

N36100 Series Wide Range Programmable DC Power Supply

User Manual

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1 Preface

Dear Customers,

First of all, we greatly appreciate your choice of N36100 series DC power supply (N36100 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 N36100 series DC power supply, including installation, operation, specifications and other detailed information. The copyright of the manual is owned by NGI. 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 N36100, 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 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 N36100's rated range.

2.2 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

3 Product

3.1 Brief Introduction

N36100 series is a DC power supply with ultra compact size, high performance and high power density. The 1U height and half 19-inch width design brings comfortable experience with space-saving in both standalone and integrated cabinet. Maximum output power of N36100 is 900W. In view of test characteristics of different fields such as laboratory test, system integration test and large-scale production line test, N36100 series adopts wide range designs to meet the needs of different application scenarios.

3.1.1 Features

- 1U height + half 19-inch width, wide range and high power density
- Maximum output power: 900W
- Remote sense
- Multiple protections: OVP, OCP, OPP, OTP
- CC&CV priority function
- External analog programming control (optional)
- Internal resistance simulation function
- Modular design, convenient for system integration
- Multiple communication interfaces: LAN/CAN/RS232/RS485
- SEQ test function
- Auto run function after startup, editable run delay time

3.2 N36100 Series Lineup

Table 2

Model	Channel	Voltage	Current	Power
N36150-40-50	1	40V	50A	500W
N36150-80-25	1	80V	25A	500W
N36150-150-12	1	150V	12A	500W
N36150-300-8	1	300V	8A	500W
N36190-40-50	1	40V	50A	900W
N36190-80-25	1	80V	25A	900W
N36190-150-12	1	150V	12A	900W
N36190-300-8	1	300V	8A	900W

3.3 Appearance & Dimension

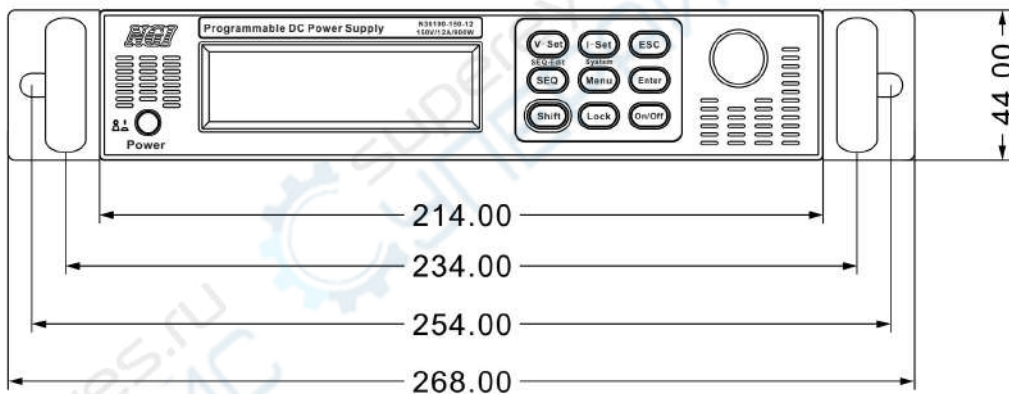


Figure 1 Front Panel Dimension(mm)

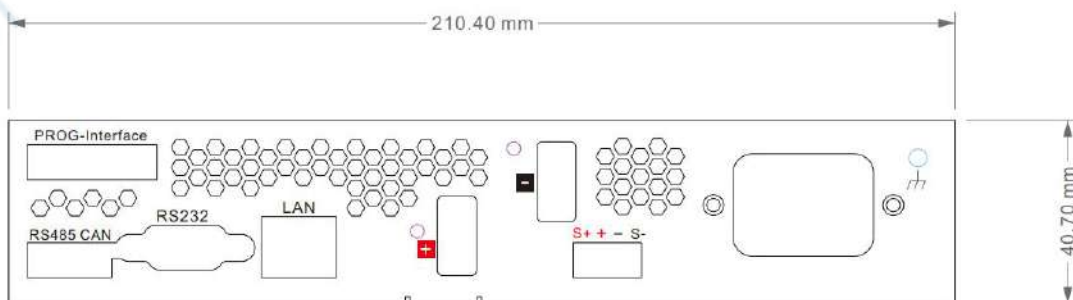


Figure 2 Rear Panel Dimension(mm) (Specification 50A and 25A)

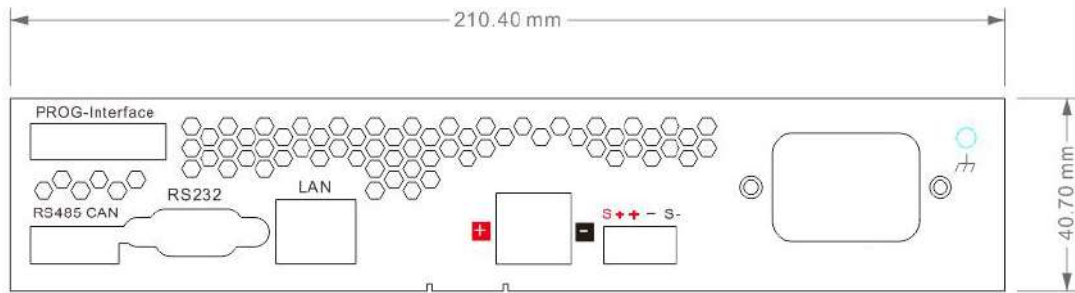


Figure 3 Rear Panel Dimension(mm) (Specification 12A and 8A)

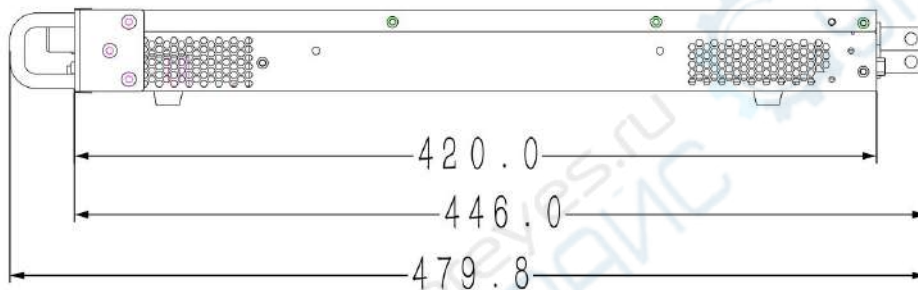


Figure 4 Side Dimension(mm) (Specification 50A and 25A)

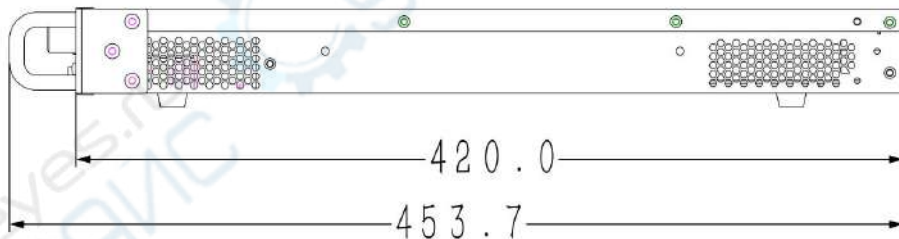


Figure 5 Side Dimension(mm) (Specification 12A and 8A)

3.4 Package Contents and Accessories

After receiving N36100, 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 NGI.
2. Check accessories.

3. Make sure the the following accessories are attached.

Table 3

N36100 Accessories	Instructions
Power cord	For AC power connection
RS232 cable	For RS232 communication
Ethernet cable	For Ethernet connection
Connector (3.5-5pin)	For RS485 and CAN connection
Connector (7.62-2pin)	For output connection (Specification 12A and 8A only)
USB flash drive	Software, technical information, user manual
Test report	Test result before delivery

If any loss or damage, please contact our authorized distributor or NGI.

4. Check the whole instrument. If N36100 chassis is damaged or has abnormal operation, please contact our authorized distributor or NGI.

3.5 Default Communication Parameter

Table 4

Parameter	N36100 Series Default Value
Default IP Address	192.168.0.123
Default Baud Rate	9600

4 Panel Introduction

4.1 Front Panel Introduction

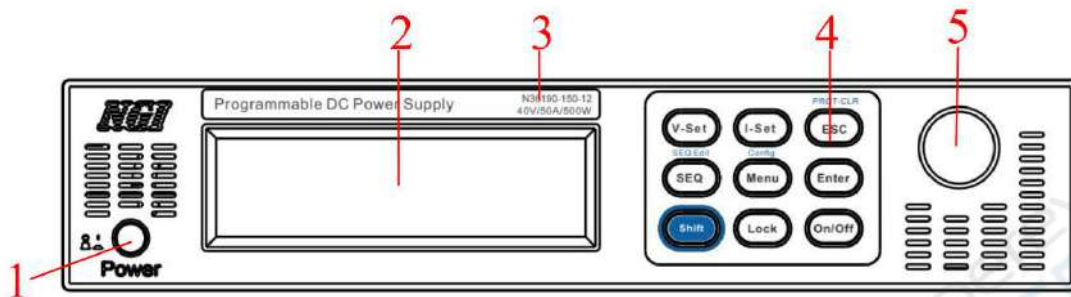


Figure 6 Front Panel

Table 5

Number	Name	Function
1	Power switch	Power control
2	Screen	Displaying data
3	Device name	Displaying model
4	Buttons	Operation mode and parameter setting
5	Knob	Adjusting the parameter and selecting the parameter

4.1.1 Screen

N36100 is equipped with an OLED screen. The contents displayed on the screen are as follows.

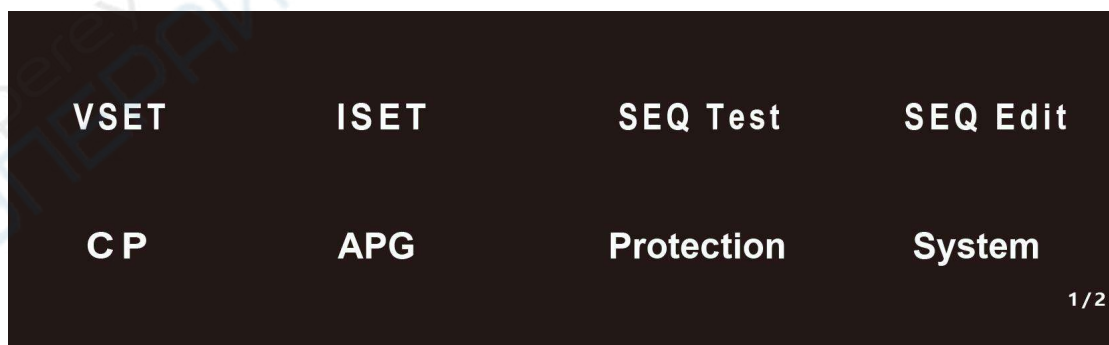


Figure 7 Menu Page One

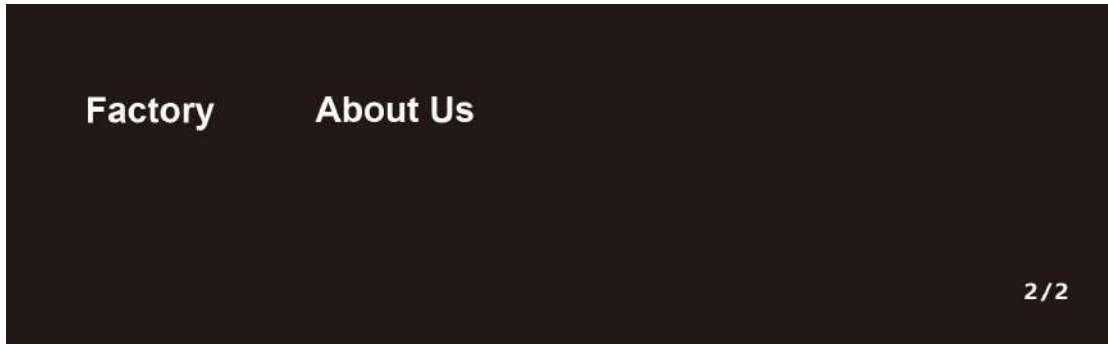


Figure 8 Menu Page Two

Table 6

Number	Item	Function
1	VSET	Setting output voltage
2	ISET	Setting output current
3	SEQ Test	Running the pre-edited sequence file
4	SEQ Edit	Editing the sequence file
5	CP	Constant power mode
6	APG	Analog programming (optional)
7	Protection	Setting protection parameters
8	System	Setting system parameters
9	Factory	Restore factory setting
10	About Us	Manufacturer information

4.1.2 Button

N36100 front panel mainly includes a screen and buttons. Users can control the device via buttons.

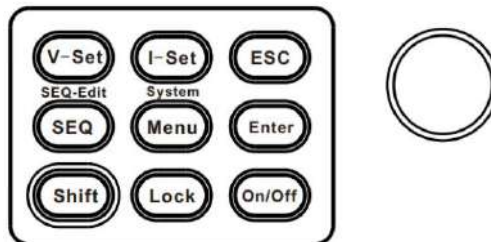


Figure 9 Buttons

Table 7

Button	Function
V-Set/I-Set	To enter V/I mode
ESC	To return
Shift+ESC	To clear the protection
SEQ	To enter SEQ Test
Shift+SEQ	To enter SEQ Edit
Menu	To enter the main menu
Shift+Menu	To enter system setting
Enter	To confirm
Shift	Compound button
Lock	To lock/unlock
On/Off	To turn on/off the output
Knob	By rotating: to select the required item, adjust the parameter By pressing: to enter the edit interface, confirm the input

4.2 Rear Panel Introduction

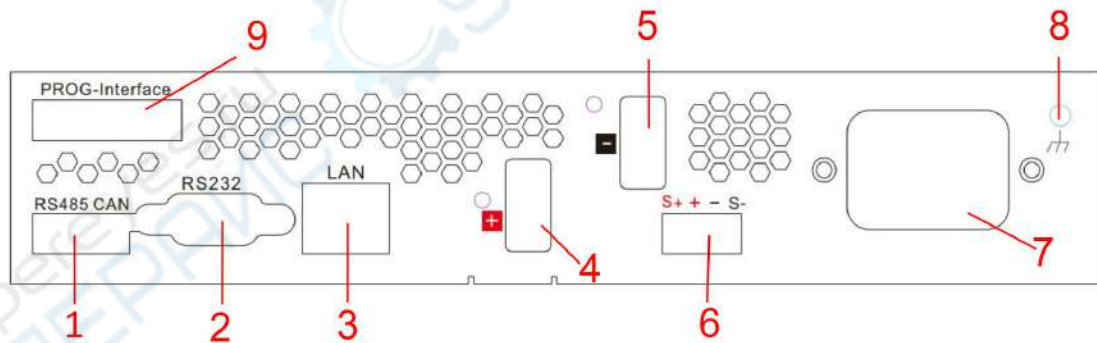


Figure 10 Rear Panel

Table 8

Number	Name
1	RS485 interface/CAN interface
2	RS232 interface
3	LAN port

4	Output interface +
5	Output interface -
6	Four-wire interface
7	AC power socket
8	Grounding screw hole
9	Programming interface (optional)

4.2.1 Output Interface

Output interface is used to connect the DUT. There are two kinds of output interfaces for N36100 series. For current specification 50A and 25A, it adopts copper bar interface. For specification 12A and 8A, it adopts pluggable interface. Please select the appropriate output wire according to the specific N36100 model. Do not use thin wires to avoid overheating, which may cause danger.

4.2.2 Four-wire Interface



Figure 11 Four-wire Interface

Table 9 Pin Definition

S+	Sense + (For remote sense)
+	Output + (For local sense, internally connected to positive output terminal)
-	Output - (For local sense, internally connected to negative output terminal)
S-	Sense - (For remote sense)

4.2.3 LAN Port

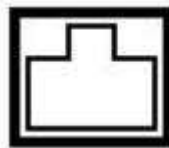


Figure 12 LAN Port

LAN port is used for remote control, by connecting N36100 with PC via an Ethernet cable.

4.2.4 RS232 Interface

RS232 interface is used for remote control. RS232 cable is supplied as standard accessory.

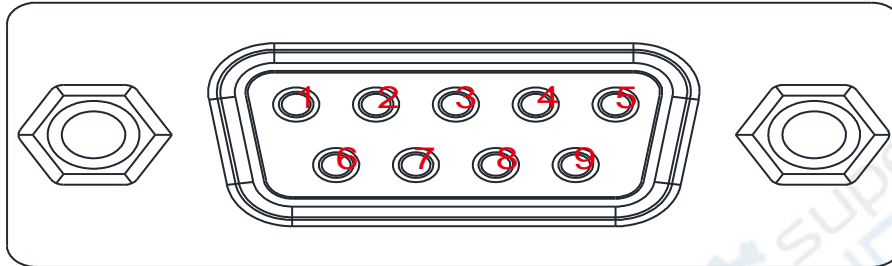


Figure 13 RS232 Interface

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

4.2.5 RS485/CAN Interface

The 5 pins of RS485/CAN interface are RS485A+, RS485B-, GND, CANH and CANL from left to right.

4.2.6 AC Power Socket

Please make sure the AC input voltage before supplying power.

Please ensure that the AC input voltage supplied to N36100 should not be too low under high load conditions.

4.2.7 Grounding Screw

The chassis of N36100 is insulated from the inner live conductor. Normally, the chassis is uncharged. If there is an accident which causes the chassis to be charged, there is a potential difference between the chassis and the ground at this time. If it is not well grounded and the operator accidentally touches the chassis, it will form a closed-circuit through the human body and cause danger. Therefore, a reliable grounding must be made between the chassis and ground to have the same potential. In addition, a reliable grounding can also prevent the accumulation of static electricity.

5 Power-on Test

Power-on test includes two parts: power-on inspection and output inspection. This test is to ensure N36100 can be started and used properly.

5.1 Power-on Inspection

5.1.1 Connection and Setting

Please follow the below steps in below table.

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

Table 11

Step	Item	Description
1	Inspection	To inspect if there is physical damage
2	Grounding	To connect the ground to prevent an electric shock
3	AC Power Input	To connect to proper AC power
4	Load Connection	To connect to a load with proper wire
5	Default Setting	To do factory reset

Warning: If N36100 chassis and upper cover are not safely grounded, there is a danger of electric shock.

5.1.2 Switch-on

Please press the power switch on the front panel.

If N36100 can not be switched on properly, please check if the power cord is well connected and AC power supply is available.

Warning: Even if the power switch is under off state, some components inside N36100 may still carry a high voltage. To avoid electric shock, it is forbidden to open the chassis.

5.2 Output Inspection

The output inspection can ensure that N36100 can reach its rated output and can perform the operations on the front panel properly.

5.2.1 Output Voltage Inspection

Steps to verify N36100's basic voltage function without connecting to a load:

1. Press the power switch.
2. Set voltage to 1V.
3. Press On/Off button to output.
4. Check if the readback voltage is close to 1V.
5. Check if the voltage can be set from 0V to full range.

5.2.2 Output Current Inspection

Steps to verify N36100's basic function during output short-circuit:

1. Press the power switch.
2. Make sure the output is OFF.
3. Connect an insulated wire to short circuit the positive and negative electrodes at the output of N36100. The wire used should be able to bear the maximum output current of N36100.
4. Set current to 1A.
5. Press On/Off button to output.
6. Check if the readback current is close to 1A.
7. Check if the current can be set from 0A to full range.

6 Load Connection

Warning: Please turn off the AC input power before changing any connections on the rear panel. Before supplying power, please check and confirm that all connections are fastened. Touching any terminal or interface on the rear panel with N36100 powered on may cause electric shock.

6.1 Load Wire

Load wire is not included among N36100 series standard accessories. Users need to prepare load wire. Please refer to the follow requirements while selecting load wire.

1. The maximum allowable current of wire.
2. The insulation level of wire should not be lower than the maximum output voltage of the power supply.
3. The maximum wire length and voltage drop.
4. Noise and impedance effects on the load wire.

Note: Please refer to the recommended wire gauge selection table in the appendix.

6.2 Maximum Allowable Current

The following two factors should be considered when selecting the wire gauge.

1. The wire should be thick enough to avoid overheating when carrying rated load current or load short-circuit current. The greater shall prevail.
2. The wire gauge should be selected properly to minimize the voltage drop on each wire and to prevent excessive output power consumption of the power supply, which affects the load regulation. Although N36100 series adopts remote sense to compensate the voltage, it is still recommended to minimize the voltage drop.

Note: Please refer to the recommended wire gauge selection table in the appendix.

6.3 Effect of Noise and Impedance

In order to reduce noise or radiation, the load wire and the remote sense wire should be twisted pair. The wire length should be as short as possible. Shielded wires must be used in high noise environments. The shielding part is connected to chassis through the grounding screw hole on rear panel.

Even if the noise is not loud, the load wire and remote sense wire should also be twisted pair to reduce coupling and increase the stability of power supply. The remote sense wire must be separated from AC input power cord.

Twisted-pair load wire can reduce the parasitic inductance of the wire and prevent high-frequency voltage peak on the load and the output of power supply, caused by fluctuation of the load current.

The impedance between the output of power supply and the load makes the ripple & noise on the load higher than at the rear panel terminal of power supply. If necessary, an additional filter circuit with a bypass capacitor can be connected to the load to limit the high-frequency load current.

6.4 Inductive Load

When using N36100 to supply power to inductive loads such as motors, users can connect a diode across the output of N36100 since the inductive load will produce a voltage spike which is harmful to N36100. The rated voltage and current of the diode should be higher than the rated output voltage and current of power supply. The negative polarity of diode is connected to the positive output of N36100. The positive polarity is connected to the negative output of N36100.

When using N36100 to supply power to inductive loads such as motors, load transients, such as counter electromotive force from motors, may occur. Please connect a surge current suppressor across the output of N36100 to protect N36100. The rated breakdown voltage of surge current suppressor must be approximately 10% higher than the rated output voltage of N36100.

6.5 Local Sense and Remote Sense

The four-wire interface at rear panel is used for local sense and remote sense. Please refer to four-wire interface introduction. N36100 is supplied with 4-pin green connector for remote sense at the rear panel.

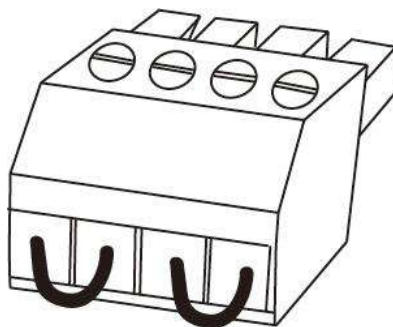


Figure 14 4-pin Green Connector

6.5.1 Local Sense

In local sense, output voltage is adjusted at the output terminal of N36100. This way does not compensate for the voltage drop on the load wire. It is recommended to use local sense when the load current is low or the load regulation is not very critical.

Note: On the 4-pin connector, jumpers have been used to connect **S+** to **+** and **S-** to **-**. When using local sense, please put the 4-pin connector at rear panel. Unplugging the connector will leave the remote sense terminal disconnected, which will affect the voltage regulation and may cause the power supply to be unstable and dangerous.

6.5.2 Remote Sense

Due to the parasitic resistance on the wire, a voltage drop will be generated on the wire after the current flows. Assuming that output of the power supply is set to 55V/10A and the resistance of the load wire is 0.5 ohms, a 5V voltage drop will be generated on the wire. The actual voltage reaching the load is only 50V, which affects the output accuracy of the power supply. In this case, it is necessary to compensate for the voltage drop on the wire.

The remote sense wire is directly connected to the load from four-wire interface on the rear panel of power supply. Since the remote sense wire is directly connected to the high impedance measurement circuit inside the supply, and the current on remote sense wire is very low, the voltage drop generated is negligible. The voltage across the load is fed back to the power supply control loop via remote sense wire. The supply will adjust its output to compensate for the voltage drop on the load wire so that the voltage across the load is equal to the set voltage.

It is recommended to use remote sense when load regulation is very critical. The procedure is as below.

1. Press the power switch to shut off the power supply.
2. Disconnect the jumpers on the 4-pin green connector.
3. Connect **S+** to positive polarity on load and **S-** to negative polarity on load with proper wire.
4. Plug the connector into the four-wire interface on rear panel of supply.
5. Connect the output of power supply to the load.
6. Press the power switch to power on the power supply.

6.6 Load Connection

Note: When rated output voltage of N36100 series is higher than the safe voltage, a dangerous voltage may exist at the connection between the supply output and the load. In order to protect operators from accidental contact with dangerous voltages, please ensure that there are no accessible live parts on the load and its connections. Please also make sure that the insulation level of the load wire is higher than or equal to the maximum output voltage of N36100.

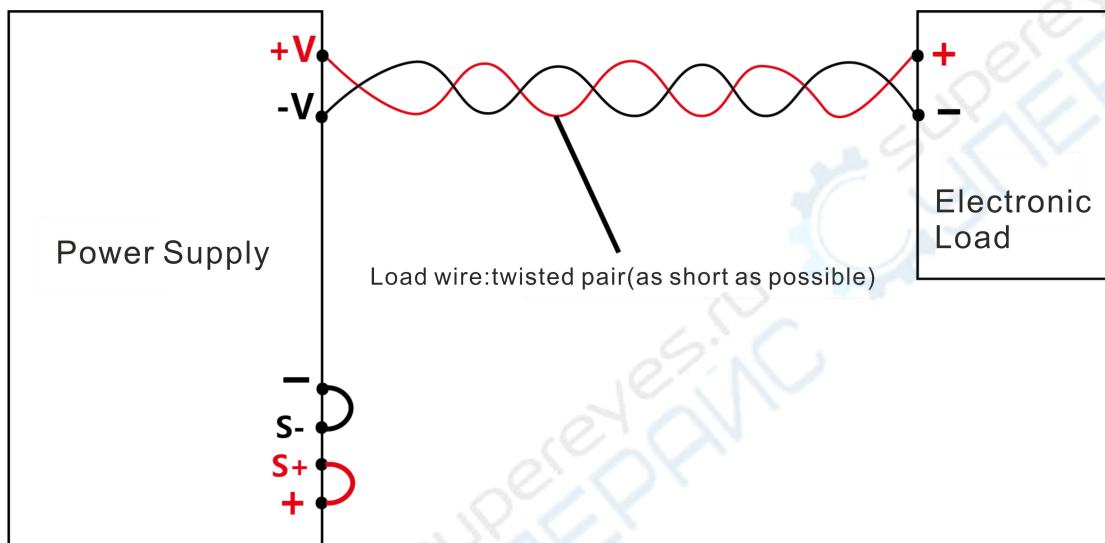


Figure 15 Local Sense Wiring Diagram

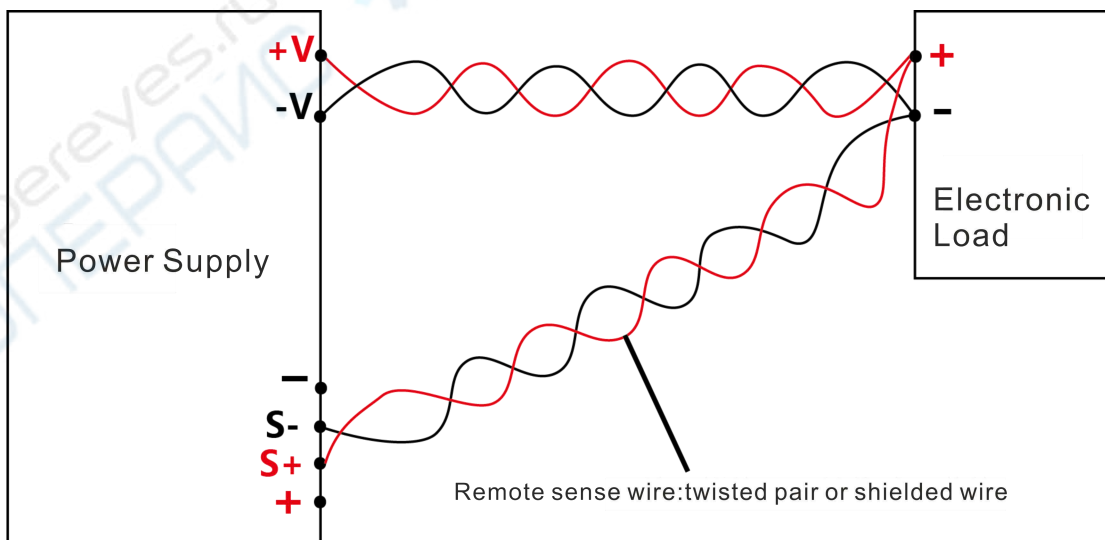


Figure 16 Remote Sense Wiring Diagram



7 Operation

This chapter mainly describes N36100 functions and features.

- Menu
- VSET
- ISET
- SEQ Test
- SEQ Edit
- CP
- APG (optional)
- Protection
- System

7.1 Menu

After the device is switched on, it will enter **V/I** mode directly. Users can enter **Menu** by pressing menu button. There are ten options on the menu: **VSET**, **ISET**, **SEQ Test**, **SEQ Edit**, **CP**, **APG**, **Protection**, **System**, **Factory**, and **About Us**. Users can enter the required option by the following method.

- Press the button directly on the front panel.
- Rotate  to select the required option and press  or **Enter** button.

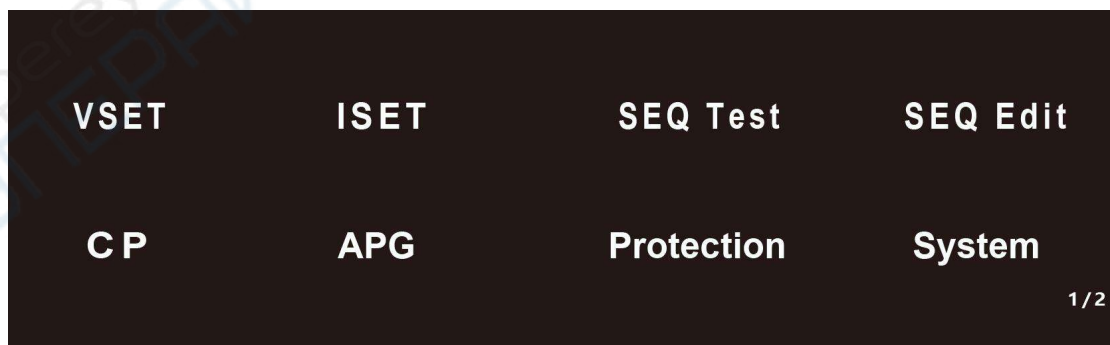


Figure 17 Menu Page One

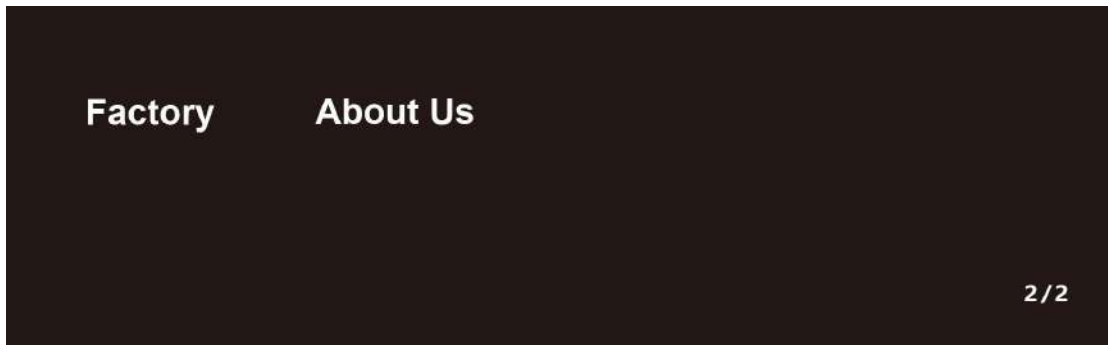


Figure 18 Menu Page Two

7.2 V/I

V/I mode provides regular constant voltage and current limit output.

Under V/I, users can set the required voltage and current for output.



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

Method 1: It will directly enter **V/I** mode after power-on.

Method 2: Press **V-Set** and **I-Set** button on the front panel directly.

Method 3: Press **Menu** button → Select **VSET** or **ISET** by rotating  → Press **Enter** button.

- Voltage Setting

Press **V-Set** button → Press  to move the cursor → Rotate  to adjust the voltage → Press **Enter** button to confirm the setting.

- Current Setting



Press **I-Set** button → Press  to move the cursor → Rotate  to adjust the current → Press **Enter** button to confirm the setting.



Figure 19 V/I Setting

Table 12

Number	Description
1	Readback of output voltage
2	Setting of output voltage
3	Readback of output power
4	Readback of output current
5	Setting of output current
6	Present output status

Note: To exit from **V/I** mode, please press **Menu** button or the function button required.

7.3 SEQ Edit

SEQ Edit allows users to set parameters such as file number, total steps, cycle times, etc.

N36100 series supports complex waveform output, with up to 10 sequence files and Max. 200 steps in total.

Methods to enter **SEQ Edit**:

Method 1: Press **Shift** button first on the front panel and then press **SEQ** button.

Method 2: Press **Menu** button → Select **SEQ Edit** by rotating  → Press **Enter** button.

File	1	Steps	10
Cycles	1	Link to File	1
Step No.	1	V-Set	5.00
I-Set	1.000	Dwell	3.000





Figure 20 SEQ Edit

Table 13

Parameter	Function
File	To set the sequence file number, Max. 10 files
Steps	To set the total test steps for the SEQ file, Max. 200 steps
Cycles	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, Max. 200 steps
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 for the present step

7.3.1 Parameter Setting

Steps to set parameters under **SEQ Edit**:

Rotate  to select the required parameter → Press  on the required parameter → Press  to move the cursor → Rotate  to adjust the parameter → Press **Enter** button to confirm the setting.

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

7.4 SEQ Test

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.

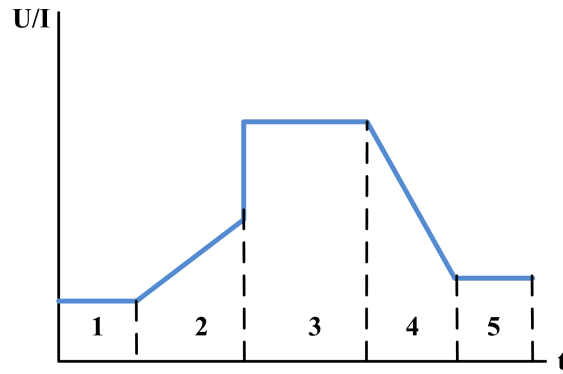


Figure 21 Output Voltage & Current Waveform by SEQ

Methods to enter **SEQ Test**:

Method 1: Press **SEQ** button directly on the front panel.

Method 2: Press **Menu** button → Select **SEQ Test** by rotating → Press **Enter** button.

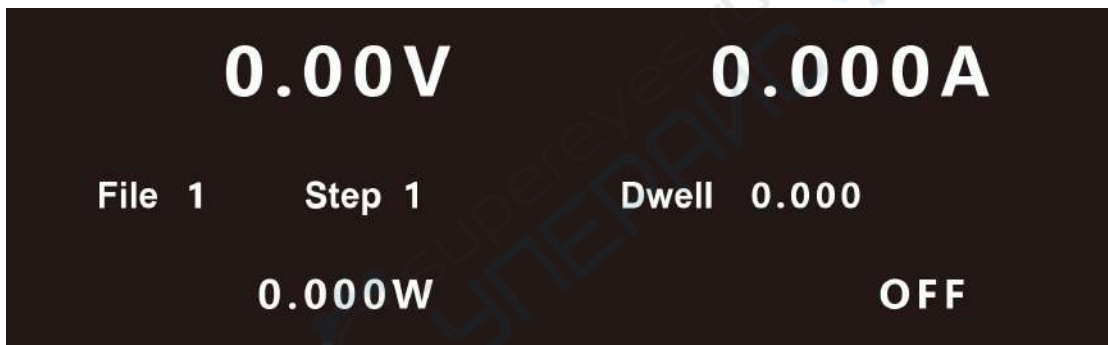


Figure 22 SEQ Test

Table 14

Parameter	Function
File	To select SEQ file No.
Step	Displaying the step No. under operation
Dwell	Displaying the dwell time for the present step

It displays readback voltage, readback current, SEQ file number, present step number, dwell time, readback power and present status. Only the SEQ file number can be editable.

Steps to set **File** under **SEQ Test**:

Press to move the cursor → Rotate to adjust the value → Press **Enter**


button to confirm the setting.

Under SEQ Test mode, users choose the required file number and press **On/Off** button. It will start sequence test. After all steps of sequence file are operated, it will stop sequence test and the system automatically shuts output.

Note: To exit from **SEQ Test**, please press **Menu** button or the function button required.

7.5 CP

Steps to enter CP:

Press **Menu** button → Select **CP** by rotating  → Press **Enter** button.

Under CP (constant power) mode, N36100 will adjust the output voltage or current continuously to maintain the output power at the set value as much as possible.

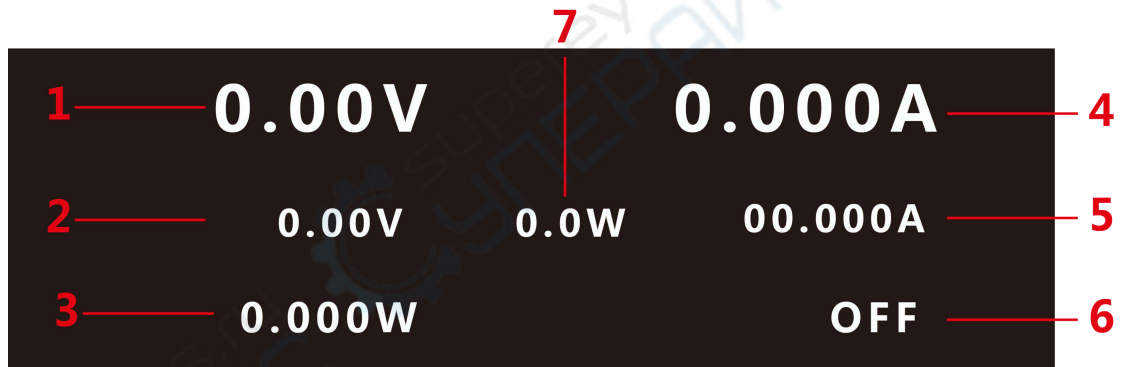


Figure 23 CP Mode

Table 15

Number	Description
1	Readback of output voltage
2	Setting of output voltage
3	Readback of output power
4	Readback of output current
5	Setting of output current
6	Present output status
7	Setting of constant power

N36100 will adjust the output voltage and output current according to the load condition. Once the external load exceeds the set range of N36100, N36100 output will maintain at the maximum set value (see below figure).

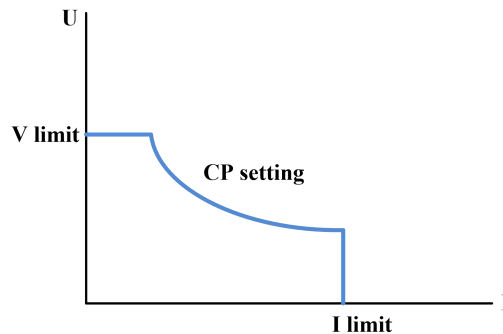


Figure 24 CP Mode

Note: To exit from **CP** mode, please press **Menu** button or the function button required.

7.6 APG Analog Programming (Optional)

Steps to enter **APG**:

Press **Menu** button → Select **APG** by rotating  → Press **Enter** button.

Analog programming (APG) can control the output voltage by using voltage analog signal. Users can use analog devices to set the output voltage of N36100 through the PROG-Interface at rear panel. The analog programming signal is introduced by Pin 7 and Pin 8 at the programming interface. Pin 7 is the negative polarity of the voltage programming input. Pin 8 is the positive polarity of the voltage programming input. Please refer to pin definition for programming interface.



Figure 25 Programming Interface

Table 16

Number	Pin	Definition
1	GND	Digital ground
2	I_MO	Current monitoring output
3	GND	Digital ground

4	V_MO	Voltage monitoring output
5	GND	Digital ground
6	EX_ISET	Current programming input
7	GND	Digital ground
8	EX_VSET	Voltage programming input

Note: Only voltage programming input is valid of N36100 analog programming.


After APG-V function is activated, the output voltage is controlled by externally input voltage signal. The external programming reference voltage is 0~5V. 0~5V programming signal corresponds to 0 ~ full scale output voltage.

Let's take model N36190-150-12 for example. The input analog value is 0 ~ 5V, and the output voltage is between 0 ~ 150V. When the input analog voltage increases by 1V, N36100 output voltage increases by 30V. When the input analog voltage is 3V, N36100 output voltage will be 90V.

Note: To exit from **APG**, please press **Menu** button or the function button required.

7.7 Protection

Steps to enter **Protection**:

Press **Menu** button → Select **Protection** by rotating  → Press **Enter** button.

On Protection interface, users can set parameters of over voltage, over current and over power. When protection occurs, alarm information will be shown on the screen. Please press **Shift** button first and then **ESC** button to clear the protection manually.



Figure 26 Protection Setting Interface

Table 17

Parameter	Function
OVP	To set over voltage protection value
OCP	To set over current protection value
OPP	To set over power protection value

➤ OVP

This parameter is used to set over voltage protection value. Once the output voltage exceeds the OVP set value, N36100 will immediately shut off the output and protect the DUT. Meanwhile, alarm OVP will be displayed on the screen.





➤ OCP

This parameter is used to set over current protection value. Once the output current exceeds the OCP set value, N36100 will immediately shut off the output and protect the DUT. Meanwhile, alarm OCP will be displayed on the screen.

➤ OPP

This parameter is used to set over power protection value. Once the output power exceeds the OPP set value, N36100 will immediately shut off the output and protect the DUT. Meanwhile, alarm OPP will be displayed on the screen.

Steps to set parameters under **Protection**:

Rotate  to select the required parameter → Press  on the required parameter → Press  to move the cursor → Rotate  to adjust the parameter → Press **Enter** button to confirm the setting.

Note: To exit from **APG**, please press **Menu** button or the function button required.

7.8 System

Methods to enter **System**:

Method 1: Press **Shift** button first on the front panel and then press **Menu** button.

Method 2: Press **Menu** button → Select **System** by rotating  → Press **Enter** button.

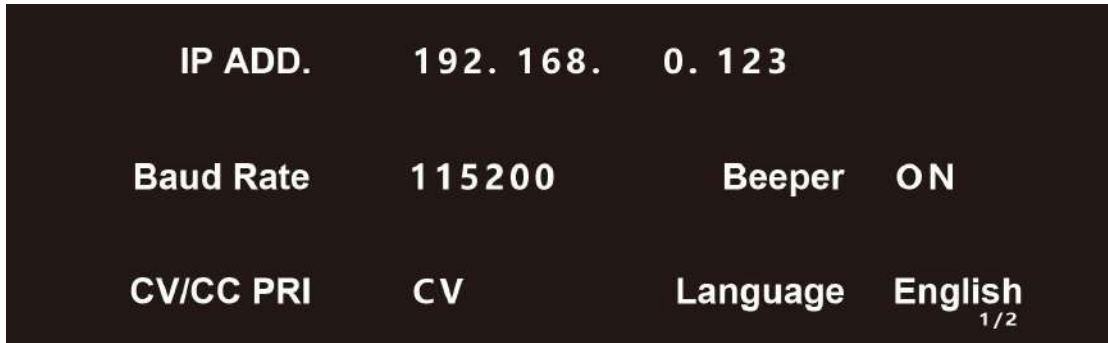


Figure 27 System Interface One



Figure 28 System Interface Two

Table 18

Parameter	Function
IP ADD.	To set IP address
Baud Rate	To set baud rate
CV/CC PRI	To set CC priority or CV priority
Beeper	To set the button sound
Language	To set the display language
Internal RES	To set internal resistance value
Auto Run	To turn on/off auto run function
Run Delay	To set delay time for auto run. When Auto Run is turned on, N36100 will start to output after the delay time reaches.
Brightness	To set screen brightness, range: 0-15

Steps to set parameters under **System**:

Rotate to select the required parameter → Press on the required parameter → Press to move the cursor → Rotate to adjust the voltage → Press **Enter** button to confirm the setting.

Note: To exit from **System**, please press **Menu** button or the function button

7.9 CV/CC Priority Function

Generally speaking, which mode the power supply works in depends on the output voltage setting, output current limit setting and load impedance.

In the case of high resistance or open circuit, the current flowing through the power supply is very low or no current flows through, the power supply works in CV (constant voltage) mode.

In the case of low resistance or short circuit, high current flows through the power supply, and the power supply works in CC (constant current) mode.

N36100 series power supply allows users to set CV priority or CC priority.

The power supply is a feedback control system that can realize the adjustment of specific parameters. Under CV mode, the feedback control loop can adjust voltage. Under CC mode, the feedback control loop can adjust current.

The power supply generally operates in CV mode by default. The supply will adjust the voltage to remain constant until the load consumes enough current to reach the set current value.

Once the supplied current reaches the set current, the power supply will switch from CV mode to CC mode. Under CC mode, the supply will adjust the current to remain constant, and the voltage will begin to drop. The supply will continue to operate under CC mode until the voltage across the load reaches the set value. In this case, the power supply will switch from CC mode to CV mode. Under CV mode, the power supply will start to regulate voltage again as described above.

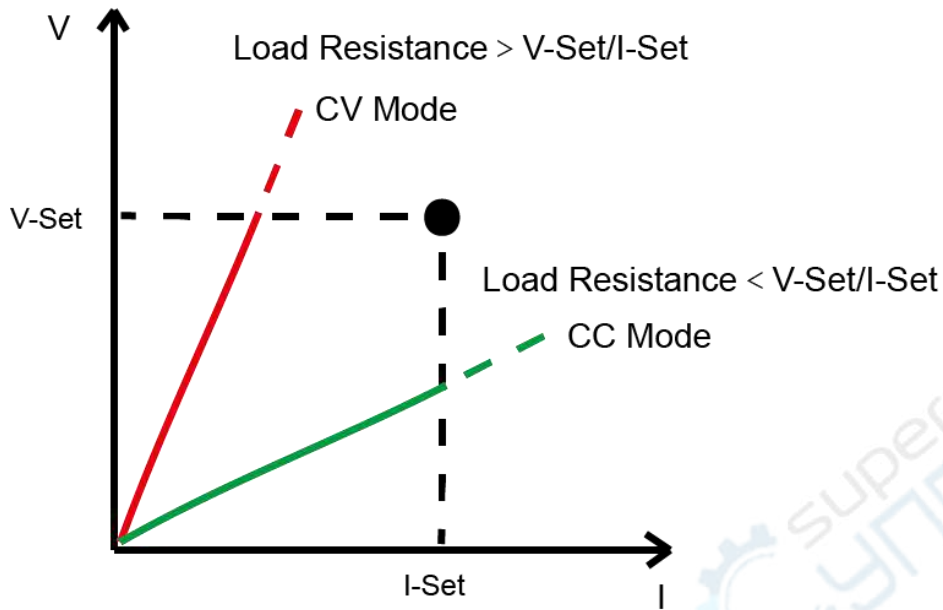


Figure 29 Relationship Between CV/CC Mode and Load

7.9.1 CV Priority Mode

Under CV priority mode, the control system will initially set current to the set value and set voltage to 0V. The voltage will continue to rise. During this process, the voltage is always regulated, with fast rise time and minimum overshoot performance.

When supplying power to high impedance loads under CV priority mode, the power supply will always remain in CV mode. In this case, voltage overshoot is rare.

When supplying power to low impedance loads under CV priority mode, the voltage cannot reach the set value due to low impedance. On the contrary, the current will quickly reach the set value. And then CV mode is converted to CC mode, which may cause unstable current control during the conversion process, and current overshoot.

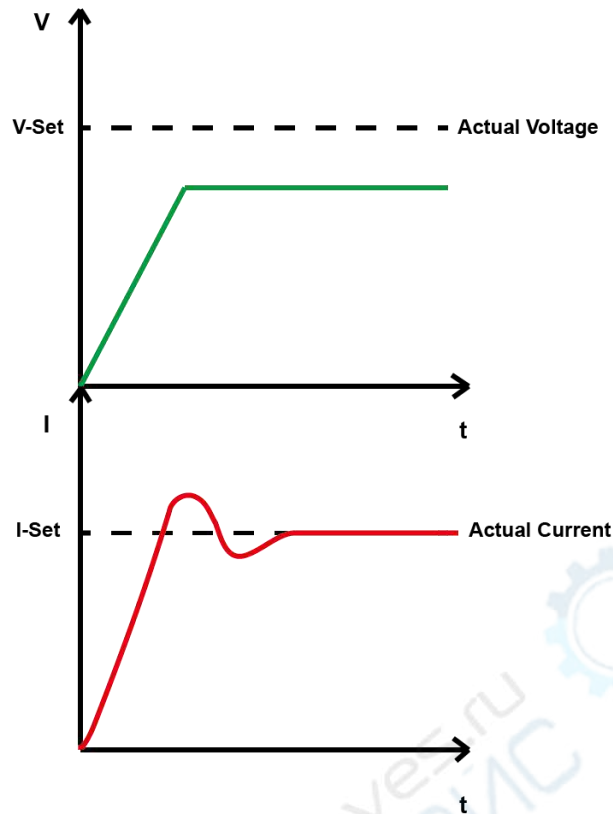


Figure 30 CV Priority and Low Impedance Load

If it requires minimum voltage overshoot, such as supplying power to a low-voltage processor or FPGA core, it is recommended to use CV priority mode.

7.9.2 CV Priority Mode

Under CC priority mode, the control system will initially set voltage to the set value and set current to 0A. The current will continue to rise. During this process, the current is always regulated, with fast current rise time and minimum overshoot.

When supplying power to low impedance loads under CC priority mode, the power supply will always remain in CC mode.

When supplying power to high impedance loads, high impedance cannot make enough current flow through the load. However, the current flowing through the high impedance load will generate high voltage. The voltage will quickly reach the set value. In this case, CC mode is converted to CV mode, which may cause unstable voltage control during the conversion process, and voltage overshoot.

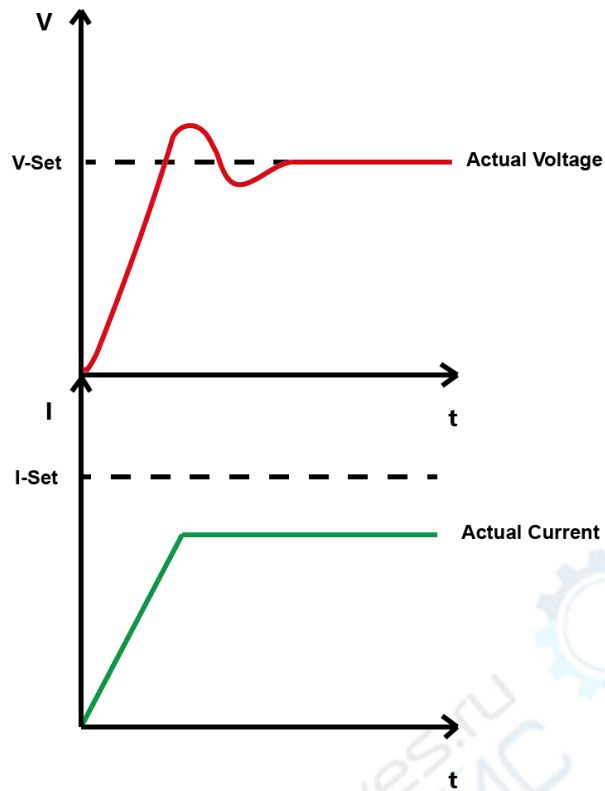


Figure 31 CC Priority and High Impedance Load

If the DUT has low impedance, for example, when charging a battery or driving a system containing a large capacitor, it is recommended to use CC priority mode.

8 Remote Operation

N36100 is equipped with four communication interfaces: LAN, RS232, RS485 and CAN.

N36100 adopts UDP network communication mode. The default port number is 7000. It adopts standard MODBUS communication protocol. Users can set the IP address.

8.1 LAN Port

The default connection method of N36100 to the computer is via LAN port. Ethernet cable is supplied as standard accessory.

Steps for Ethernet connection via LAN port:

1. Check if N36100 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 N36100 LAN port.
5. Check if the indicator light at LAN port on N36100 is flashing.

Note 1: If the indicator light at LAN port on N36100 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 N36100 will stop after a short flash. At this time, the hardware network connection has been established.

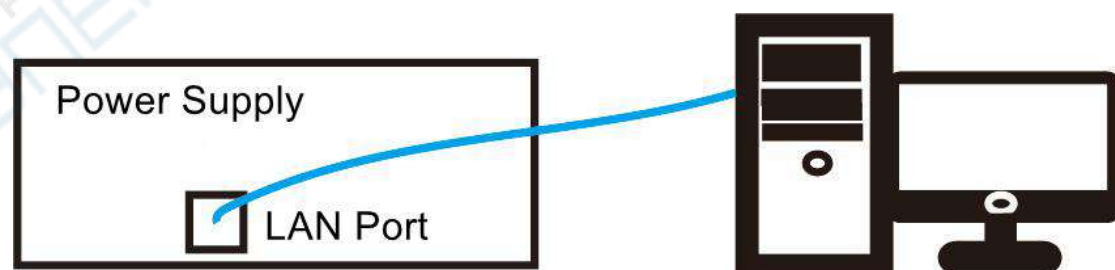


Figure 32 LAN Connection Diagram

8.2 Connection to Computer

There are a LAN port at N36100's rear panel for remote communication.

The below steps is for remote control via LAN port:

1. Enter the N36100 Application Software on PC.
2. Find **Hardware Config**.
3. Select LAN for **Communication Mode**.
4. Set **IP** address. The IP should be consistent with IP of N36100.
5. Press **Test** to connect with N36100.

After N36100 receives the correct communication instruction, it will start remote control. Under remote control mode, local operation is disabled and N36100 can only be controlled by programming instructions. Please press Lock button to return to local operation.

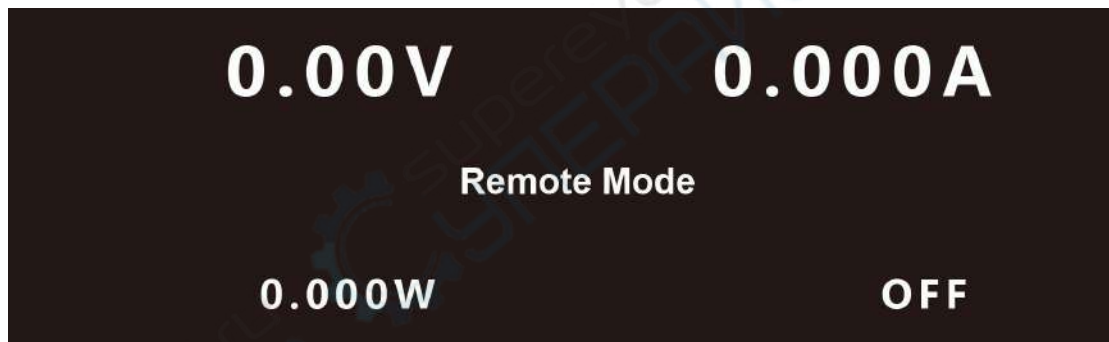


Figure 33 Remote Mode

9 Maintenance and Self-inspection

9.1 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.**

9.2 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 N36100 series should be calibrated once a year.

10 Main Technical Data

Attention:

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

Please warm up the device for half hour to ensure the measurement accuracy.

Table 19

Model	N36150-40-50	N36150-80-25	N36150-150-12	N36150-300-8
Voltage	40V	80V	150V	300V
Current	50A	25A	12A	8A
Power	500W			
Channels	1CH			
Setting Resolution-Voltage	1mV		10mV	
Setting Resolution-Current	1mA			
Setting Accuracy-Voltage (23±5°C)	0.05%+0.05%F.S.			
Setting Accuracy-Current (23±5°C)	0.1%+0.1%F.S.			
Setting Temperature Coefficient	50ppm/°C			
Readback Resolution-Voltage	1mV		10mV	
Readback Resolution-Current	1mA			
Readback Accuracy-Voltage (23± 5°C)	0.05%+0.05%F.S.			
Readback Accuracy-Current (23± 5°C)	0.1%+0.1%F.S.			
Readback Temperature Coefficient	50ppm/°C			
Long-term Stability	≤50ppm/1000h			
Voltage Ripple Noise (20Hz-20MHz)	≤100mVp-p	≤150mVp-p	≤150mVp-p	≤200mVp-p
Current Ripple Noise (20Hz-20MHz)	≤50mArms	≤30mArms	≤20mArms	≤20mArms
Dynamic Characteristics				

Voltage Rise Time (no load) (10%-90%F.S. Variation Time)	≤100ms			
Voltage Rise Time (full load) (10%-90%F.S. Variation Time)	≤300ms	≤300ms	≤500ms	≤600ms
Voltage Fall Time (no load) (90%-10%F.S. Variation Time)	≤200ms	≤200ms	≤400ms	≤500ms
Voltage Fall Time (full load) (90%-10%F.S. Variation Time)	≤50ms	≤50ms	≤50ms	≤100ms
Transient Recovery Time	≤20ms			
Line Regulation-Voltage	≤0.05%			
Line Regulation-Current	≤0.1%			
Load Regulation-Voltage	≤0.05%			
Load Regulation-Current	≤0.1%			
Others				
Isolation (Output to Ground)	1000V DC			
Communication Response Time	≤10ms			
Interface	LAN/RS232/RS485/CAN			
AC Input	Single phase, please refer to the voltage mark at the rear panel.			
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			
Net Weight	Approx. 3kg			
Dimension	1U, 44.00(H)*214.00(W)*420.00(D)mm			

Table 20

Model	N36190-40-50	N36190-80-25	N36190-150-12	N36190-300-8
Voltage	40V	80V	150V	300V
Current	50A	25A	12A	8A
Power	900W			
Channels	1CH			
Setting Resolution-Voltage	1mV		10mV	
Setting Resolution-Current	1mA			

Setting Accuracy-Voltage (23±5°C)	0.05%+0.05%F.S.			
Setting Accuracy-Current (23±5°C)	0.1%+0.1%F.S.			
Setting Temperature Coefficient	50ppm/°C			
Readback Resolution-Voltage	1mV	10mV		
Readback Resolution-Current	1mA			
Readback Accuracy-Voltage (23±5°C)	0.05%+0.05%F.S.			
Readback Accuracy-Current (23±5°C)	0.1%+0.1%F.S.			
Readback Temperature Coefficient	50ppm/°C			
Long-term Stability	≤50ppm/1000h			
Voltage Ripple Noise (20Hz-20MHz)	≤100mVp-p	≤150mVp-p	≤150mVp-p	≤200mVp-p
Current Ripple Noise (20Hz-20MHz)	≤50mArms	≤30mArms	≤20mArms	≤20mArms
Dynamic Characteristics				
Voltage Rise Time (no load) (10%-90%F.S. Variation Time)	≤100ms			
Voltage Rise Time (full load) (10%-90%F.S. Variation Time)	≤300ms	≤300ms	≤500ms	≤600ms
Voltage Fall Time (no load) (90%-10%F.S. Variation Time)	≤200ms	≤200ms	≤400ms	≤500ms
Voltage Fall Time (full load) (90%-10%F.S. Variation Time)	≤50ms	≤50ms	≤50ms	≤100ms
Transient Recovery Time	≤20ms			
Line Regulation-Voltage	≤0.05%			
Line Regulation-Current	≤0.1%			
Load Regulation-Voltage	≤0.05%			
Load Regulation-Current	≤0.1%			
Others				
Isolation (Output to Ground)	1000V DC			

Communication Response Time	≤10ms
Interface	LAN/RS232/RS485/CAN
AC Input	Single phase, please refer to the voltage mark at the rear panel.
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
Net Weight	Approx. 3kg
Dimension	1U, 44.00(H)*214.00(W)*420.00(D)mm

Note 1: For other specifications, please contact NGI.

Note 2: All specifications are subject to change without notice.

11 Appendix

11.1 Protection Display List

Table 21

Alarm	Protection
OVP	Over Voltage Protection
OCP	Over Current Protection
OPP	Over Power Protection
OTP	Over Temperature Protection

11.2 Communication Interface

Table 22

N36100		
RS232	Hardware	Standard RS232 interface Baud rate: 9600/19200/38400/57600/115200bps Data length: 8 bits Stop bit:1 bit Parity bit: None Flow control: None
LAN	Hardware	IEEE 802.3 100M Ethernet IPv4, RJ-45 interface

11.3 Recommended Wire Gauge Selection Table

Table 23

Model	Sectional Area	Temperature Conditions			
		60°C	75°C	85°C	90°C
AWG	mm ²	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

11.4 Trouble Shooting

- ◆ Screen does not work after power-on.

Table 24

Fault	Possible Causes	Solutions
N36100 screen does not work after power-on.	The power cord is broken.	Change a new power cord.
	The power cord is not properly connected.	Ensure proper connection.

- ◆ No output.

Table 25

Fault	Possible Causes	Solutions
There is no output after switching on.	The voltage/current setting is zero.	Set the required voltage/current.
The voltage output stops after transient output.	There is over voltage protection (OVP).	Lower the setting.

- ◆ It is not allowed to set output voltage/current properly.

Table 26

Fault	Possible Causes	Solutions
The output voltage/current cannot be set properly.	The set voltage/current is higher than V-Limit Max/I-Limit Max.	Set the required voltage/current.
	The set voltage/current is lower than V-Limit Min/I-Limit Min.	

- ◆ Unstable output voltage.

Table 27

Fault	Possible Causes	Solutions
The output voltage are not stable.	N36100 is switching between CV and CC.	Change the setting.
The output voltage is wobbly.	The sense terminal is not connected.	Connect to sense terminal, using the green terminal supplied.

- ◆ High output voltage ripple.

Table 28

Fault	Possible Causes	Solutions
The ripple is high sometimes.	The output voltage is out of range.	Adjust the output voltage.
The ripple is high in another operation environment.	There is strong electromagnetic interference nearby.	Stay away from the interference.