit	To set output current limit

5.2.1. Parameter Setting

■ Channel Selection

Channel selection refers to selecting the present channel to edit parameters or run the present channel.

Methods to select the required channel under **Source** mode:

Method 1: Press **[CH]** directly on the front panel.

Method 2: Press ◀▶ to select **Channel**→ Press **[Enter]** or the knob on **Channel**→ Press ◀▶ to select the required channel→ Press **[Enter]** or the knob to complete selection.

Method 3: Rotate the knob to select **Channel**→ Press **[Enter]** or the knob on **Channel**→ Rotate the knob to select the required channel→ Press **[Enter]** or the knob to complete selection.

Users can select option **ALL** to turn on/off all channels.

■ Current Range

Current range is the current readback range, including three options: high range, low range, and automatic range. When the device is set to automatic range, the readback current range will automatically switch the range according to the actual current value. After switching the range, users need to press ON again to take effect.

Steps to select the required current range under **Source** mode:

1. Press ◀▶ or rotate the knob to select **I-Range**.
2. Press **[Enter]** or the knob on **I-Range**.
3. Press ◀▶ or rotate the knob to select the range required.

■ CV Value

The settable range is from 0 to rated voltage.

■ Input/Output Current Limit

The settable range of IN/I-Limit or OUT/I-Limit is from 0 to rated current. The actual input/output current will not exceed the setting value.

Methods to set **CV Value** or **IN/I-Limit** or **OUT/I-Limit** under **Source** mode:

Method 1: Press ◀ ▶ or rotate the knob to select **CV Value** or **IN/I-Limit** or **OUT/I-Limit**→Press [Enter] or the knob on **CV Value** or **IN/I-Limit** or **OUT/I-Limit**→Press numeric buttons to input the value→Press [Enter] or the knob to complete setting.

Method 2: Press ◀ ▶ or rotate the knob to select **CV Value** or **IN/I-Limit** or **OUT/I-Limit**→Press [Enter] or the knob on **CV Value** or **IN/I-Limit** or **OUT/I-Limit**→Press ◀ ▶ to move the cursor and rotate the knob to adjust the numeric→Press [Enter] or the knob to complete setting.

5.2.2. Operation Example

Step 1: Select the channel to CH1.

Step 2: Set **CV Value** to 5V and press [Enter].

Step 3: Set **I-Range** to 0~0.1 and press [Enter].

Step 4: Set **IN/I-Limit** to 5000mA and press [Enter].

Step 5: Set **OUT/I-Limit** to 5000mA and press [Enter].

Step 6: Connect a 10.6Ω and press [ON/OFF] to enable output.

Step 7: The LCD screen shows the data.

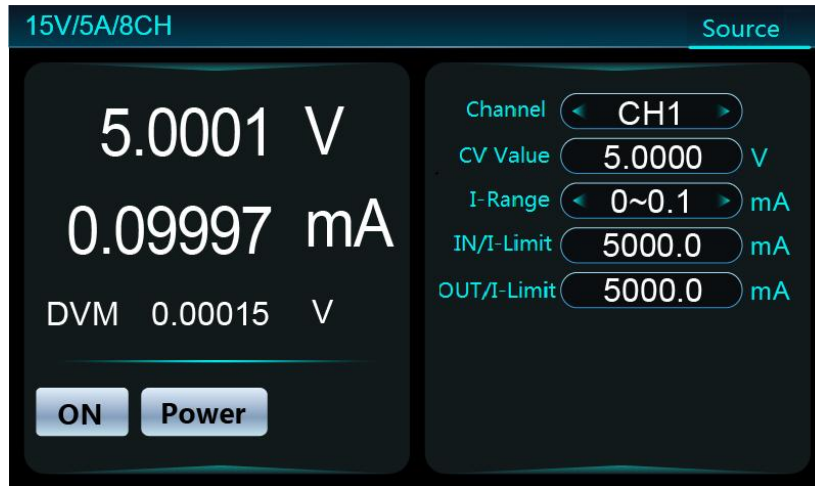


Figure 51 Source Mode

Step 8: After the test completed, press [ON/OFF] to shut off output.

5.2.3. Remote Operation Control Command Example

Table 17

Commands	Description
OUTPut1:ONOFF 0	//turn off channel output
OUTPut1:MODE 1	//Set the operating mode to source mode
SOURce1:VOLTage 5.0	//Set the constant voltage value to 5.0V.
SOURce1:OUTCURRent 1000	//Set the output current limit to 1000mA.
SOURce1:INCURRent 500	//Set the input current limit to 500mA.
SOURce1:RANGe 3	//Select current range 3 for auto range.
OUTPut1:ONOFF 1	//Enable channel 1 output

5.3. Charge Mode

Charge mode can be used to simulate battery charging and discharging.

Steps to enter **Charge** mode:

1. Press [Menu] on the front panel.
2. Choose **Charge** by pressing ◀▶ or rotating the knob.
3. Press [Menu] or the knob.

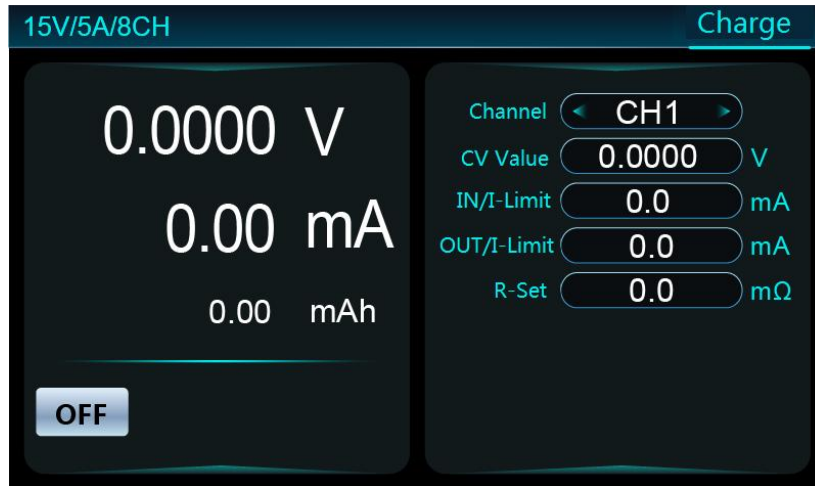


Figure 52 Charge Mode

Table 18

Parameter	Description
Channel	To select channel number
CV Value	To set constant voltage value
IN/I-Limit	To set input current limit
OUT/I-Limit	To set output current limit
R-Set	To set resistance value

5.3.1. Parameter Setting

■ Channel Selection

Channel selection refers to selecting the present channel to edit parameters or run the present channel.

Methods to select the required channel under **Charge** mode:

Method 1: Press **[CH]** directly on the front panel.

Method 2: Press ◀▶ to select **Channel**→ Press **[Enter]** or the knob on **Channel**→ Press ◀▶ to select the required channel→ Press **[Enter]** or the knob to complete selection.

Method 3: Rotate the knob to select **Channel**→ Press **[Enter]** or the knob on **Channel**→ Rotate the knob to select the required channel→ Press **[Enter]** or the knob to complete selection.

■ Input/Output Current Limit

The settable range of IN/I-Limit or OUT/I-Limit is from 0 to rated current. The actual input/output current will not exceed the setting value.

■ CV Value

The settable range is from 0 to rated voltage.

■ Simulated Resistance

The settable range is from 0mΩ to 99999.9mΩ.

Methods to set **CV Value** or **IN/I-Limit** or **OUT/I-Limit** or **R-Set** under **Charge** mode:

Method 1: Press ◀ ▶ or rotate the knob to select **CV Value** or **IN/I-Limit** or **OUT/I-Limit** or **R-Set**→Press [Enter] or the knob on **CV Value** or **IN/I-Limit** or **OUT/I-Limit** or **R-Set**→Press numeric buttons to input the value→Press [Enter] or the knob to complete setting.

Method 2: Press ◀ ▶ or rotate the knob to select **CV Value** or **IN/I-Limit** or **OUT/I-Limit** or **R-Set**→Press [Enter] or the knob on **CV Value** or **IN/I-Limit** or **OUT/I-Limit** or **R-Set**→Press ◀▶ to move the cursor and rotate the knob to adjust the numeric→Press [Enter] or the knob to complete setting.

5.3.2. Operation Example

Step 1: Select the channel to CH1.

Step 2: Set **CV Value** to 1V and press [Enter].

Step 3: Set **IN/I-Limit** to 5000mA and press [Enter].

Step 4: Set **OUT/I-Limit** to 5000mA and press [Enter].

Step 5: Set **R-Set** to 0mΩ and press [Enter].

Step 6: Connect a battery and press [ON/OFF] to enable output.

Step 7: The screen shows the data.

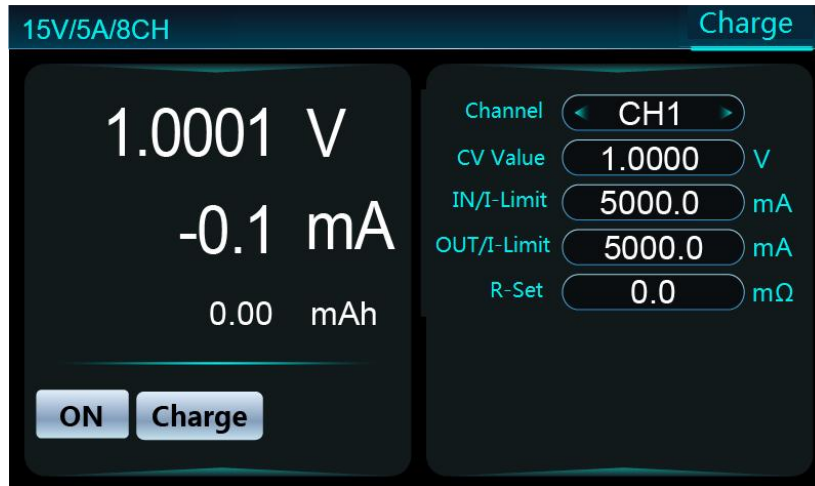


Figure 53 Charge Mode

Step 8: After the test completed, press [ON/OFF] to shut off output.

5.3.3. Remote Operation Control Command Example

Table 19

Commands	Description
OUTPut1:ONOFF 0	//turn off channel output
OUTPut1:MODE 2	//Set the operating mode to charge mode
CHARge1:VOLTage 5.0	//Set the constant voltage value to 5.0V.
CHARge1:OUTCURREnt 1000	//Set the output current limit to 1000mA.
CHARge1:INCURREnt 2000	//Set the input current limit to 2000mA.
CHARge1:Res 3.0	//Select resistance to 3mΩ.
OUTPut1:ONOFF 1	//Enable channel 1 output

5.4. Battery

Methods to enter **Battery** mode:

Method 1: Press [**Battery**] on the front panel directly.

Method 2: Press [**Menu**]→ Select [**Battery**] by pressing ◀▶ or rotating the knob→ Press the knob or [**Enter**].

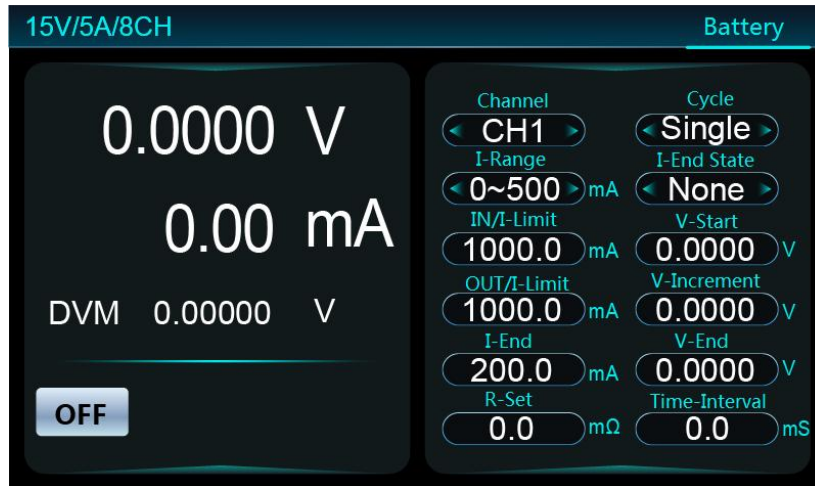


Figure 54 Battery Simulation

Table 21

Parameter	Description
Channel	To select channel number
I-Range	To select current range
IN/I-Limit	To set input current limit. The range is from 0mA to maximum input current limit.
OUT/I-Limit	To set output current limit. The range is from 0mA to maximum output current limit.
I-End	To set end current
R-Set	To set resistance value
Cycle	To select cycle mode. Options: Single and Cont.
I-End State	To select condition of cut-off current. When current meets the condition, N83580 will stop running.
V-Start	To set start voltage
V-Increment	To set voltage increment for single step
V-End	To set stop voltage
Time Interval	To set the time interval

5.4.1. Parameter Setting

■ Channel Selection

Channel selection refers to selecting the present channel to edit parameters or run the present channel.

Methods to select the required channel under **Battery** mode:

Method 1: Press **[CH]** directly on the front panel.

Method 2: Press ◀▶ to select **Channel**→ Press **[Enter]** or the knob on **Channel**→ Press ◀▶ to select the required channel→ Press **[Enter]** or the knob to complete selection.

Method 3: Rotate the knob to select **Channel**→ Press **[Enter]** or the knob on **Channel**→ Rotate the knob to select the required channel→ Press **[Enter]** or the knob to complete selection.

Users can select option **ALL** to turn on/off all channels.

■ Cycle Mode

The options for cycle mode: Single or Continuous.

Single: It means it will maintain end voltage after completing the test.

Continuous: It means the voltage will be reassigned to start voltage after completing the test.

■ Current End State

When the current meets the conditions, it will respond accordingly.

None: Invalid

≥: loop current greater than or equal to end current

≤: loop current less than or equal to end current

■ Current Range

Current range is the current readback range, including three options: high range, low range, and automatic range. When the device is set to automatic range, the readback current range will automatically switch the range according to the actual current value. After switching the range, users need to press ON again to take effect.

Steps to select the required cycle mode or current end state or current range under **Battery** mode:

1. Press ◀▶ or rotate the knob to select **Cycle** or **I-End State** or **I-Range**.
2. Press [Enter] or the knob on **Cycle** or **I-End State** or **I-Range**
3. Press ◀▶ or rotate the knob to select the option required.
4. Press [Enter] or the knob to complete selection.

■ Input/Output Current Limit

The settable range of IN/I-Limit or OUT/I-Limit is from 0 to rated current. The actual input/output current will not exceed the setting value.

■ End Current

The loop current is compared with end current. When the loop current meets the current end state, the device will perform relevant processing.

■ Simulated Resistance

The settable range is from 0mΩ to 99999.9mΩ.

■ Start Voltage, Increment Voltage, End Voltage, Time Interval

Start voltage refers to the starting voltage of the device. The voltage increases in time intervals until it reaches the end voltage.

Methods to set **IN/I-Limit** or **OUT/I-Limit** or **I-End** or **R-Set** or **V-Start** or **V-Increment** or **V-End** or **Time Interval** under **Battery** mode:

Method 1: Press ◀▶ or rotate the knob to select **IN/I-Limit** or **OUT/I-Limit** or **I-End** or **R-Set** or **V-Start** or **V-Increment** or **V-End** or **Time Interval** → Press [Enter] or the knob on **IN/I-Limit** or **OUT/I-Limit** or **I-End** or **R-Set** or **V-Start** or **V-Increment** or **V-End** or **Time Interval** → Press numeric buttons to input the value → Press [Enter] or the knob to complete setting.

Method 2: Press ◀▶ or rotate the knob to select **IN/I-Limit** or **OUT/I-Limit** or **I-End** or **R-Set** or **V-Start** or **V-Increment** or **V-End** or **Time Interval** → Press [Enter] or the knob on **IN/I-Limit** or **OUT/I-Limit** or **I-End** or **R-Set** or **V-Start** or **V-Increment** or **V-End** or **Time Interval** → Press ◀▶ to move the cursor and rotate the knob to adjust the numeric → Press [Enter] or the knob to complete setting.

5.4.2. Operation Example

Step 1: Select the channel to CH1.

Step 2: Set **Cycle** to Single and press [Enter].

Step 3: Set **I-Range** to Auto and press [Enter].

Step 4: Set **IN/I-Limit** to 5000mA and press [Enter].

Step 5: Set **OUT/I-Limit** to 5000mA and press [Enter].

Step 6: Set **I-End** to 200mA and press [Enter].

Step 7: Set **R-Set** to 0mΩ and press [Enter].

Step 8: Set **I-End State** to None.

Step 9: Set **V-Start** to 1V and press [Enter].

Step 10: Set **V-Increment** to 0.5V and press [Enter].

Step 11: Set **V-End** to 2V and press [Enter].

Step 12: Set **Time Interval** to 500ms and press [Enter].

Step 13: Connect a test object and press [ON/OFF] to enable output.

Step 14: The LCD screen shows the data.

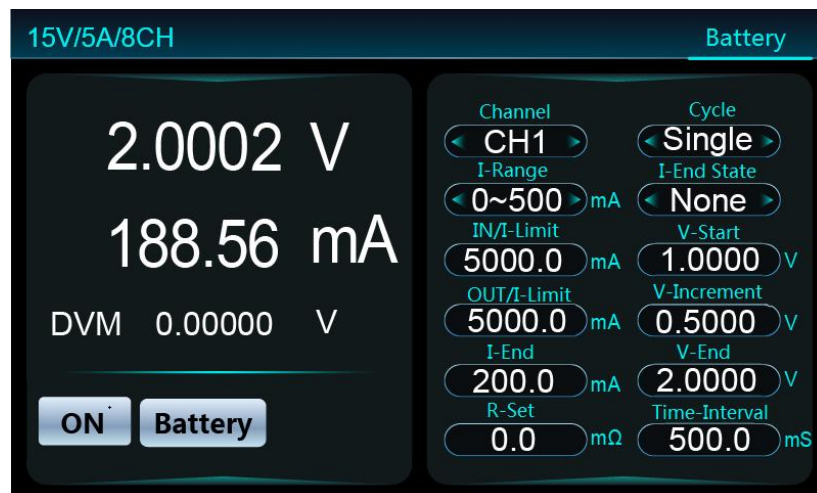


Figure 55 Battery Simulation

Step 15: After the test completed, press [ON/OFF] to shut off output.

5.4.3. Remote Operation Control Command Example

Table 22

Commands	Description
OUTPut1:ONOFF 0	//Turn off the channel output
OUTPut1:MODE 5	//Set to battery mode
BATTery1:MODE 1	//Set the cycle mode to single mode
BATTery1:STARTVOLTage 2.0	//Set the initial voltage to 2.0V
BATTery1:INCVOLTage 0.5	//Set the incremental voltage to 0.5V
BATTery1:ENDVOLTage 5.0	//Set the end voltage to 5V
BATTery1:OUTCURREnt 1000	//Set the output current limit to 1000mA
BATTery1:INCURREnt 1000	//Set the input current limit to 1000mA
BATTery1:STOPCURREnt 200	//Set the end current to 200mA
BATTery1:STOPMODE 0	//Set the current end state to None
BATTery1:INCTIME 500	//Set the time interval to 500ms
BATTery1:Res 3.0	//Set internal resistance to 3.0mΩ
BATTery1:RANGe 3	//Select current range 3 for auto range
OUTPut1:ONOFF 1	//Enable channel 1 output

5.5. SOC Edit

The SOC function simulates battery charging and discharging. During the battery charging and discharging process, the larger the battery capacity is, the higher the battery open circuit voltage and the lower the battery internal resistance are. On the contrary, when the capacity decreases, the battery open circuit voltage decreases and the internal resistance increases.

Under SOC edit, users can edit multiple steps to form a test program. Up to 8 files can be edited (File 1 ~ File 8). Up to 200 steps can be configured per SOC file. Users can edit the capacity, constant voltage value, input/output current limit and simulated internal resistance of each single step. After editing is completed, users can enter SOC test interface to execute the edited test steps.

Methods to enter **SOC Edit**:

Method 1: Press [**Shift**] first and then [**Battery**] on the front panel.

Method 2: Press [**Menu**]→ Select [**SOC Edit**] by pressing ◀▶ or rotating the knob→

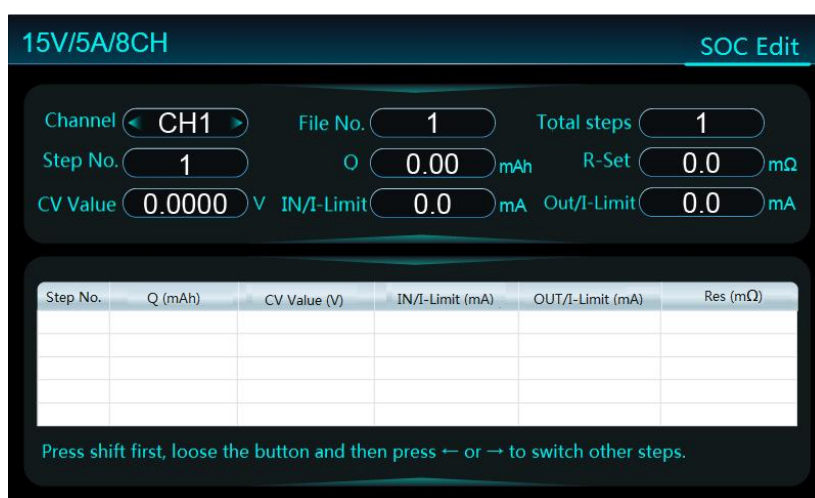


Figure 56 SOC Edit

Table 23

Parameter	Description
Channel	To select channel number
File No.	To set SOC test file number, range: 1-8
Total Steps	To set the total operation steps. Range: 0-200
Step No.	To set the specific step number. Range:1-200
Q	To set the initial capacity for the corresponding step number
R-Set	To set resistance value,range: 0mΩ-99999.9mΩ
CV Value	To set constant voltage value,range: 0 to rated voltage
IN/I-Limit	To set input current limit
OUT/I-Limit	To set output current limit. Loop current should be less than OUT/I-Limit.

5.5.1. Parameter Setting

■ Channel Selection

Channel selection refers to selecting the present channel to edit parameters or run the present channel.

Methods to select the required channel under **SOC Edit** mode:

Method 1: Press **[CH]** directly on the front panel.

Method 2: Press **◀▶** to select **Channel**→ Press **[Enter]** or the knob on **Channel**→

selection.

Method 3: Rotate the knob to select **Channel**→ Press [Enter] or the knob on **Channel**→ Rotate the knob to select the required channel→ Press [Enter] or the knob to complete selection.

Users can select option **ALL** to turn on/off all channels.

■ File No.

It refers to the work step file executed when the device is running. Settable range is 1-8.

■ Total Steps

It refers to the total steps executed when the device is running. Settable range is 0-200.

■ Step No.

After setting the step number, users can set corresponding parameters. Settable range is 1-200.

■ Capacity

It refers to the capacity for the step under editing.

■ Constant Voltage

Settable range is from 0 to rated voltage.

■ Simulated Resistance

Settable range is from 0mΩ-99999.9mΩ.

■ Input/Output Current Limit

The settable range of IN/I-Limit or OUT/I-Limit is from 0 to rated current. The actual input/output current will not exceed the setting value.

Methods to set **File No.** or **Total Steps** or **Step No.** or **Q** or **R-Set** or **CV Value** or **IN/I-Limit** or **OUT/I-Limit** under **SOC Edit**:

Method 1: Press ◀▶ or rotate the knob to select **File No.** or **Total Steps** or **Step No.** or **Q** or **R-Set** or **CV Value** or **IN/I-Limit** or **OUT/I-Limit** → Press [Enter] or the knob on **File No.** or **Total Steps** or **Step No.** or **Q** or **R-Set** or **CV Value** or **IN/I-Limit** or

complete setting.

Method 2: Press ◀▶ or rotate the knob to select **File No.** or **Total Steps** or **Step No.** or **Q** or **R-Set** or **CV Value** or **IN/I-Limit** or **OUT/I-Limit** →Press [Enter] or the knob on **File No.** or **Total Steps** or **Step No.** or **Q** or **R-Set** or **CV Value** or **IN/I-Limit** or **OUT/I-Limit** →Press ◀▶ to move the cursor and rotate the knob to adjust the numeric→Press [Enter] or the knob to complete setting.

5.5.2. Operation Example

Step 1: Select the channel to CH1.

Step 2: Set **File No.** to 4 and press [Enter].

Step 3: Set **Total Steps** to 20 and press [Enter].

Parameters for step 1 to step 20 (lead-acid battery discharge model)

Table 24

Step No.	Capacity (mAh)	Constant Voltage (V)	Input Current Limit (mA)	Output Current Limit (mA)	Resistance (mΩ)
1	10000.00	2.1000	5000.0	5000.0	10.0
2	9600.00	2.0900	5000.0	5000.0	11.0
...	...	...	...	...	...
18	2000.00	1.7700	5000.0	5000.0	71.0
19	1000.00	1.6900	5000.0	5000.0	85.0
20	0.00	1.600	5000.0	5000.0	100.0

After the parameters are all set, the screen will show as below picture.

15V/5A/8CH SOC Edit

Channel < CH1 >
File No. 4
Total steps 20

Step No. 1
Q 10000.00 mAh
R-Set 10.0 mΩ

CV Value 2.1000 V
IN/I-Limit 5000.0 mA
Out/I-Limit 5000.0 mA

Step No.	Q (mAh)	CV Value (V)	IN/I-Limit (mA)	OUT/I-Limit (mA)	Res (mΩ)
16	3500.00	1.8800	5000.0	5000.0	40.0
17	2800.00	1.8300	5000.0	5000.0	58.0
18	2000.00	1.7700	5000.0	5000.0	71.0
19	1000.00	1.6900	5000.0	5000.0	85.0
20	0.00	1.6000	5000.0	5000.0	100.0

Press shift first, loose the button and then press ← or → to switch other steps.

Figure 57 SOC Edit

Note: To exit from **SOC Edit**, please press [**Menu**] or the function button required.

5.6. SOC Test

After completing SOC Edit, users can enter SOC Test, select the required channel, set the required SOC file number, set initial voltage and turn on the output to run the test steps.

Steps to enter **SOC Test**:

1. Press [**Menu**] on the front panel.
2. Select **SOC Test** by pressing ◀▶ or rotating the knob.
3. Press [**Enter**] or the knob.

15V/5A/8CH SOC Test

0.0000 V
0.00 mA
0.00 mAh

OFF

Channel < CH1 >
File No. 1
Initial Volt 0.0000 V
O-C Volt 0.0000 V
Initial Q 0.00 mAh
Present Q 0.00 mAh
Present R 0.0 mΩ
Present step 1

Table 25

Parameter	Description
Channel	To select channel number
File No.	To select the required SOC file No.
Initial Volt	To set start voltage
O-C Volt	Displaying the open circuit voltage
Initial Q	Displaying the starting capacity
Present Q	Displaying the present capacity
Present R	Displaying the internal resistance value
Present Step	Displaying the present test step

5.6.1. Parameter Setting

■ Channel Selection

Channel selection refers to selecting the present channel to edit parameters or run the present channel.

Methods to select the required channel under **SOC Test**:

Method 1: Press **[CH]** directly on the front panel.

Method 2: Press ◀▶ to select **Channel**→ Press **[Enter]** or the knob on **Channel**→ Press ◀▶ to select the required channel→ Press **[Enter]** or the knob to complete selection.

Method 3: Rotate the knob to select **Channel**→ Press **[Enter]** or the knob on **Channel**→ Rotate the knob to select the required channel→ Press **[Enter]** or the knob to complete selection.

Users can select option **ALL** to turn on/off all channels.

■ File No.

Users can select the edited SOC file.

■ Initial Voltage

Initial voltage refers to start voltage of simulated battery. After setting, the device will

Methods to set **File No.** or **Initial Volt** under **SOC Test**:

Method 1: Press ◀ ▶ or rotate the knob to select **File No.** or **Initial Volt** → Press [Enter] or the knob on **File No.** or **Initial Volt** → Press numeric buttons to input the value → Press [Enter] or the knob to complete setting.

Method 2: Press ◀ ▶ or rotate the knob to select **File No.** or **Initial Volt** → Press [Enter] or the knob on **File No.** or **Initial Volt** → Press ◀ ▶ to move the cursor and rotate the knob to adjust the numeric → Press [Enter] or the knob to complete setting.

Note: Initial Volt should be lower than the highest voltage and higher than lowest voltage in the SOC Edit test steps.

5.6.2. Operation Example

Step 1: Select the channel to CH1.

Step 2: Set **File No.** to 4 and press [Enter].

Step 3: Set **Initial Volt** to 2.0980V and press [Enter].

Step 4: Connect a test object and press [ON/OFF] to enable output.

Step 5: The LCD screen shows the data.

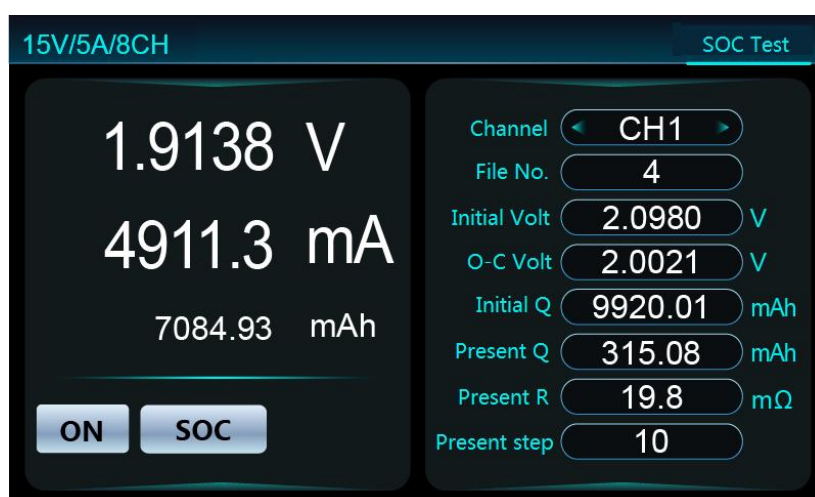


Figure 59 SOC Test

Step 6: After the test completed, press [ON/OFF] to shut off output.

5.6.3.Remote Operation Control Command Example

Table 26

Commands	Description
OUTPut1:ONOFF 0	//Turn off the channel output
OUTPut1:MODE 3	//Set to SOC mode
SOC1:EDIT:FILE 1	//Set SOC file No. to 1
SOC1:EDIT:LENGth 3	//Set SOC total step No. to 3
SOC1:EDIT:STEP 1	//Set the step No. to 1
SOC1:EDIT:Q 1000	//Set capacity to 1000mAh for step 1
SOC1:EDIT:VOLTage 5.0	//Set CV value to 5.0V for step 1
SOC1:EDIT:OUTCURRent 1000	//Set Out/I-Limit to 1000mA for step 1
SOC1:EDIT:INCURRent 1000	//Set IN/I-Limit to 1000mA for step 1
SOC1:EDIT:Res 0.1	//Set resistance to 0.1mΩ for step 1
SOC1:EDIT:STEP 2	//Set the step No. to 2
SOC1:EDIT:Q 900	//Set capacity to 900mAh for step 2
SOC1:EDIT:VOLTage 4.0	//Set CV value to 4.0V for step 2
SOC1:EDIT:OUTCURRent 1000	//Set Out/I-Limit to 1000mA for step 2
SOC1:EDIT:INCURRent 1000	//Set IN/I-Limit to 1000mA for step 2
SOC1:EDIT:Res 0.2	//Set resistance to 0.2mΩ for step 2
SOC1:EDIT:STEP 3	//Set the step No. to 3
SOC1:EDIT:Q 800	///Set capacity to 800mAh for step 2
SOC1:EDIT:VOLTage 3.0	//Set CV value to 3.0V for step 2
SOC1:EDIT:OUTCURRent 1000	//Set Out/I-Limit to 1000mA for step 2
SOC1:EDIT:INCURRent 1000	//Set IN/I-Limit to 1000mA for step 2
SOC1:EDIT:Res 0.3	//Set resistance to 0.3mΩ for step 2
SOC1:EDIT:SVOL 4.8	//Set SOC initial voltage to 4.8 V
OUTPut1:ONOFF 1	//Turn on channel 1 output
SOC1:RUN:STEP?	//Read the step number of SOC mode for present step.
SOC1:RUN:Q?	//Read the accumulated capacity of SOC mode for present step.

5.7. SEQ Edit

Multiple steps can be edited under SEQ Edit. The maximum SEQ files are 10 files with range 1-10. The maximum steps are 200 steps. Constant voltage value, output current limit, input current limit, resistance value and dwell time can be set for each step. Links can also be made between steps. The corresponding cycle times can be set independently.

N83580 judges the number of running steps based on the selected SEQ file. It will run all the steps in sequence, according to the preset output parameters for each step.

Methods to enter **SEQ Edit**:

Method 1: Press **[Shift]** first and then **[SEQ]** on the front panel.

Method 2: Press **[Menu]**→ Select **[SEQ Edit]** by pressing ◀▶ or rotating the knob→ Press the knob or **[Enter]**.

Figure 60 SEQ Edit

Table 27

Parameter	Description
Channel	To select channel number
Cycle Times	To set the number of cycles for the file under edit. Range:0-9999
IN/I-Limit	To set input current limit. Loop current should be less than IN/I-Limit.

Link Cycle Times	To set cycle times for the link
SEQ File No.	To set the sequence test file number. Range: 1-10
Step No.	To set the step number for editing. Range: 1-200
OUT/I-Limit	To set output current limit. Loop current should be less than OUT/I-Limit.
Link Start Step	To link to the required step after the present step is completed, range -1 to 200. -1 means no link.
Total Steps	To set the total steps of SEQ file. Range: 0-200
CV Value	To set constant voltage value
R-Set	To set resistance value
Link Stop Step	To set the link stop step, range -1 to 200. -1 means no link.

5.7.1. Parameter Setting

■ Channel Selection

Channel selection refers to selecting the present channel to edit parameters or run the present channel.

Methods to select the required channel under **SEQ Edit**:

Method 1: Press **[CH]** directly on the front panel.

Method 2: Press ◀▶ to select **Channel**→ Press **[Enter]** or the knob on **Channel**→ Press ◀▶ to select the required channel→ Press **[Enter]** or the knob to complete selection.

Method 3: Rotate the knob to select **Channel**→ Press **[Enter]** or the knob on **Channel**→ Rotate the knob to select the required channel→ Press **[Enter]** or the knob to complete selection.

■ SEQ File No.

It refers to the work step file executed when the device is running. Settable range is 1-10.

■ Total Steps

It refers to the total steps executed when the device is running. Settable range is

■ File Cycle Times

It refers to the cycle times the SEQ file should run. Settable range is 0-9999.

■ Step No.

After setting the step number, users can set corresponding parameters. Settable range is 1-200.

■ Constant Voltage

Settable range is from 0 to rated voltage.

■ Input/Output Current Limit

The settable range of IN/I-Limit or OUT/I-Limit is from 0 to rated current. The actual input/output current will not exceed the setting value.

■ Simulated Resistance

Settable range is from 0mΩ-99999.9mΩ.

■ Dwell Time

It refers to the running time for the specific time. Settable range is 0-99.999s.

■ Link Start Step No.

Settable range is -1-200. -1 means no link. When this parameter is set to zero or the same value of Step No., it means Link Start Step is same as Step No.

■ Link Stop Step No.

Settable range is -1-200. -1 means no link. When this parameter is set to zero or the same value of Step No., it means Link Start Step is same as Step No.

Example:

When the step No. is set to 3, setting Link Start Step/Link Stop Step to zero or 3 means still running step number 3.

■ Link Cycle Times

It refers to the cycle times the link step should run.

Example:

For editing Step No. 3, Link Start Step is set to 1, Link Stop Step is set to 2, Link Cycle Times is set to 2. It means after reaching dwell time of step 3, it will run from step 1 to step 2 for twice .

Methods to set the above 12 parameters under **SEQ Edit**:

Method 1: Press ◀▶ or rotate the knob to select the required parameter→Press [Enter] or the knob on the required parameter→Press numeric buttons to input the value→Press [Enter] or the knob to complete setting.

Method 2: Press ◀▶ or rotate the knob to select the required parameter→Press [Enter] or the knob on the required parameter →Press◀▶ to move the cursor and rotate the knob to adjust the numeric→Press [Enter] or the knob to complete setting.

5.7.2. Operation Example

- 1.Choose CH1 under Channel selection.
- 2.Choose file No. and set it to 1,and then enter to confirm.
- 3.Choose total step and set it to 3, and then enter to confirm.
- 4.Choose file operating times and set it to 1, and then enter to confirm.

Table 28

Step No.	CV value(V)	Input current limitation(mA)	Output current limitation(mA)	Simulated internal resistance (mΩ)	Running Time(s)
1	7.5000	100.0	100.0	0.1	3.000
2	3.0000	500.0	500.0	0.1	6.000
3	15.0000	50.0	50.0	0.1	6.000

15V/5A/8CH SEQ Edit

Channel < CH1 >

File No. 1

Total steps 3

Cycle times 1

Step No. 1

CV Value 7.5000 V

IN/I-Limit 100.0 mA

Out/I-Limit 100.0 mA

R-Set 0.1 mΩ

Dwell 3.000 s

Link start step -1

Link stop step -1

Link cycle times 0

Step No.	CV Value (V)	IN/I-Limit(mA)	OUT/I-Limit (mA)	R-Set (mΩ)	Dwell (s)
1	7.5000	100.0	100.0	0.1	3.000
2	3.0000	500.0	500.0	0.1	6.000
3	15.0000	50.0	50.0	0.1	6.000

Press [Shift]+[◀] or [▶] to switch the page

Figure 61 SEQ Edit

5.8. SEQ Test

The sequence test mainly determines the step size according to the currently selected running file, and executes sequentially according to the output parameters of each step. The user presses SEQ to enter the "Sequence Test" interface, or selects "Sequence Test" under the "Menu" menu to enter the interface, as shown in Figure 62:

15V/5A/8CH SEQ Test

0.0000 V

0.0 mA

0.000 W

OFF

Channel < CH1 >

File No. 1

Step No. 3

Dwell 15.000 s

Figure 62 SEQ Test

5.8.1. Parameter Setting

■ Channel Selection

Refer to Chapter 5.2.1

■ File Edit

Select the running file No. currently, Refer to chapter 5.2.1

5.8.2. Operation Example

1. Choose CH1 under Channel selection.

2. Choose file No. and set it to 1, and then enter to confirm.

Please note that this operation should be done after SEQ edit finished.

3. Connect the DUT, press ON/OFF button to enable output.

4. Observe the reading data on the screen.

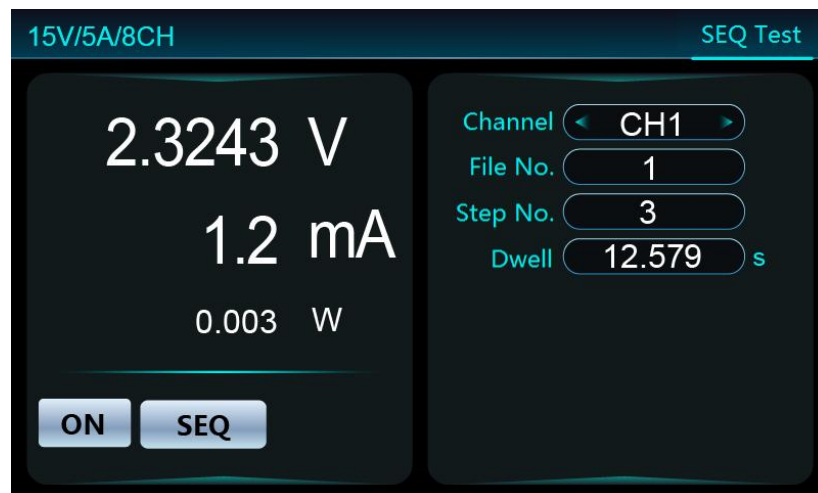


Figure 63 SEQ Test

5. Press ON/OFF button to disable output after test finished.

5.8.3.Remote Operation Control Command Example

Table 29

Commands	Description
OUTPut1:ONOFF 0	//Turn off the channel output
OUTPut1:MODE 4	//Set to SEQ mode
SEquence1:EDIT:FILE 1	//Set the SEQ edit file to 1
SEquence1:EDIT:LENGTh 3	//Set the total steps to 3
SEquence1:EDIT:Cycle 1	//Set the SEQ edit cycle to 1
SEquence1:EDIT:STEP 1	//Set the step number to 1
SEquence1:EDIT:VOLTage 1.0	//Set CV value to 1.0V for step1
SEquence1:EDIT:OUTCURRent 2000	//Set OUT/I-limit to 2000mA for step1
SEquence1:EDIT: INCURRent 2000	//Set IN/I-limit to 2000mA for step1
SEquence1:EDIT:Res 0.0	//Set resistance to 0m Ω for step1
SEquence1:EDIT:RUNTime 10	//Set dwell to 10s for step1
SEquence1:EDIT:LINKStart -1	//Set link start number to -1 for step1
SEquence1:EDIT:LINKEnd -1	//Set link stop number to -1 for step1
SEquence1:EDIT:LINKCycle 0	//Set link cycle times to 0 for step1
SEquence1:EDIT:STEP 2	//Set the step number to 2
SEquence1:EDIT:VOLTage 2.0	//Set CV value to 2.0V for step2
SEquence1:EDIT:OUTCURRent2000	//Set OUT/I-limit to 2000mA for step2
SEquence1:EDIT:INCURRent2000	//Set IN/I-limit to 2000mA for step2
SEquence1:EDIT:Res0.1	//Set resistance to 0.1m Ω for step2
SEquence1:EDIT:RUNTime15	//Set dwell to 15s for step2
SEquence1:EDIT:LINKStart -1	//Set link start number to -1 for step2
SEquence1:EDIT:LINKEnd -1	//Set link stop number to -1 for step2
SEquence1:EDIT:LINKCycle 0	//Set link cycle times to 0 for step2
SEquence1:EDIT:STEP 3	//Set the step number to 3
SEquence1:EDIT:VOLTage 3.0	//Set CV value to 3.0V for step3
SEquence1:EDIT:OUTCURRent 2000	//Set OUT/I-limit to 2000mA for step3
SEquence1:EDIT:INCURRent 2000	//Set IN/I-limit to 2000mA for step3
SEquence1:EDIT:Res 0.2	//Set resistance to 0.2m Ω for step3
SEquence1:EDIT:RUNTime 20	//Set dwell to 20s for step3
SEquence1:EDIT:LINKStart -1	//Set link start number to -1 for step3
SEquence1:EDIT:LINKEnd -1	//Set link stop number to -1 for step3
SEquence1:EDIT:LINKCycle 0	//Set link cycle times to 0 for step3
SEquence1:RUN:FILE 1	//Set file No. to 0 for present step
OUTPut1:ONOFF1	//Turn on channel 1 output

SEQUence1:RUN:Time?

//read dwell time for present step

5.9. Fault Simulation

The N83580 can simulate a variety of battery fault states, including short circuit, negative open circuit, positive open circuit, and reverse polarity. On the Menu menu, choose Fault Simulation to enter the screen, as shown in Figure 64.

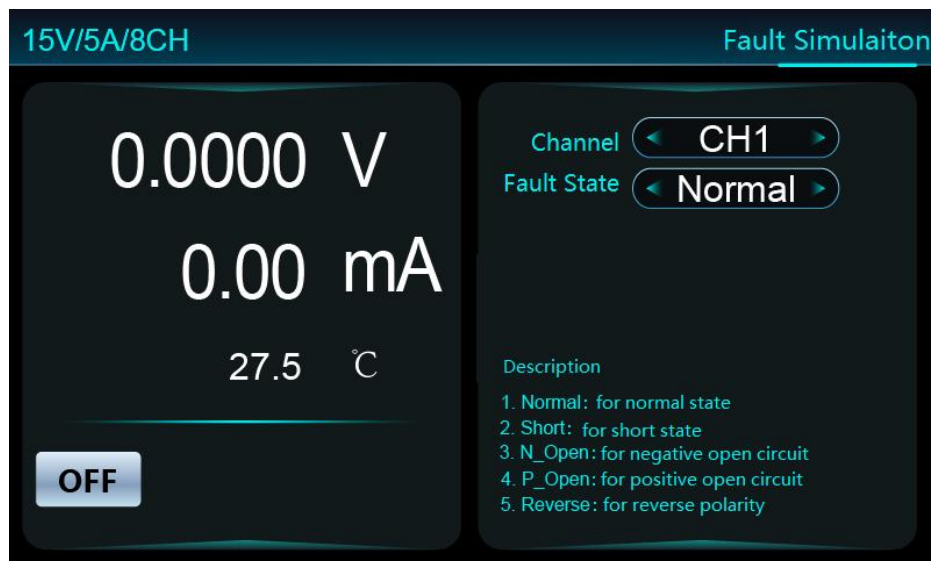


Figure 64 Fault Simulation

■ Channel

Please refer to the chapter 5.2.1.

■ Fault State

Functional type includes Normal, Short, N_Open, P_Open, Reverse.

Note: Fault simulation only applies to the source mode, can not be in the charging mode, SOC, SEQ and other modes of fault simulation test; must be set in the operating state of OFF fault simulation and then ON channel.

5.10. Graph

Users can press Graph or choose Graph from Menu to enter the screen, as shown in Figure 65:

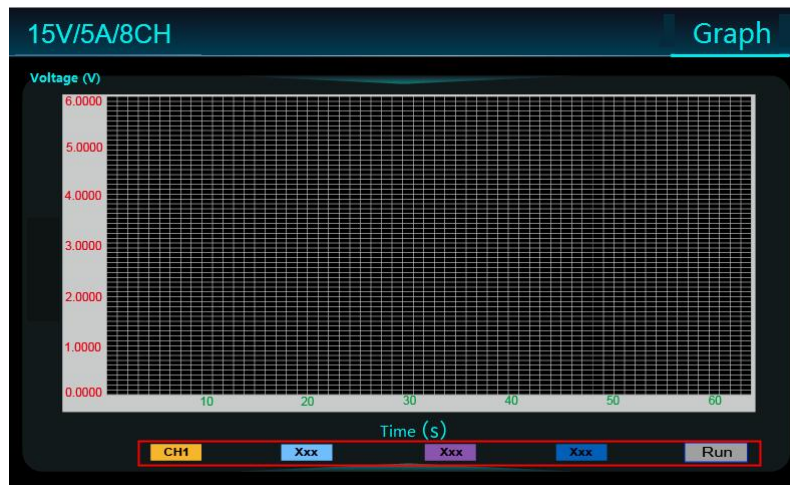


Figure 65 Graph

The real-time curve diagram of any four channels voltage values can be displayed simultaneously.

Operation: Press the "◀▶" key or rotate the "knob" to move the cursor to the channel display bar, press the "knob" to select, then rotate the "knob" to switch the channel, and press the "knob" to confirm.

After setting the channel, move the cursor to the "Run" button and press the "knob" to start.

5.11. CAN Set

The user selects CAN Settings to enter the CAN Settings screen, as shown in Figure 66:

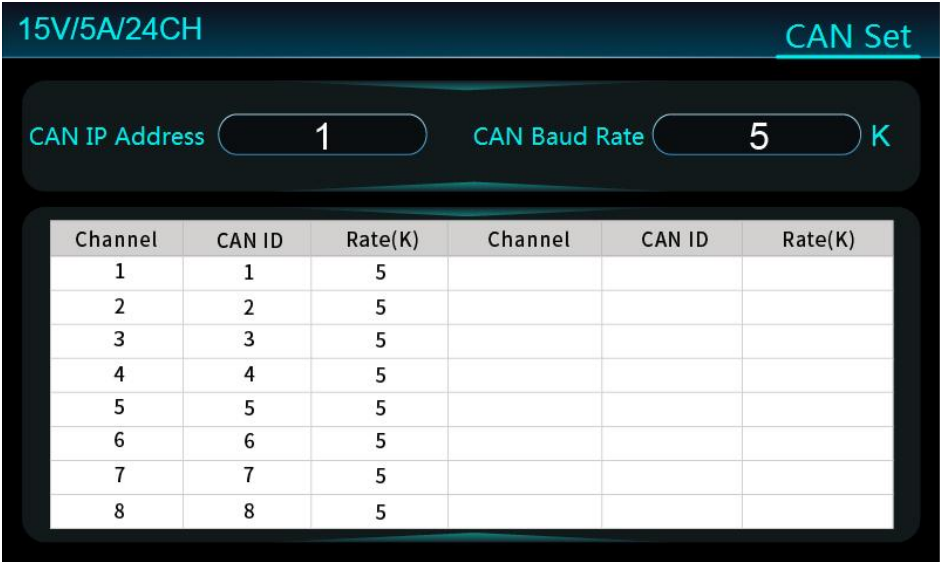


Figure 66 CAN Set

■ CAN ID Address

Set the CAN ID address of the device (the default value is 1 and the maximum value is 16). The CAN ID of the CH8 are 1-8, and when the CAN ID address is 2, the CAN ID of the CH8 are 9-16, and so on.

■ CAN Baud Rate

The N83580 supports multiple CAN baud rates. A restart takes effect after the baud rate is changed.

The CAN ID address and CAN baud rate parameters are set in the same way. For details, see Section 5.2.1.

5.12. All CH

Users can press All CH or choose All View from Menu to enter the screen, as shown in Figure 67:

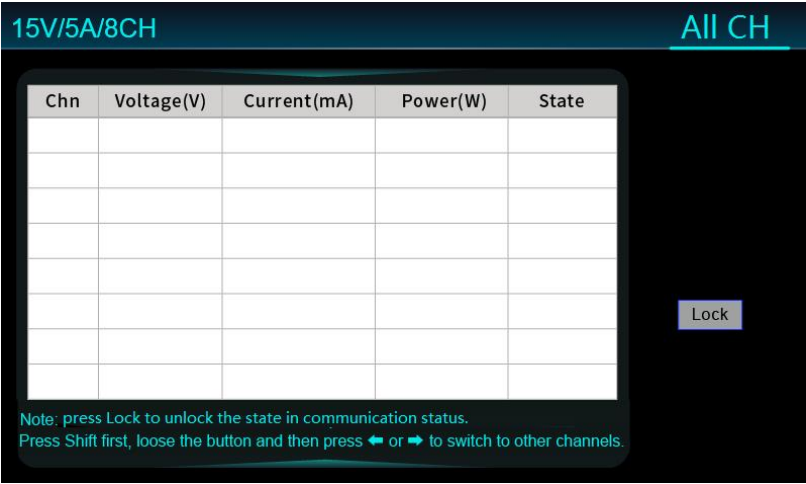


Figure 67 All CH

In the All view interface, users can view the voltage value, current value, power value and On/Off status of each channel. Press "Shift "+"◀▶" to switch to other channels.

5.13. System

The System Settings screen is displayed by pressing Shift+Menu, or by selecting System Settings from the Menu menu. Users can set related parameters on the system configuration screen, as shown in Figure 68:

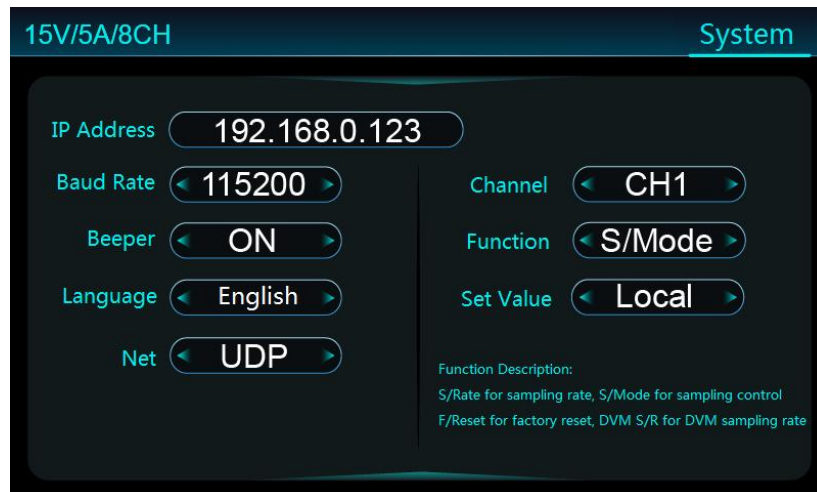


Figure 68 System

■ IP Address

The default IP address is 192.168.0.123. Users can change the value. After the change is complete, the system restarts to take effect.

To set it up: press the "◀▶" key or rotate the "knob" to move the cursor to the "Network IP" option and press it

Select "Knob" to enter the parameter setting interface. Enter a value using numeric keys and press "Knob" to confirm.

■ Baud Rate

The N83580 supports a variety of baud rates. Users can select 9600, 19200, 38400, 57600, and 115200 as required. The changes take effect after being restarted.

■ Buzzer

This option can set the device key sound ON/OFF.

■ Language

■ Network connection

This option can set the network connection to UDP/TCP. After the change is complete, the restart takes effect.

■ Channel

This option can set the channels, range from CH1 to CH8, All.

■ Functional Type and Setting Rate

Functional type includes S/Rate and F/Reset, S/Mode, DVM S/R.

S/Rate: Fast(10ms) /Medi(120ms) /Slow(480ms), Medi defaulted.

F/Reset: Yes for factory reset , No defaulted.

S/Mode:Local/Remote, Local defaulted.

DVM S/R:Fast(10ms) /Medi(120ms) /Slow(480ms), Medi defaulted.

Note:

1. After selecting Yes under S/Rate, wait for a moment - No is displayed, then it means that factory restoration is completed.
2. About the selection of function type, please users refer to the actual and combined with the on-screen instructions selected.

5.14. Protection

Users can press the "Menu" button and select "Protection" to enter the interface, the protection parameters can be set in the interface.

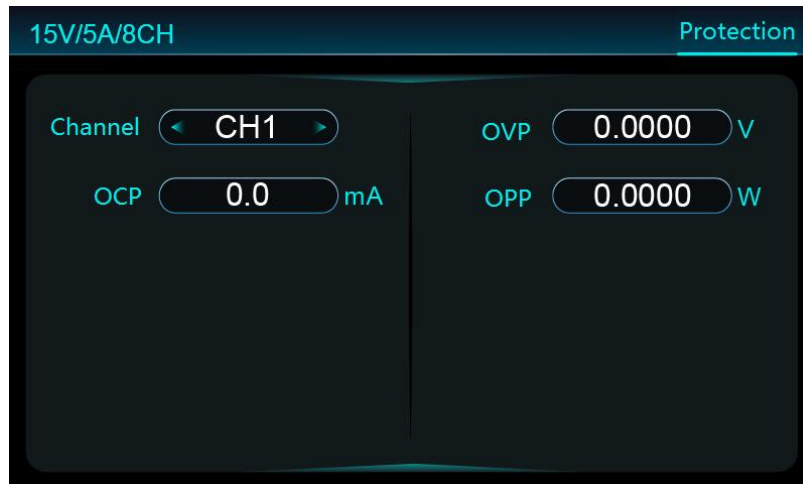


Figure 69 Protection

■ Channel

Please refer to the chapter 5.2.1.

■ OVP

If the OVP is triggered, the maximum output voltage will be limited to the protection value, once the OVP is triggered, the output will be shut down immediately and the screen will display the OVP symbol.

■ OCP

If the OCP is triggered, the maximum output/input current will be limited to the protection value, once the OCP is triggered, the output will be shut down immediately and the screen will display the OCP symbol.

■ OPP

If the OPP is triggered, the maximum output power will be limited to the protection value, once the OPP is triggered, the output will be shut down

Note: 0 for no protection

5.15. About Us

Users press "Menu" to enter and select "About Us" to enter the interface, press "Shift", it will show the factory SN number and software version information of N83580.



Figure 70 About Us

6. Maintenance and Self-inspection

6.1. Regular Maintenance

Clean the Device

Please wipe lightly the device with a dry or slightly wet cloth, and do not wipe the inside of it. Make sure the power is disconnected before cleaning.

 **Warning: Disconnect power before cleaning.**

6.2. Fault Self-inspection

Device Fault Self-inspection

Due to system upgrade or hardware problem, the device may break down. Please do the following necessary inspection to eliminate the troubles, which can save your maintenance and time cost. If the troubles cannot be recovered, please contact NGL.

The inspection steps are as below.

- ◆ Check whether the device is powered.
- ◆ Check whether the device can be turned on normally.
- ◆ Check whether the fuse has no damage.
- ◆ Check whether other connectors are correct, including wire cables, plug, etc.
- ◆ Check whether the system configuration is correct.
- ◆ Check whether all the specifications and performances are within the device working range.
- ◆ Check whether the device displays error information.
- ◆ Operate on a replacement device.

Calibration Intervals

It is suggested that N83580 series should be calibrated once a year.

7. Main Technical Data

Note: Measurement accuracy is recognized when the temperature is 18°C~28°C and the relative humidity reaches 80% within one year after calibration. Also, please warm up for half an hour before accuracy measurement.

Table 30

Model	N83580-06-01	N83580-06-02	N83580-06-03
Current	±1A/CH	±2A/CH	±3A/CH
Voltage	6V/CH	6V/CH	6V/CH
Power	6W/CH	12W/CH	18W/CH
Channels	8CH		
CV Mode			
Range	0~6V		
Setting Resolution	0.1mV		
Setting Accuracy(23±5°C)	0.6mV		
Readback Resolution	0.1mV		
Readback Accuracy (23±5°C)	0.6mV		
Output Voltage Set-up Time	≤10ms		
Load Regulation	0.01%+1mV		
Line Regulation	0.01%+0.1mV		
Temperature Coefficient (0~40°C)	25ppm/°C		
Voltage Ripple Noise (20Hz~20MHz)	≤2mVrms		
Current Measurement			
Range1			
Range	-1A~+1A	-2A~+2A	-3A~+3A
Resolution	0.1mA		
Accuracy (23±5°C)	1mA	2mA	3mA
Temperature	50ppm/°C		

Range2			
Range	-100mA~100mA	-200mA~200mA	-300mA~300mA
Resolution	0.01mA		
Accuracy (23±5℃)	0.1mA	0.2mA	0.3mA
Temperature Coefficient (0~40℃)	50ppm/℃		
Range3			
Range	-1mA~1mA		
Resolution	0.1μA		
Accuracy (23±5℃)	1μA		
Temperature Coefficient (0~40℃)	50ppm/℃		
Range4			
Range	-0.1mA~0.1mA		
Resolution	10nA		
Accuracy (23±5℃)	100nA		
Temperature Coefficient (0~40℃)	50ppm/℃		
Current Protection Limit			
Range	-1A~+1A	-2A~+2A	-3A~+3A
Resolution	0.1mA		
Accuracy (23±5℃)	1mA	2mA	3mA
Temperature Coefficient (0~40℃)	50ppm/℃		
Dynamic Characteristics			
Transient Voltage Drop ¹	<200mV		
Transient Recovery Time ²	<100μs		
DVM (Digital Volt Meter)			
Channels	8CH	Input Impedance	4MΩ
Range	±5V/±30V	Frequency	4Hz
Resolution	0.01mV (±5V) 0.1mV(±30V)	Accuracy ³	0.1mV (±5V) 3mV(±30V)
Wiring Terminal	Pluggable terminal	Temperature	30ppm/℃

Others			
Isolation (Output to Ground)	1500VDC		
Isolation (Channel to Channel)	500VDC		
Interface	LAN, RS232, CAN		
AC Input	Single phase, please refer to the voltage mark at the rear panel.		
Earth Leakage Current	<3.5mA @230V AC	Safe voltage to ground	<15V AC
Temperature	Operating temperature: 0°C-40°C, storage temperature: -20°C~60°C		
Operating Environment	Altitude <2000m, relative humidity: 5%-90%RH(non-condensing), atmospheric pressure: 80-110kPa		
Dimension	88.0mm(H)*482.0mm(W)with handle *557.0mm(D)		
Net Weight	Approx.14.8kg		

Table 31

Model	N83580-05-05	N83580-15-01	N83580-15-05
Current	±5A/CH	±1A/CH	±5A/CH
Voltage	5V/CH	15V/CH	15V/CH
Power	75W/CH	15W/CH	75W/CH
Channels	8CH		
CV Mode			
Range	0~5V	0~15V	0~15V
Setting Resolution	0.1mV		
Setting Accuracy(23±5°C)	0.6mV	1.5mV	
Readback Resolution	0.1mV		
Readback Accuracy (23±5°C)	0.6mV	1.5mV	
Output Voltage Set-up Time	≤10ms		
Load Regulation	0.01%+1mV	0.01%+2mV	
Line Regulation	0.01%+0.1mV	0.01%+0.2mV	

Coefficient (0~40℃)	25ppm/℃		
Voltage Ripple Noise (20Hz~20MHz)	≤2mVrms	≤5mVrms	
Current Measurement			
Range1			
Range	-5A~+5A	-1A~+1A	-5A~+5A
Resolution	0.1mA		
Accuracy (23±5℃)	5mA	1mA	5mA
Temperature Coefficient (0~40℃)	50ppm/℃		
Range2			
Range	-500mA~500mA	-100mA~100mA	-500mA~500mA
Resolution	0.01mA		
Accuracy (23±5℃)	0.5mA	0.1mA	0.5mA
Temperature Coefficient (0~40℃)	50ppm/℃		
Range3			
Range	-1mA~1mA		
Resolution	0.1μA		
Accuracy (23±5℃)	1μA		
Temperature Coefficient (0~40℃)	50ppm/℃		
Range4			
Range	-0.1mA~0.1mA		
Resolution	10nA		
Accuracy (23±5℃)	100nA		
Temperature Coefficient (0~40℃)	50ppm/℃		
Current Protection Limit			
Range	-5A~+5A	-1A~+1A	-5A~+5A
Resolution	0.1mA		
Accuracy (23±5℃)	5mA	1mA	5mA
Temperature Coefficient (0~40℃)	50ppm/℃		
Dynamic Characteristics			

Drop ¹	<200mV	<400mV	
Transient Recovery Time ²	<100μs	<200μs	
DVM (Digital Volt Meter)			
Channels	8CH	Input Impedance	4MΩ
Range	±5V/±30V	Frequency	4Hz
Resolution	0.01mV (±5V) 0.1mV(±30V)	Accuracy ³	0.1mV (±5V) 3mV(±30V)
Wiring Terminal	Pluggable terminal	Temperature Coefficient (0~40°C)	30ppm/°C
Others			
Isolation (Output to Ground)	1500VDC		
Isolation (Channel to Channel)	500VDC		
Interface	LAN, RS232, CAN		
AC Input	Single phase, please refer to the voltage mark at the rear panel.		
Earth Leakage Current	<3.5mA @230V AC	Safe voltage to ground	<15V AC
Temperature	Operating temperature: 0℃-40℃, storage temperature: -20℃~60℃		
Operating Environment	Altitude <2000m, relative humidity: 5%-90%RH(non-condensing), atmospheric pressure: 80-110kPa		
Dimension	88.0mm(H)*482.0mm(W)with handle *557.0mm(D)		
Net Weight	Approx.14.8kg		

Note 1: Under full voltage output, the load is changed abruptly from 10% to 90%, and the voltage drop value.

Note 2: Under full voltage output, the load is changed abruptly from 10% to 90%, and the voltage is restored to within (original voltage minus 50mV).

Note3: 0.1mV measured at 23±2°C, temperature drift coefficient 10ppm/°C, time drift coefficient 5ppm/1000h.

This brochure is for reference only, if you need other specifications, please consult NGI for the latest product information. NGI products are constantly updated and technical specifications

When multiple N83580s are used in series, the mains power cannot be disconnected when the device channels are ON, all channels must be OFF before disconnecting the mains power, otherwise the device will be damaged!

Cooperation

ET System electronic and NGI

Driving innovation, quality, and service – together

With over 30 years of experience in developing and manufacturing AC/DC power supplies, electronic loads, and battery simulators, ET System is a well-established provider of high-performance power solutions in Germany. Through our strategic partnership with Next Generation Instrumental (NGI) – a leading manufacturer with over 18 years of expertise in DC loads, bidirectional power supplies, and battery cell simulators – we are combining our strengths to offer an even broader and more powerful product portfolio.

This partnership enables:

- Centralized service and technical support in Germany for all NGI cooperation products
- Direct personal contact – from your initial inquiry to after-sales service, via our local team
- Demo equipment stock in Germany – ensuring quick availability for evaluation across Europe
- Local spare parts and selected device inventory – for fast response in service and urgent needs
- Premium quality and reliability from a single source – thanks to seamless integration of NGI products into ET System solutions



Our customers benefit from a unique combination of local engineering expertise, tailored system integration, and a comprehensive product offering – all from one trusted source.

Please note: Our existing product lines will continue to be manufactured in Germany and remain fully available without change.

From initial consultation to system implementation and ongoing support, our headquarters in Altlußheim (Germany) serves as the central competence center for both our own technologies and the entire NGI portfolio throughout Europe.

Need assistance or have any questions?

We're here to help – contact us.



Call us at:

+49 (0)6205 - 3948-0



Send us an email:

info@et-system.de



We are available from

Mon. to Thurs.: 8 AM to 5 PM

Fri.: 8 AM to 3 PM