User Manual

N39400 Series High Accuracy Multi-channel Programmable DC Power Supply

Version: V20240115

Copyright Statement

Contact Us

If you have any questions about this product, please contact us in the following way.

export@ngi-tech.com

Contents

1 Preface

Dear Customers,

First of all, we greatly appreciate your choice of N39400 series DC power supply (N39400 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 N39400 series DC power supply, 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 N39400, please read this manual carefully, especially the safety instructions.

Please keep this manual for future use.

Thanks for your trust and support.

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
3~	Three-phase current	O	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 Notes

- **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 N39400's rated range.

3 Inspection and Installation

3.1 Inspection

After receiving N39400, please check the instrument according to the following steps:

1. Check whether the instrument is damaged during transportation.
2. Check accessories.
3. Make sure the following accessories are attached.

Note

1: If any severe damage to the package, please contact our authorized distributor or NGI. Send it back after getting a positive response.

2: If no problem, please keep it carefully. Compliance with packing requirements when returning for service.

3.2 Connection

Before connecting the power cord, observe the following precautions to prevent electric shock and damage to the instrument:

1. Make sure that the power supply voltage matches the rated power supply voltage of the instrument;
2. Make sure the power switch is off.

3.3 Power-ON Check

After receiving the N39400, please follow the steps:

The power-on check includes two parts: system self-test and startup power.

1. System Self-test

After connecting the power cord and turning on the front panel Power switch, the power supply will start the self-test process, and the screen will display the

information as shown in Figure 1 below.

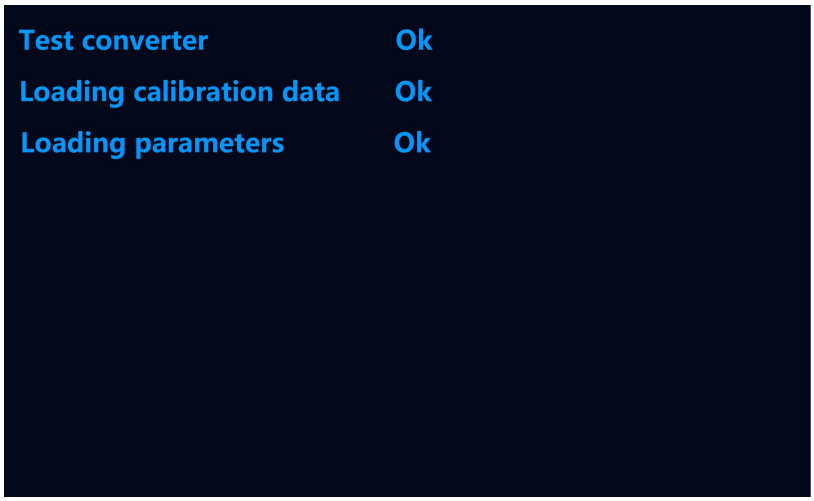


Figure 1 Power-on self-test

The contents of power-on self-test include:

① Whether the test converter is normal

② whether the loading calibration data is lost

③ Whether the loading parameters are lost

The screen displays the self-test items and results. After all the self-test items pass the check, the system automatically enters the application interface, otherwise the screen displays [Press 'Enter' key to continue]. In this case, users should write down the error message displayed on the screen and contact NGI authorized dealers or after-sales service department. If it does not affect the use, users can press "Enter" key to enter the application interface.

2. Power ON

Press the POWER button on the front panel to turn on the power. If you find that the power does not start normally, you should first check whether the power cord is connected, whether the power supply has been supplied, and whether the power switch has been turned on.

Warnings

If the power switch is OFF, some components inside the power supply may still have a high voltage, to avoid the risk of electric shock, it is prohibited to open the cover.

Output Voltage Check

Please follow the steps below to verify the basic voltage function of the power supply at no load:

1. Turn on the power switch.

2. Set the voltage value to 1V.

3. Turn on the output ON.

4. Check that the voltage value displayed on the screen is close to the set voltage value.

5. Make sure that the voltage can be adjusted from 0V to the maximum voltage value within the range at no load.

Output Current Check

Follow the steps below to verify the basic current function of the power supply when the output is short-circuited:

1. Turn on the power switch.

2. Make sure the power supply output is OFF.

3. Connect an insulated wire to the output of the power supply to short-circuit the positive and negative terminals, and use a wire that can withstand the maximum output current of the power supply.

4. Set the current value to 1A.

5. Turn on the output ON.

6. Check whether the current displayed on the screen is close to the set current value.

7. Ensure that the current can be adjusted from 0A to the maximum current value within the range.

3.4 Product Connection

3.4.1 Communication Connection

There are two LAN ports at N39400 rear panel. Users can select either LAN port to connect N39400 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 2 Multiple Devices Connection Diagram

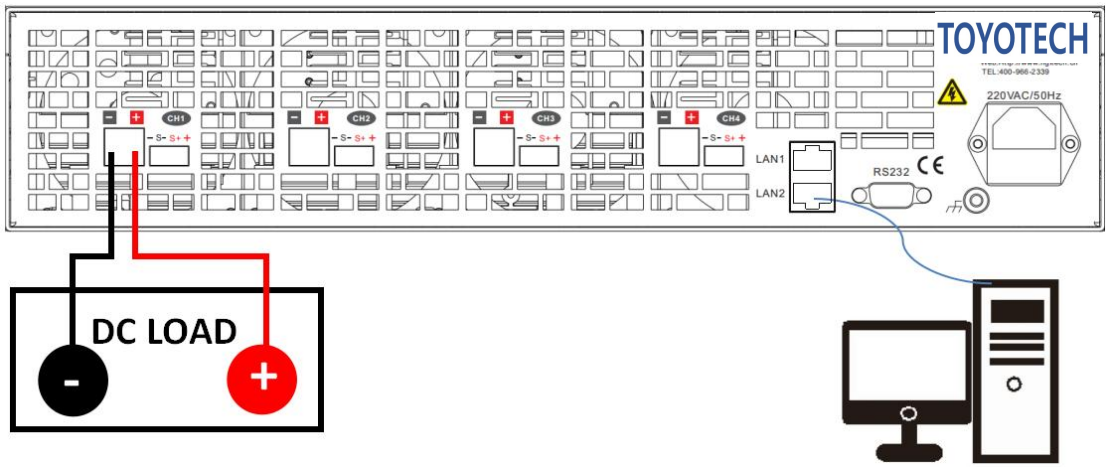


Figure 3 Single Device Connection Diagram

Positive(+) and negative(-) of N39400 are connected to test object. Please pay attention to the wire diameter, length and polarity when connecting the test cable. Do not use wires with smaller diameter, which will affect measurement accuracy and cause overheating and danger.

N39400 can be connected to computer by Ethernet cable. Please make sure the cable connection and communication setting are correct before online operation.

Multiple N39400 devices can be controlled at the same time via LAN port. The LAN ports of different N39400 devices should be connected a switch, which should be connected to the computer. Please make sure the cable connection is correct and IP addresses of different N39400 devices are not repeated.

N39400 adopts UDP network communication. Users can modify IP address on LCD screen. The default port number is 7000. The default ID is 160. When RS232 communication is used, it is necessary to set baud rate. The baud rate options are 4800, 9600, 19200, 38400 and 115200.

The below figure shows N39400 is under remote control.

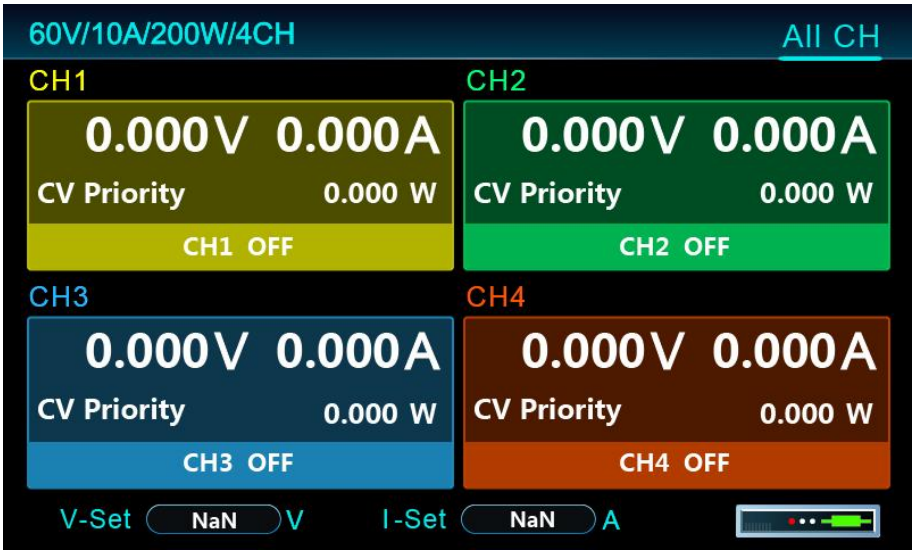


Figure 4 Remote Control Interface

3.4.2 Two/Four-Wire Sense Connection

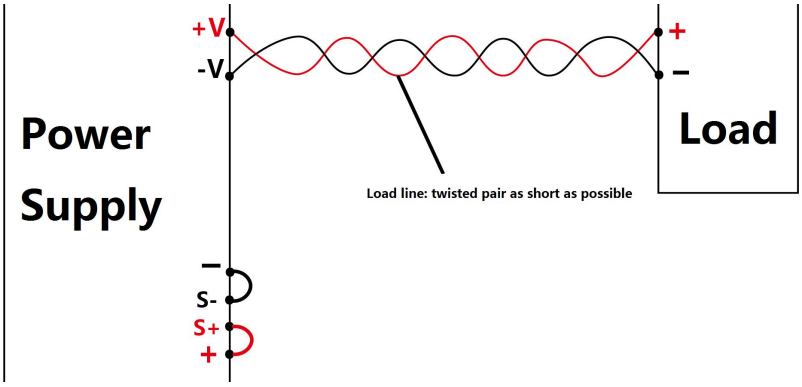


Figure 5 Two wire sense connection

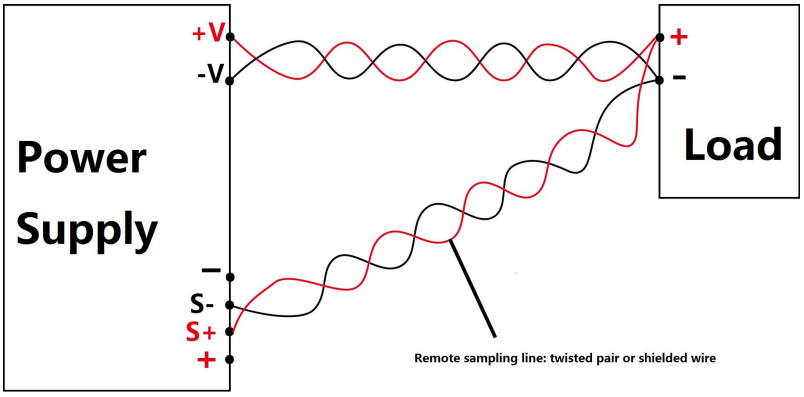


Figure 6 Four wire sense connection

4 Product

4.1 Introduction

N39400 series is a high-accuracy & multi-channel programmable DC power supply with standard 19-inch 2U design, available for rack installation. N39400 standalone supports Max. 4 channels output, with channels isolated. Both local operation on front panel and remote control on a computer are supported. N39400 can be widely used in lab test, system integration test, production aging line, etc.

Features

- Voltage range: 60V/150V
- Current range: 4A/6A/10A/15A
- Power range: 200W/360W/600W
- Single device with up to 4 channels, each channel isolated
- Multiple protections: OVP, OCP, OTP and short circuit
- Equipped with LCD screen and user-friendly interface
- CC&CV priority function
- LAN port and RS232 interface
- Dual LAN ports design

4.2 Dimension

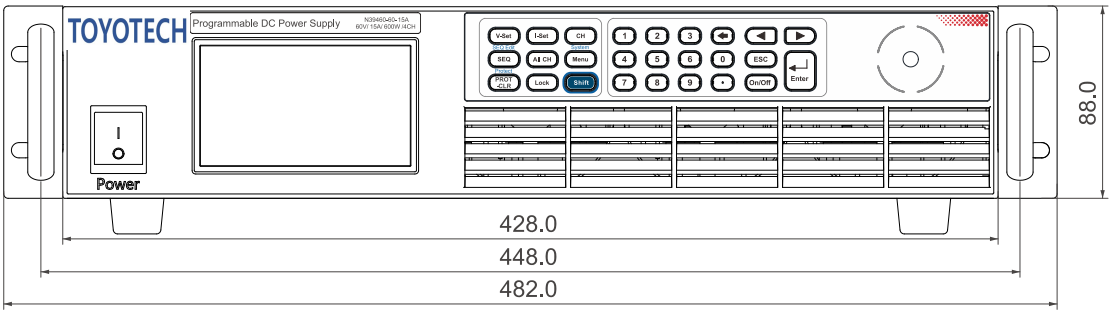


Figure 7 Front Panel Dimension(mm)

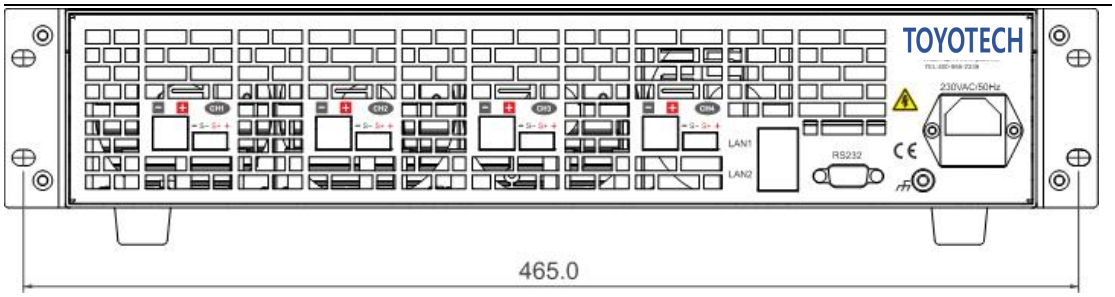


Figure 8 Rear Panel Dimension(mm)

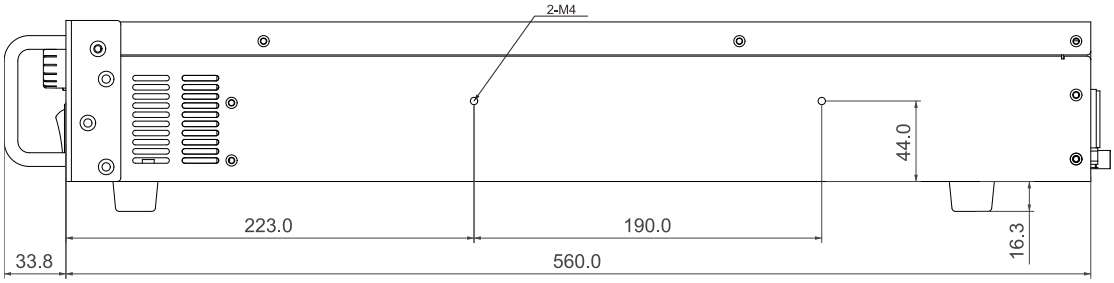


Figure 9 Side Dimension(mm)

4.3 Front Panel Introduction

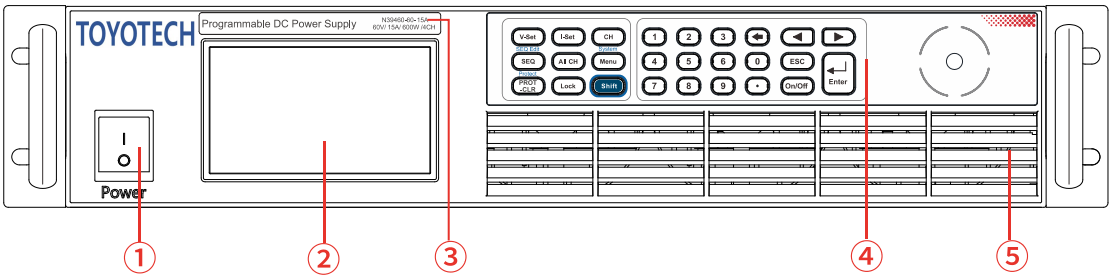


Figure 10 Front Panel

Table 2

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

4.3.1 Button & Knob

Users can control N39400 via button and knob.

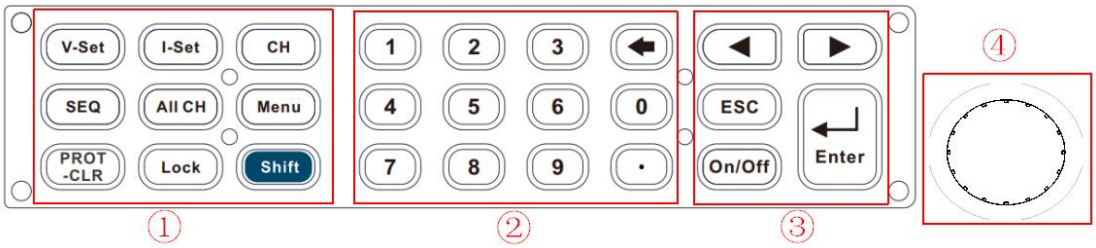


Figure 11 Button & Knob

Table 3

Number	Name
1	Function buttons
2	Numeric buttons
3	Left/right button, ESC button, On/Off button, Enter button
4	Knob

4.3.2.1 Function Button

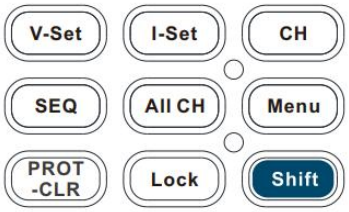


Figure 12 Function Button

Table 4

Button	Function
[V-Set]	To set output voltage
[I-Set]	To set output current
[CH]	To switch channels
[SEQ]	To enter SEQ test interface
[All CH]	To enter all channels display interface
[Menu]	To enter the main menu

[PROT-CLR]	To clear the protection
[Lock]	To lock/unlock
[Shift]	Compound button
SEQ Edit [Shift]+[SEQ]	To enter SEQ Edit
System [Shift]+[Menu]	To enter System interface
Protect [Shift]+[PROT-CLR]	To enter protection interface

4.3.2.2 Numeric Button

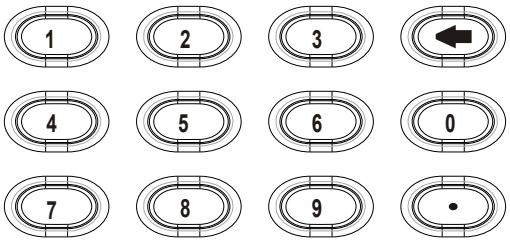


Figure 13 Numeric Button

Table 5

Button	Function
[0~9], [.]	To input digits
[←]	To delete

4.3.2.3 Left/Right Button, ESC Button, On/Off Button, Enter Button

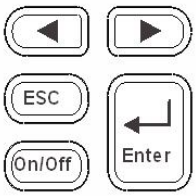


Figure 14 Left/Right Button, ESC Button, On/Off Button, Enter Button

Table 6

Button	Function
[←], [→]	1. To shift or select the required parameter 2. To control the cursor scrolling when setting parameter
[ESC]	To return to previous page
[Enter]	To enter the required parameter, confirm the input, exit from setting
[On/Off]	To turn on/off the output

4.4.2.4 Knob

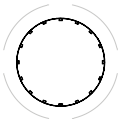
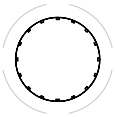


Figure 15 Knob

Table 7

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

4.4 Rear Panel Introduction

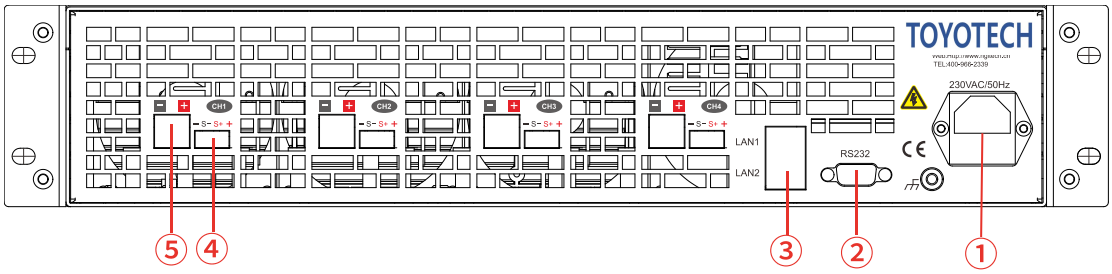
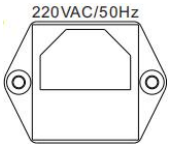
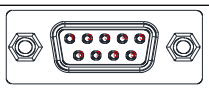
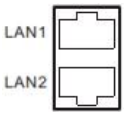
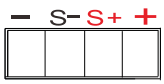


Figure 16 Rear Panel

Table 8

Number	Name	Icon	Definition
1	AC power socket		For AC power input
2	RS232 interface		For remote control
3	LAN port		For remote control, dual LAN ports
4	Four-wire interface		For voltage remote sense and local sense
5	Output interface		DC power supply output

4.4.1 AC Input Connection

Warning: Please confirm the AC input power and connect to correct AC power. Wrong AC power may cause serious damage to the instrument.

Notes for AC power input connection:

- Single phase input, 47Hz ~ 63Hz (Please refer to the voltage mark at the rear panel.)
- Reliable ground ⏚

4.4.2 DC Output

Please select the proper output test cable according to different specifications of N3600.

Table 9

Model	Sectional Area	Temperature Conditions			
AWG	mm²	60℃	75℃	85℃	90℃
		Wire model: RUW, T , UF	Wire model: RHW, RH	Wire model: V, MI	Wire model: TA, TBS, SA, AV
		Rated Current (A)			
14	2.08	20	20	20	20
12	3.31	25	25	30	30
10	5.26	30	35	40	40
8	8.36	40	50	55	55
6	13.3	55	65	70	75
4	21.1	70	85	95	95
3	26.7	85	100	110	110
2	33.6	95	115	125	130
1	42.4	110	130	145	150
0	53.5	125	150	165	170
00	67.4	145	175	190	195
000	85	165	200	215	225
0000	107	195	230	250	260

4.4.3 Ethernet Cable Connection

The default connection to PC is via Ethernet. An Ethernet cable is provided as standard accessory in N39400 accessory bag.

Steps for connection to PC:

1. Check if N39400 is switched on properly.
2. Make sure the PC is switched on and its LAN port is working properly.
3. Connect one end of Ethernet cable to PC LAN port.

4. Connect another end of Ethernet cable to N39400 LAN port.
5. Check if the indicator light at LAN port on N39400 is flashing.

Note 1: If the indicator light at LAN port on N39400 does not flash after the Ethernet cable was plugged, please check whether the LAN port on computer is working properly and make sure the computer is switched on correctly.

Note 2: After completing the above operations, the indicator light at LAN port on N39400 will stop after a short flash. At this time, the hardware network connection has been established.

4.4.4 RS232 Serial Connection

N39400 can be controlled by RS232 interface. A RS232 cable is provided as standard accessory in N39400 accessory bag.

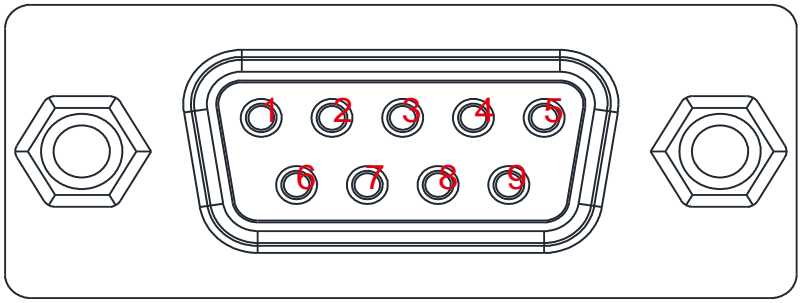


Figure 17 RS232 Interface

Table 10

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

4.4.5 Remote Sense

When N39400 is working, due to the parasitic resistance of the wire, the voltage at the load input terminal will be lower than the voltage at N39400 output terminal after the current flows through the wire, which will affect the output accuracy of N39400. N39400 series supports remote sense to compensate the voltage drop.

When using remote sense, please connect S+ to load input+ and connect S- to load input-.

Note: Green connector is provided as standard accessory in N39400 package. When it is not necessary to use remote sense, the green connector must be installed on V SENSE interface. S+ has been connected to + on green connector, and S- to -. Unplugging the green connector may cause instability or even danger.

4.4.6 Default Communication Parameter

Table 11

Parameter	N39400 Series Default Value
Default IP Address	192.168.0.123
Baud Rate	9600

5 Operation

After the device is switched on, it will enter **V/I** mode directly. Users can enter **Menu** by pressing [**Menu**]. There are eight options on the menu: **V/I, SEQ Test, SEQ Edit, All CH, Channel, System, Factory Reset** and **About Us**. Users can enter the desired option by pressing the corresponding button. Parameter settings can be completed easily.

Parameter settings can be operated by pressing [←] [→] or knob. Users can press [**Enter**] to the editing interface. Value input can be completed by pressing the numeric buttons or rotating knob. Cursor scrolling can be realized by [←] [→] .

This chapter mainly describes the following functions of N39400.

- V/I
- SEQ Test
- SEQ Edit
- All CH
- Channel
- System
- Factory Reset

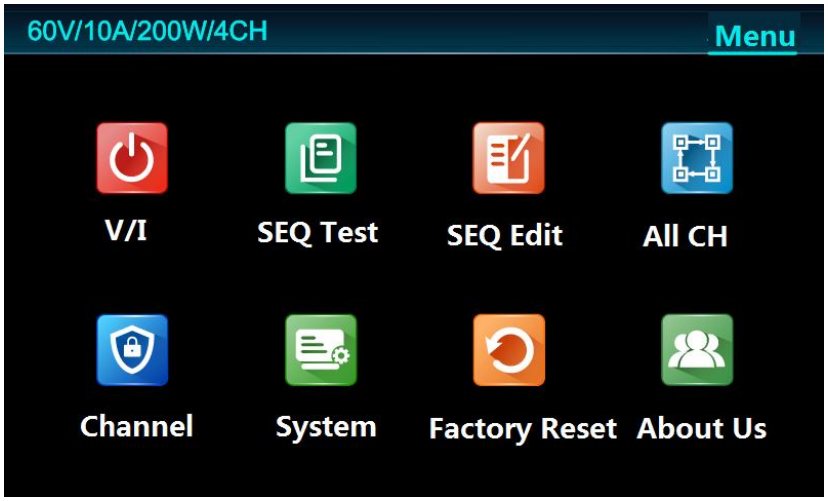


Figure 18 Menu

5.1 Interface

N39400 series power supply adopts a 4.3-inch color LCD display with a resolution of 800 x 480.

Figure 19 Screen

Table 12

No.	Description	Functionality
1	Specifications	Display rated voltage/current/power
2	Protection status	Display the OVP/OCP/OPP/OTP
3	Current interface	Display the item menu of current operation
4	Display value	Output V/I/P display value
5	Parameter set	Set channel, V/I value and CV/CC priority
6	Status display	Display the operating status

The status display is used to display the working status of the power supply. Various statuses of the power supply are not displayed in the status bar at the same time, but are selectively displayed after integrating and processing the information according to the system working condition, which can reduce the amount of user information processing and improve the efficiency of human-computer interaction. The description of power supply working status display is shown in the following table.

Table 13

No.	Infomation Display	Description
1	CV/CC	Power supply is under CV/CC mode
2	ON/OFF	Power supply is under ON/OFF mode
3	VI/SEQ	Power supply is under VI/SEQ mode

5.2 V/I

Methods to enter **V/I** mode:

Method 1: It will directly enter **V/I** mode after power-on.
Method 2: Press [**V-Set**] or [**I-Set**] on the front panel directly.
Method 3: Press [**Menu**]→ Select **V/I** by [←] [→]or knob→ Press knob or [**Enter**].

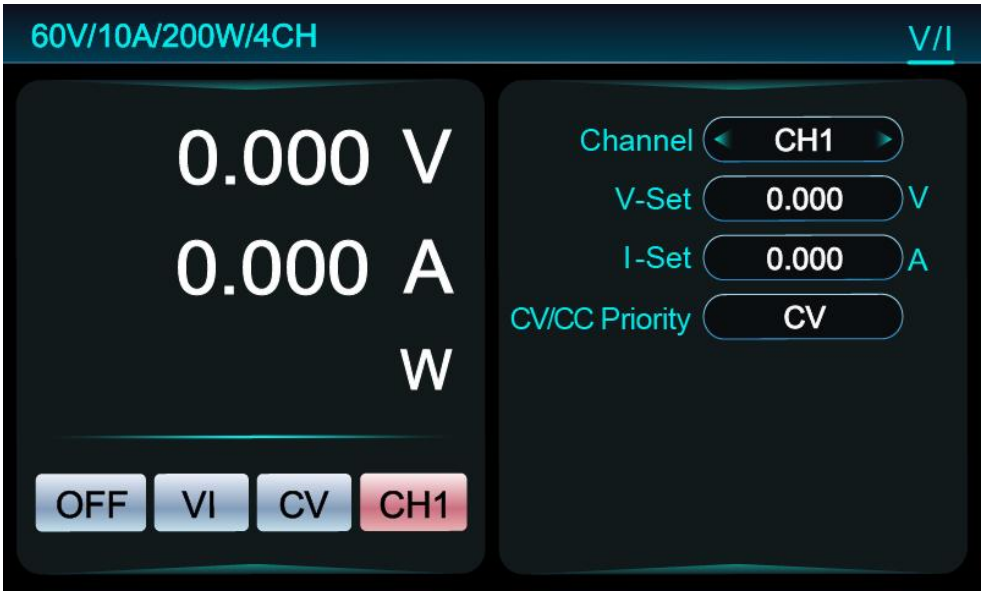


Figure 20 V/I Mode

Table 14

Parameter	Description
Channel	To select channel
V-Set	To set output voltage
I-Set	To set output current
CC/CV Priority	To select CC priority or CV priority

Under V/I mode, users can set required channel, output voltage and output current. N39400 will begin to output after setting is completed and [**On/Off**] is pressed.

Note: The current setting value should be higher than load current to maintain CV mode for output. Otherwise the device will output at CC mode.

5.3 SEQ Test

Method 1: Press [**SEQ**] on the front panel directly.
Method 2: Press [**Menu**]→ Select **SEQ Test** by [←] [→]or knob→ Press knob or [**Enter**].

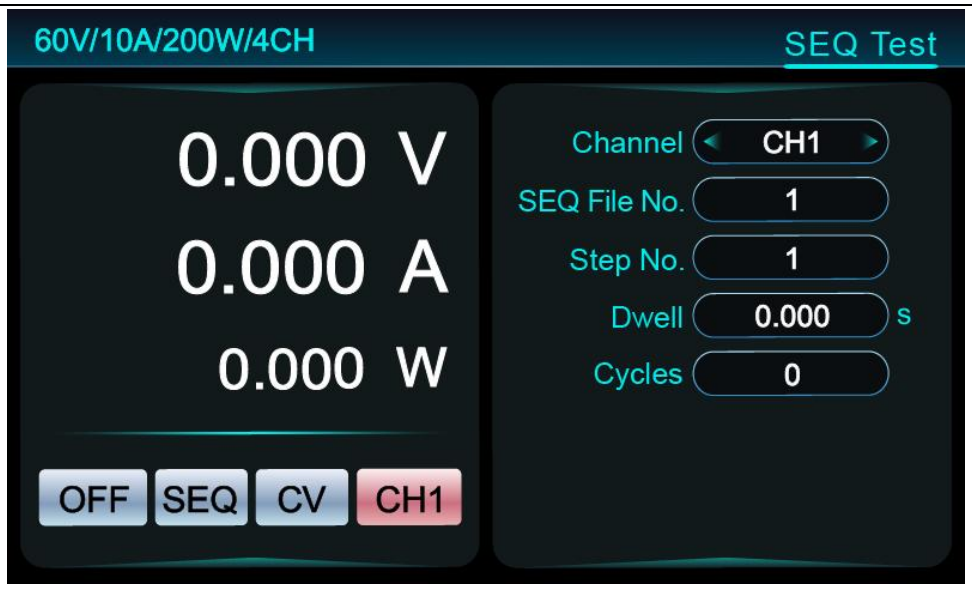


Figure 21 SEQ Test

Parameter	Description
Channel	To select channel
SEQ File No.	To select SEQ file No.
Step No.	Displaying the step No. under operation
Dwell	Displaying the dwell time for present step
Cycles	Displaying the cycle times for present file

The SEQ mode includes SEQ test function and SEQ edit interface.

5.4 SEQ Edit

SEQ test (sequence test function) supports simulation of complex voltage & current waveform, which is frequently used for automotive electronics test, engine start-up test, etc.

The principle of sequence test is to output the voltage and current according to the test steps edited by the user. When dwell time reaches, it will switch to the next step.

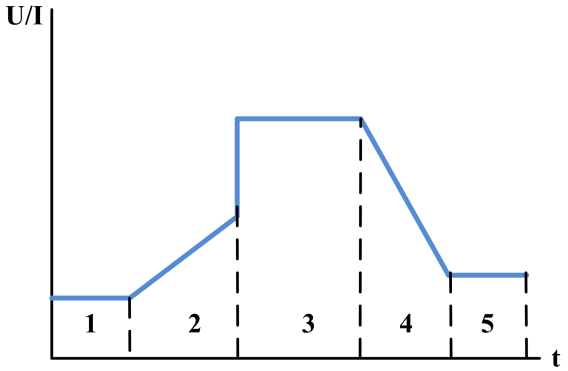


Figure 22 Output Voltage & Current Waveform by SEQ

Press [Shift+SEQ] to enter the sequence editing interface, or press [Menu] to enter the main menu, use [◄]and [►] to move the cursor, select the [SEQ Edit], and then press [Enter] to enter the Sequence Edit interface, as shown in Figure 23.

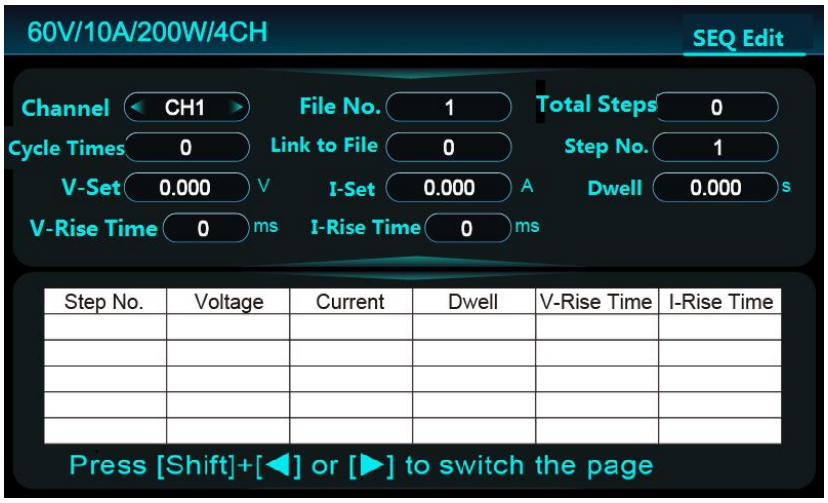


Figure 23 SEQ Edit

Table 15

Parameter	Function
Channel	To select the channel
File No.	To set the sequence file number, range 1~10.
Total Steps	To set the total test steps for the SEQ file, range 0~200
Cycle Times	To set the number of cycles for the file under edit
Link to File	Link to the required file after the present file is completed. Zero means no link.
Step No.	To set the test step number, range 1～200.
V-Set	To set the output voltage for the present step
I-Set	To set the output current for the present step
Dwell	To set single step delay time
V-Rise Time	To set single step voltage rise time
I-Rise Time	To set single step current rise time

5.5 All CH

Method 1: Press [**All CH**] on the front panel directly.
Method 2: Press [**Menu**]→ Select **All CH** by [←] [→]or knob→ Press knob or [**Enter**].

Figure 24 All CH

Users can set the voltage and current values for all four channels uniformly in this interface, and all channels can be turned on or off at the same time by pressing the ON/OFF.

If the voltage and current values of the four channels set in the V/I mode are not the same, NaN will be displayed.

5.6 Channel

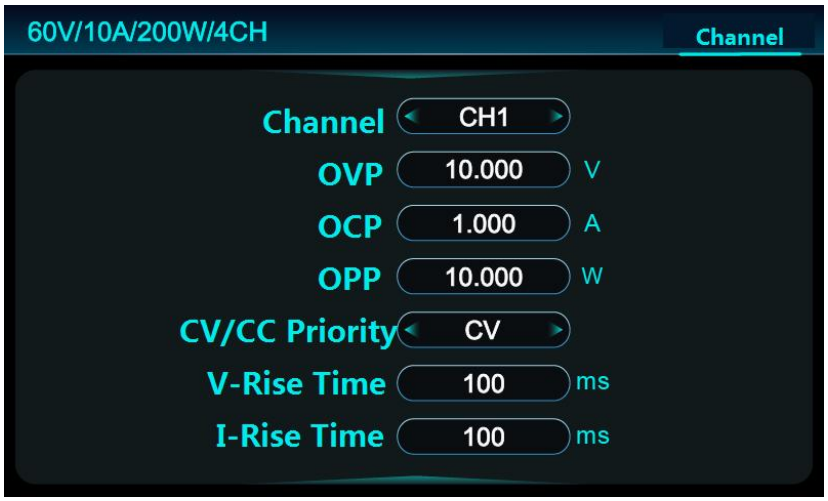


Figure 25 Channel

Table 16

Name	Description
Channel	To select CH1-CH4
OVP	To set the OVP value
OCP	To set the OCP value
OPP	To set the OPP value
CV/CC Priority	To set the CC/CV priority
V-Rise Time	To set the voltage rise time
I-Rise Time	To set the current rise time

5.6.1 PROT-CLR

Protection parameters can be set in this interface, when the protection occurs, the screen will display the corresponding protection information. Press the [PROT-CLR] to manually clear the prompt information.

Press [Shift+PROT-CLR] to enter the interface, or press [Menu] to enter the main menu, move the [◀][▶]，select [Channel] and press [Enter], then users can enter the Channel interface.

5.6.1.1 OVP

This function is used to set the over voltage protection value. Once the output voltage exceeds the Over Voltage protection setting, the power supply immediately shuts down the output to protect the DUT, and at the same time gives a prompt message OVP in the alarm area on the screen.

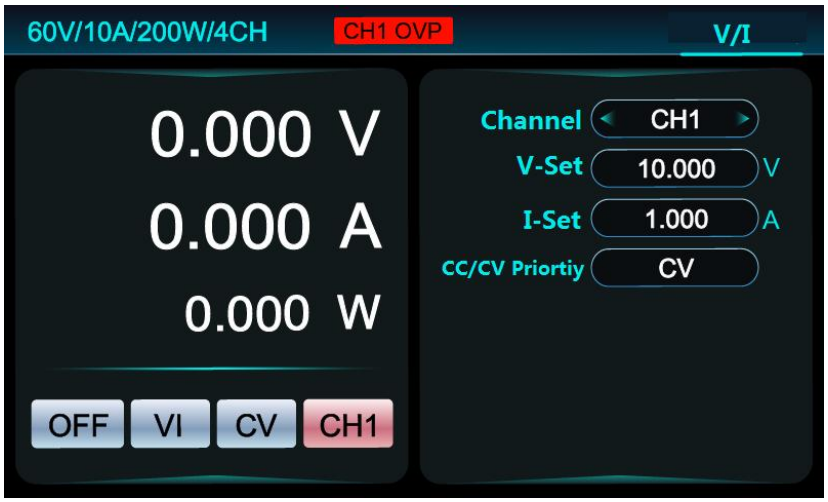


Figure 26 OVP

5.6.1.2 OVP

This function is used to set the over current protection value. Once the output current exceeds the over current protection setting, the power supply will immediately shut down the output to protect the equipment under test, and at the same time give a prompt message OCP in the alarm area on the screen.

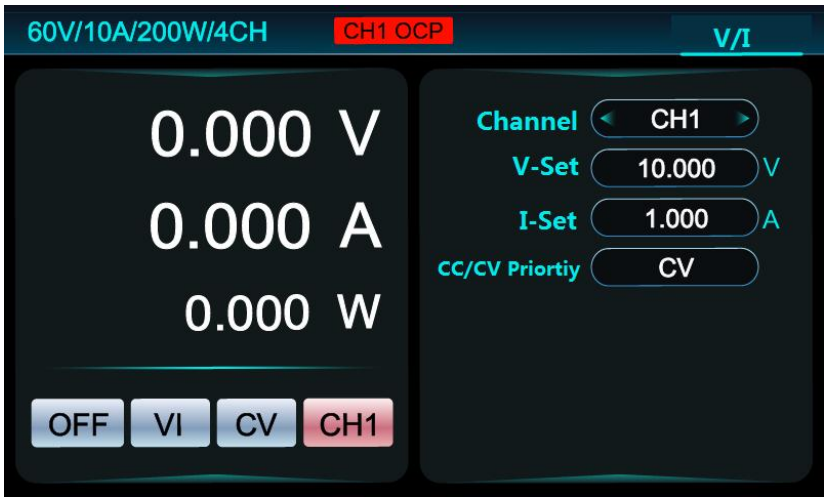


Figure 27 OCP

5.6.1.3 OPP

This function is used to set the over power protection value. Once the output power exceeds the over power protection setting, the power supply will immediately shut down the output to protect the equipment under test, and at the same time give a prompt message OPP in the alarm area on the screen.

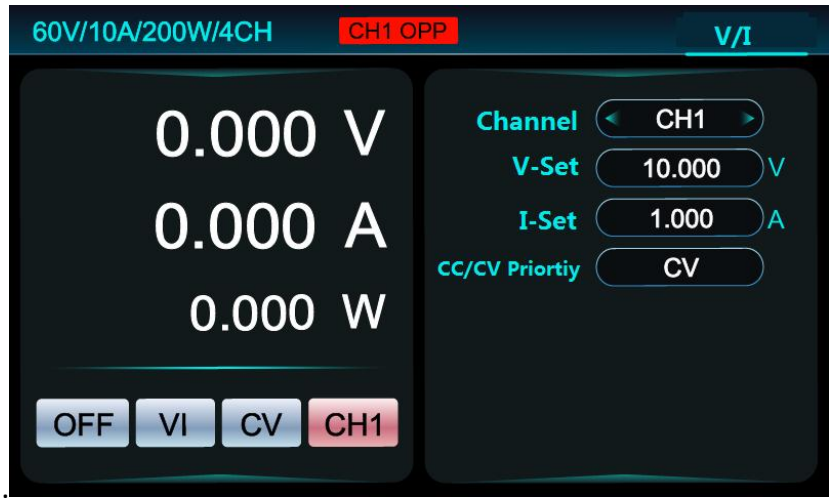


Figure 28 OPP

5.6.1.3 OTP

When the internal temperature of the power supply exceeds the warning level, the Over Temperature protection will be activated, shutting down the output to protect the power supply . At this time, the message OTP is given in the alarm area on the screen. The Over Temperature protection setup parameters are already solidified in the device, so there is no need to set them manually.

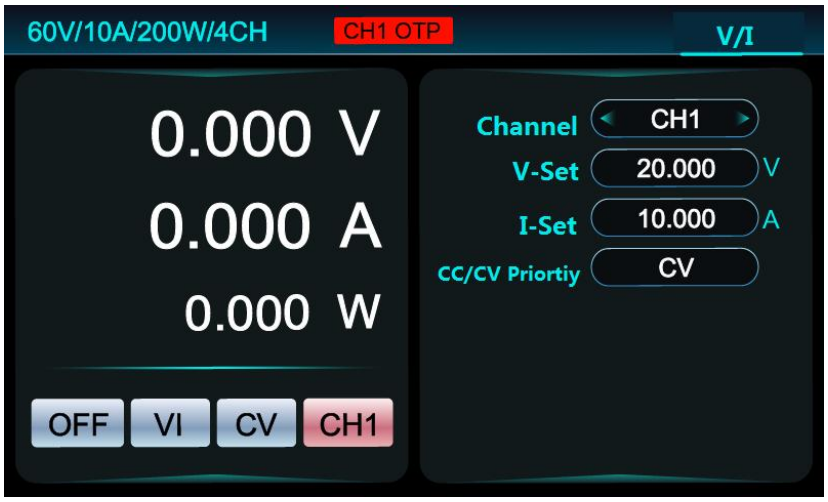


Figure 29 OTP

Table 17

Display	Description
OVP	Over voltage protection
OCP	Over current protection
OPP	Over power protection
OTP	Over temperature protection

5.6.2 CV/CC Priority

CV/CC Priority: Generally, the mode in which the power supply operates within depends on the output voltage setting, the output current limit setting, and the load impedance.

Under high resistance or open circuit conditions, very little or no current flows through the power supply and the power supply is in constant voltage mode.

In a low resistance or short circuit situation, a large amount of current flows through the power supply and the power supply is in constant current mode.

The N39400 series power supplies allow the user to set CV priority or CC priority.

The power supply is a feed-back control system that enables the regulation of specific parameters. Under constant voltage conditions, the power supply's feedback control loop regulates the voltage. Under constant current conditions, the power supply's feedback control loop regulates the current. So when using a power supply, the power supply will generally operate in CV mode by default, and the power supply will regulate the voltage to remain constant until the load draws enough current to reach the set current value.

Once the current supplied reaches the current setting, the power supply will switch from CV mode to CC mode. In CC mode, the power supply will regulate the current to remain constant and the voltage will begin to drop as it is no longer the parameter being regulated. The power supply will continue to operate in CC mode until the voltage across the load climbs to the set value, then the power supply will switch from CC mode to CV mode. In CV mode, the power supply will start regulating again as described above.

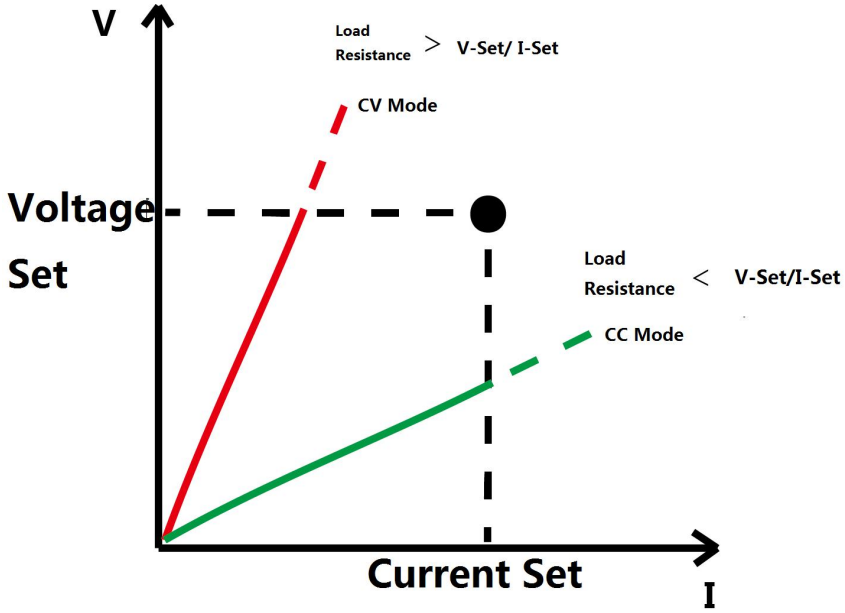


Figure 30 Relation between operation mode and load resistance

5.6.2.1 CV Priority

When power is supplied in CV priority mode, the control system will initially set the current to a set value, set the voltage to 0V, and then continue to rise, during which the voltage is always in a regulated state, with fast rise time and minimal overshoot.

When supplying power to high impedance loads in CV priority mode, the power supply will always remain in CV mode, and the voltage overshoot is rare. when supplying power to low impedance loads in CV priority mode, due to the low impedance, the voltage can not reach the set value, on the contrary, the current will reach the set value of the current very quickly, and the CV mode is converted to CC mode, which may lead to the instability of the current control in the process of the conversion, and then the current overshoot occurs.

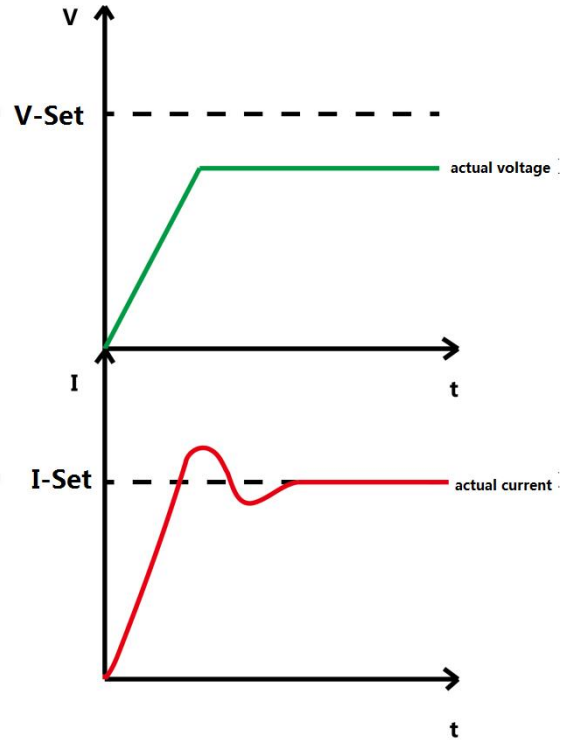


Figure 31 CV Priority

If the user needs that voltage overshoot must be minimized, such as when biasing to a low voltage processor or FPGA core, it is recommended that the user use CV priority mode.

5.6.2.1 CC Priority

When power is supplied in CC priority mode, the control system will initially set the voltage to a set value, set the current to 0A, and then continue to rise, during which the current is always regulated, with fast current rise time and minimal overshoot.

When supplying power to low impedance loads in CC priority mode, the power supply will remain in CC mode, when supplying power to high impedance loads in CC priority mode, the high impedance will not allow enough current to flow through the loads, however, the current flowing through the high loads will generate a high voltage, the voltage will reach the set value very quickly, and the CC mode will change to CV mode, which may lead to unstable voltage control in the process of changeover, and then generate voltage Overshoot.

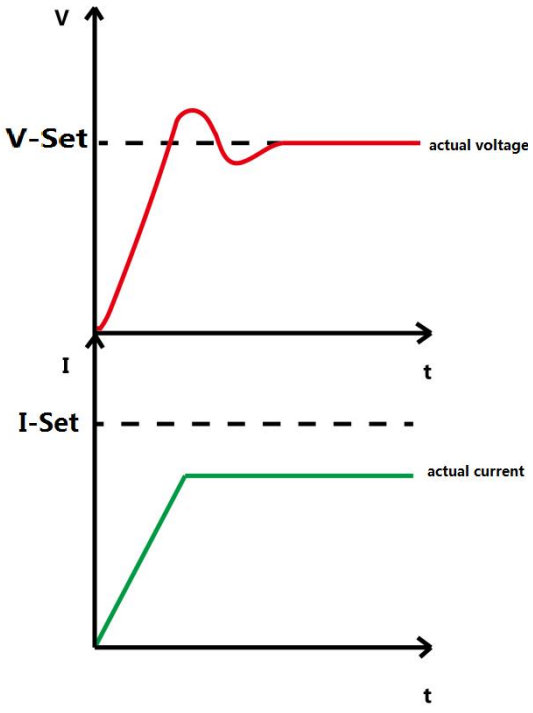


Figure 32 CC Priority

If the user's component to be tested is low impedance, such as when charging a battery or driving a system containing a large capacitor, CC priority mode should be used.

5.7 System

The System allows you to set the IP Address, Baud rate, Buzzer, and language for the device, and the configuration interface is shown in Figure 33 .

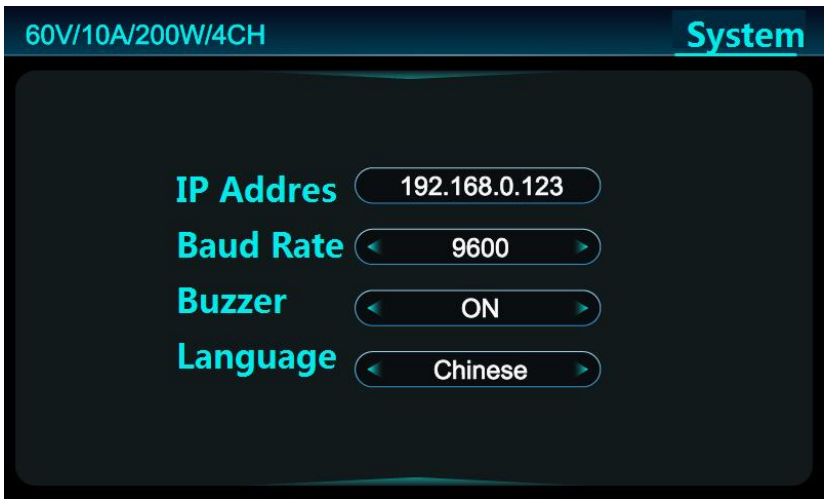


Figure 33 System

5.8 Factory Reset

Users can enter **Factory Reset** from the menu.

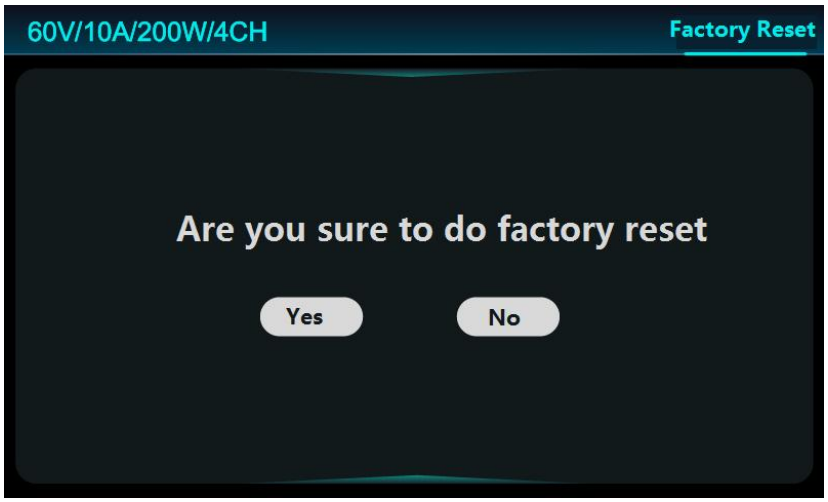


Figure 34 Factory Reset

In this interface, by pressing [**Enter**] button or the knob to select **Yes**, N39400 parameters will be restored to factory state. At the same time, the top of interface shows Reset successfully. Please restart the device.

Warning

It will take effect only by restarting the device after completing factory reset.

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 NGI.

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 N39400 series should be calibrated once a year.

7 Main Technical Data

Warning

1. The measurement accuracy is identified by the following three conditions: within one year after calibration, operation temperature between 18℃ and 28℃, and the relative humidity up to 80%.

Table 18

Model	N39420-60-10	N39436-60-15	N39460-60-15
Voltage	60V	60V	60V
Current	10A	15A	15A
Power	200W	360W	600W
Channel	4CH		
	CV Mode		
Range	0-60V		
Setting Resolution	1mV		
Setting Accuracy	0.05%+60mV		
	CC Mode		
Range	0-10A	0-15A	0-15A
Setting Resolution	1mA		
Setting Accuracy	0.1%+10mA	0.1%+15mA	0.1%+15mA
	Voltage Measurement		
Range	0-60V		
Setting Resolution	1mV		
Setting Accuracy	0.05%+60mV		
Temperature coefficient	50PPM/℃（0-40℃）		
	Current Measurement		
Range	0-10A	0-15A	0-15A
Setting Resolution	1mA		
Setting Accuracy	0.1%+10mA	0.1%+15mA	0.1%+15mA
Temperature coefficient	50PPM/℃（0-40℃）		
	Line Regulation		
Voltage	≤0.015%		
Current	≤0.05%		
	Load Regulation		
Voltage	≤0.03%		
Current	≤0.05%		
	Dynamic Characteristics		

Voltage Rise Time (no load)	≤50ms ≤30ms
Voltage Rise Time (full load)	≤100ms ≤50ms
Voltage Fall Time	≤50ms
Voltage Fall Time (full load)	≤30ms ≤30ms
	Ripple（20Hz-20MHz）
Ripple（p-p）	≤250mV
Ripple（rms）	≤20mV
	Others
Interface	RS232/LAN
Communication	≤5ms
AC Input	Single phase, please refer to the voltage mark at the rear panel.
Temperature	Operating temperature: 0℃-40℃, storage temperature: -20℃~60℃
Operating	Altitude <2000m, relative humidity: 5%-90%RH(non-condensing),
Dimension	482.0mm(W)*88.0mm(H)*560.0mm(D)
Net Weight	Approx.9.5kg