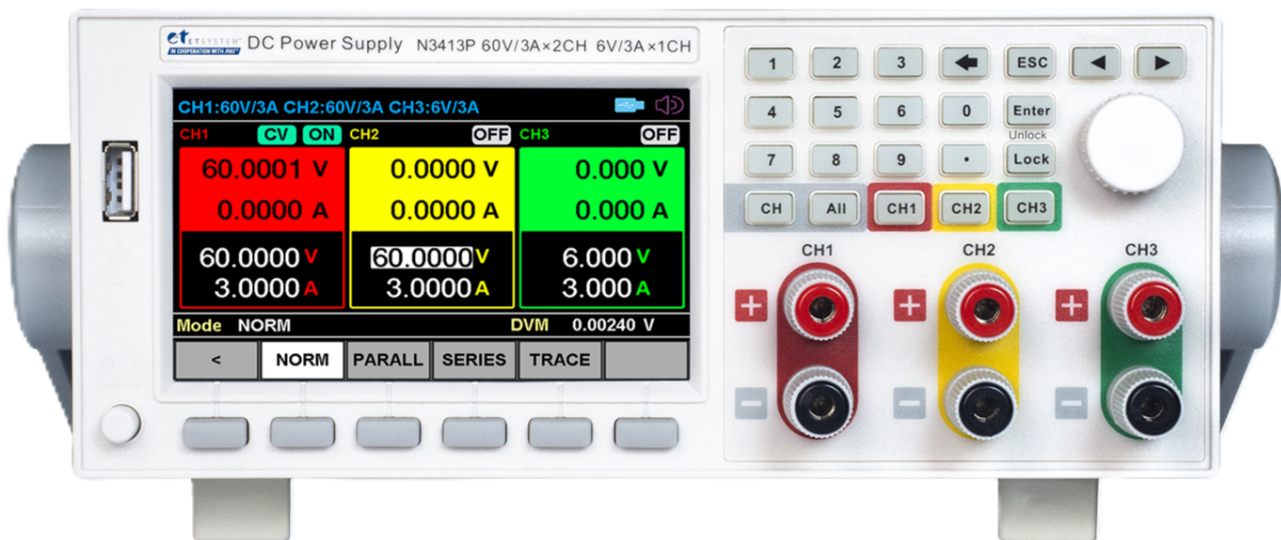


Manual: N3410 Series

Triple-channel Programmable DC Power Supply



Version: 27.01.2026

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Contents

1 PREFACE	1
2 SAFETY INSTRUCTIONS	2
2.1 Safety Notes	2
2.2 Safety Symbols	2
3 PRODUCT	3
3.1 Brief Introduction	3
3.1.1 Features	3
3.2 Dimension	4
3.3 Front Panel Introduction	5
3.3.1 Function Button	6
3.3.2 Knob	7
3.3.3 Screen	7
3.3.4 DC Output Port	9
3.4 Rear Panel Introduction	10
3.4.1 AC Input Connection	11
3.4.2 LAN Port	11
3.4.3 RS232 Serial Connection	12
3.4.4 Remote Sense	13
3.4.5 Grounding Screw	15
3.5 Model&Accessories Selection	15
3.5.1 Model Selection	15
3.5.2 Accessories Selection	16
4 INSPECTION & INSTALLATION	17
4.1 Inspection	17
4.2 Connection to Power Cord	18
4.3 Power-ON Check	18
5 OPERATION	20
5.1 V/I Set	20
5.2 Protect	20
5.3 Output Mode Setting	22
5.3.1 Parallel Mode	23
5.3.2 Series Mode	24
5.3.3 Trace Mode	25
5.4 Configuration	27
5.5 SEQ	28
5.6 SEQ Edit	29

5.8 Graph	32
6 APPLICATION SOFTWARE INSTALLATION & CONFIGURATION	33
6.1 PC Software Configuration	33
6.2 Application Software Installation and Uninstallation	33
6.2.1 Installation	33
6.2.2 Uninstallation	34
6.3 Connection to PC and Preparation	34
6.3.1 Port Connection	34
6.3.2 Disabling operating system standby mode	35
6.3.3 Network IP Address Setting	39
6.4 Menu	46
6.5 Configuration	47
6.5.1 Hardware Configuration	47
6.5.2 Advanced Configuration	48
6.5.3 Online/Offline	49
7 FUNCTION	50
7.1 Device List	50
7.2 Info Echo	50
7.3 Graph Echo	51
7.4 Device ON/OFF	51
7.5 All Channel ON/OFF	52
7.6 Control Mode	52
7.7 Log	53
8 MAINTENANCE AND SELF-INSPECTION	55
8.1 Regular Maintenance	55
8.2 Fault Self-inspection	55
9 MAIN TECHNICAL DATA	56

1 Preface

Dear Customers,

First of all, we greatly appreciate your choice of N3410 series programmable DC power supply (N3410 for short). We are also honored to introduce our company, NGI Technologies Company Limited (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 N3410 series programmable 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 N3410, 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 N3410'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

N3410 series is a triple-channel programmable DC power supply with high performance and high reliability. N3410 is with half 19 inch 2U size, integrating three independent output channels, and supporting both front and rear wiring. It has compact size and elegant appearance. N3410 supports both benchtop application with carrying handle and tilt stand, and supports rack installation for system integration. Test and measurement information is displayed intuitively on the 4.3 inch LCD screen. It provides DVM measurement as an optional function to meet different test demands.

3.1.1 Features

- Voltage range: 6V/32V/60V, supporting series connection to increase voltage
- Current range: 3A/5A, supporting parallel connection to increase current
- 3 channels in a standalone, each channel isolated
- Low ripple&noise
- High accuracy and resolution, as low as 0.1mV/0.1mA¹
- Dynamic response time less than 1ms
- Supporting series, parallel and trace output modes
- High accuracy DVM measurement (for N3411P/N3412P/N3413P only)
- 4.3 inch LCD screen, supporting screenshot via USB port
- Sequence(SEQ) test function²
- Graph for real-time output waveform display³
- Half 19 inch 2U size with tilt stand
- Front and rear output terminals
- LAN port and RS232 interface

Remark 1: N3411E/N3412E/N3413E are with 10mV/1mA resolution.

Remark 2: SEQ is not available for N3411E/N3412E/N3413E.

Remark 3: Graph is not available for N3411E/N3412E/N3413E

3.2 Dimension

N3411 Series: 88.0mm(H)*214mm(W)*413.0mm(D);

N3412/N3413 Series: 88.0mm(H)*214mm(W)*461.0mm(D)

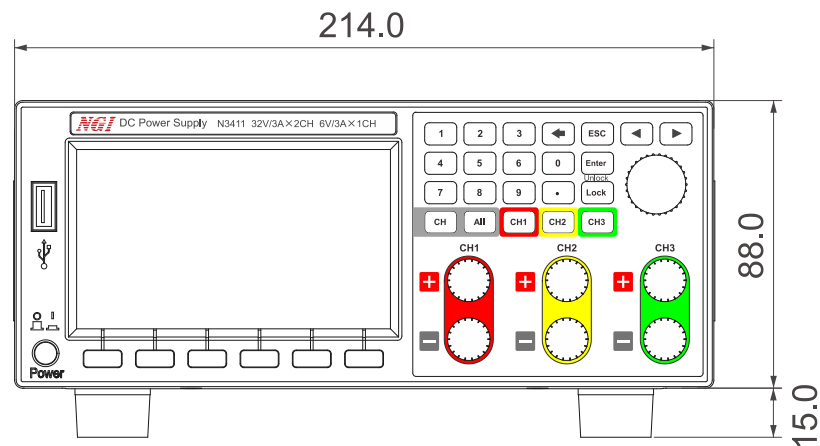


Figure 1 Front Panel Dimension(mm)

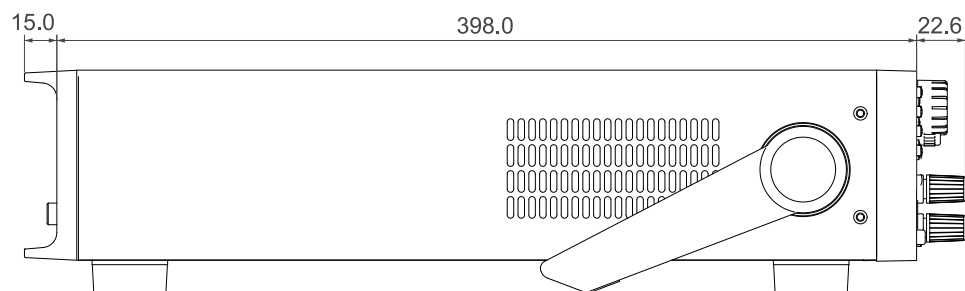


Figure 2 N3411 Series Master Chassis side Dimension(mm)



Figure 3 N3412/N3413 Series Master Chassis side Dimension(mm)

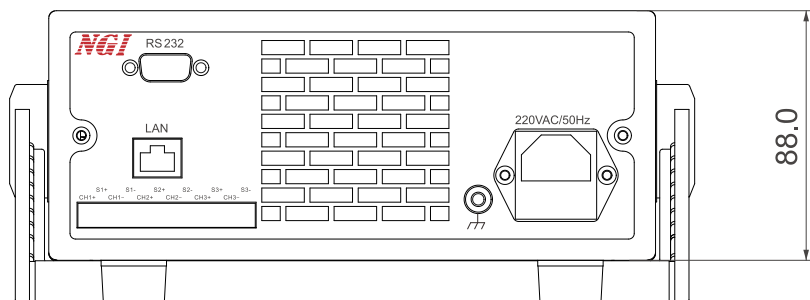


Figure 4 Rear Panel Dimension(mm) (N341X/N341XE Series)

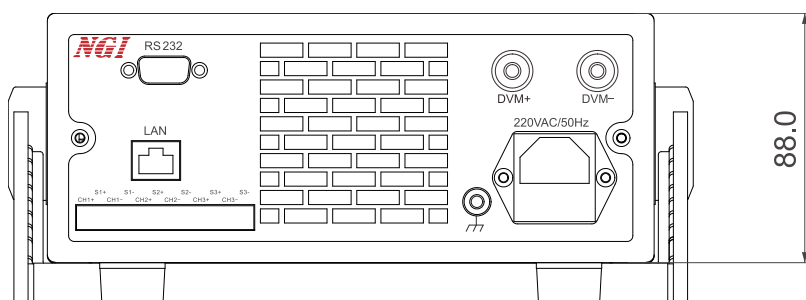


Figure 5 Rear Panel Dimension(mm) (N341XP Series)

3.3 Front Panel Introduction

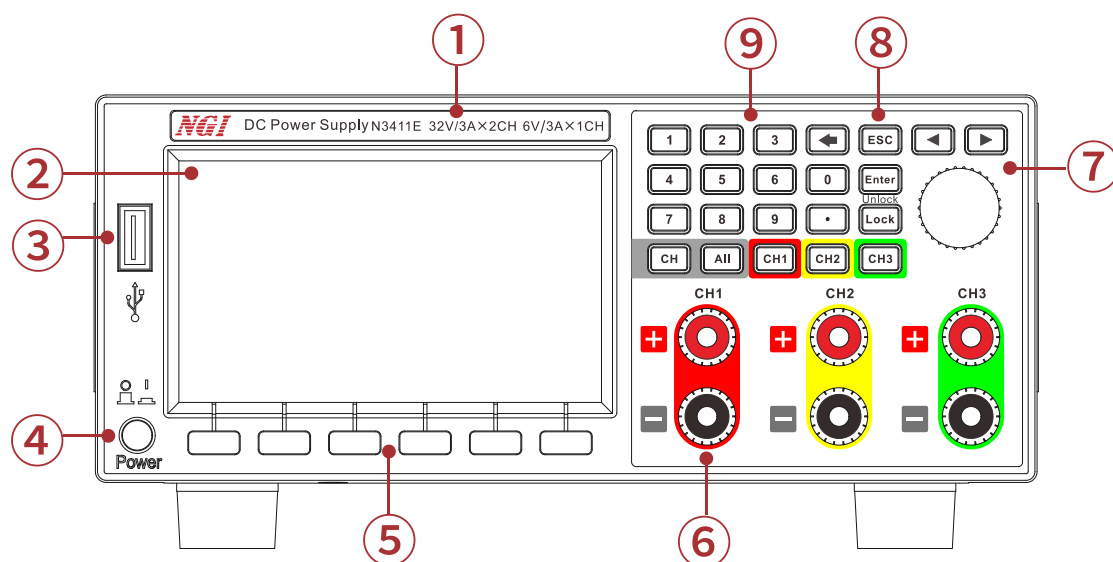


Figure 6 Front Panel

Table 2

Number	Name	Function
1	Device model	Displaying model number
2	Screen	Displaying data
3	USB port	For USB flash drive connection
4	Power switch	Power control
5	Shortcut button	Shortcut button for the function at the bottom of screen
6	Output interface	Output interface, red for positive(+), black for negative(-)
7	Knob/left&right button	By rotating knob: to select the required item, adjust the parameter By pressing knob: to enter the edit interface, confirm the input
8	Function button	Please see below chapter description.
9	Numeric button	For digit input

3.3.1 Function Button

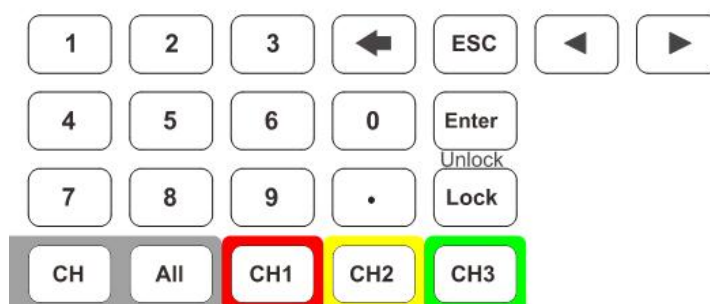


Figure 7 Button

Table3

Button	Function
	Channel switch
	To turn on/off the output for all three channels
	Single channel control
	To lock/unlock
	To confirm
	To exit

	To delete
 	To move the cursor

3.3.2 Knob

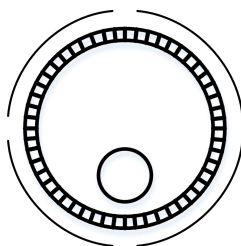
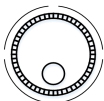


Figure 8 Knob

Table 4

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

3.3.3 Screen

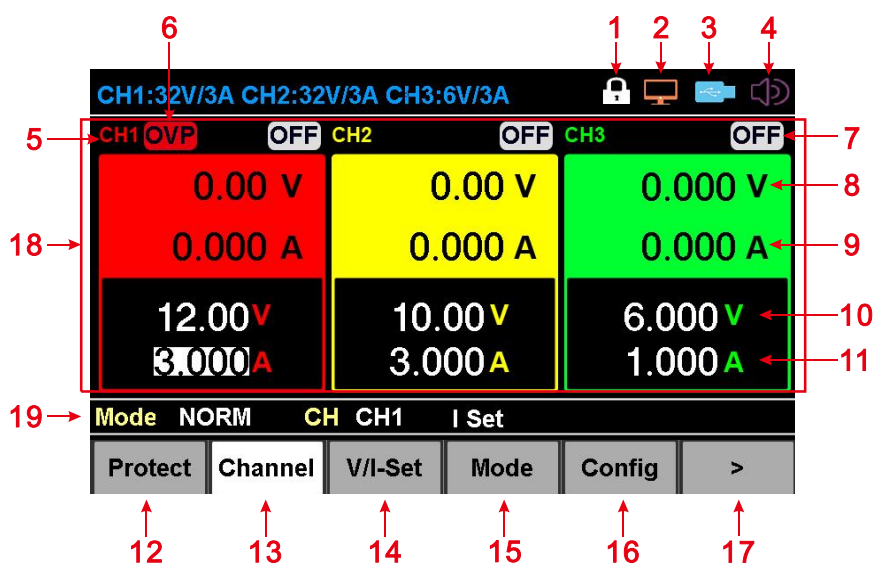


Figure 9 Screen

Table 5

No.	Definition	Description
1	Lock	Power keypad locked, other key input invalid
2	LAN mark	The power supply is connected to a PC or other control device via a network cable
3	USB mark	Power supply via USB connection to memory disk
4	Buzzer mark	Power button with buzzer alert message
5	Channel mark	Three channel number
6	Alarm	To display alarm information
7	Status	OFF/CV ON/ CC ON
8	V-Readback	Readback voltage
9	I-Readback	Readback current
10	V-Set	Voltage setting
11	I-Set	Current setting
12	Protection menu	Press Protect to set OVP, OCP of the three channels
13	Channel menu	Press Channel to set cycle switch between CH1-CH3
14	V/I set menu	Press V/I Set Continuously to set cycle switch between voltage and current.
15	Mode	To set source mode
16	System	To configure relevant information
17	More	Including Time Shutdown, SEQ, Graph and About us
18	Readback menu	Voltage/current readback settings for the three channels CH1 is red, CH2 is yellow, CH3 is green
19	Present mode	Selected channel and parameter cursor position

3.3.4 DC Output Port

The N3410 series supports both front panel wiring and rear panel wiring for the output channels. The front panel output terminals are shown in Figure 10 and the rear panel output terminals are shown in Figure 11.

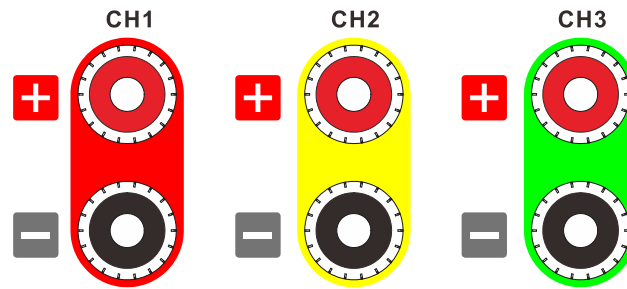


Figure 10 Front Panel Output Terminal

N3410 series has 3 output modes such as CH1/CH2 series, parallel, tracking, etc., which can be switched locally with one key, see chapter 5.3 for details, no external series and parallel wiring is required to meet the needs of different ranges and voltage outputs.

Please select the appropriate output connection cable according to the product model, do not use too thin a cable, in order to avoid overheating of the connection cable, resulting in danger.

3.4 Rear Panel Introduction

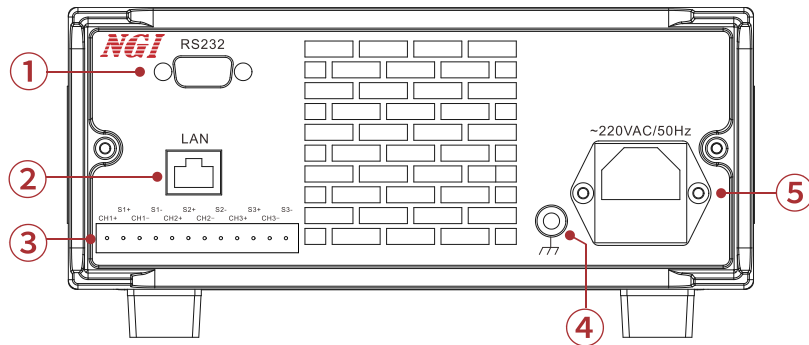


Figure 11 Rear Panel (N341X/N341XE Series)

Table 6

Number	Name
1	RS232 interface
2	LAN port
3	Output interface
4	Grounding screw
5	AC power socket

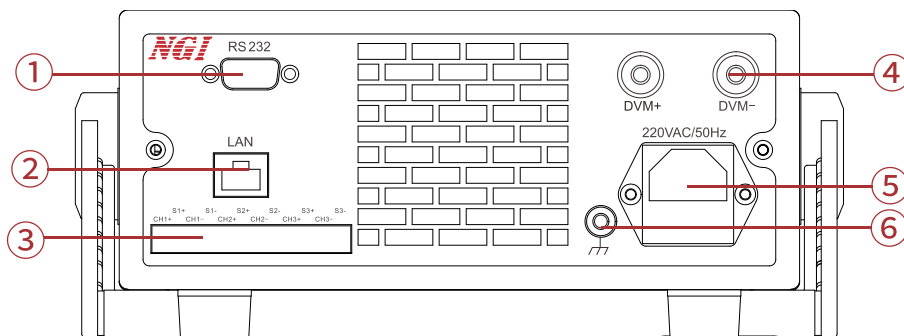


Figure 12 Rear Panel (N341XP Series)

Table 7

Number	Name
1	RS232 interface
2	LAN port
3	Output interface
4	DVM interface
5	AC power socket
6	Grounding screw

3.4.1 AC Input Connection

Notes for AC power input connection:

- Single phase input, Please refer to the voltage mark at the rear panel.
- Reliable ground 

3.4.2 LAN Port

The N3410 series uses a standard RJ45 (LAN) interface for easy wiring, operation and system integration.

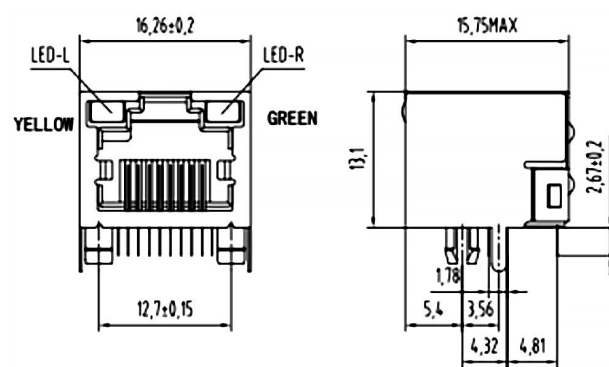


Figure 13 RJ45

The default connection to PC is via Ethernet. An Ethernet cable is provided as standard accessory in N3410 package. Default IP: 192.168.0.123.

Steps for connection to PC:

1. Check if N3410 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 N3410 LAN port.
5. Check if the indicator light at LAN port on N3410 is flashing.

Note 1: If the indicator light at LAN port on N3410 does not flash after the Ethernet cable was plugged, please check whether the LAN port on computer is working properly, the information is correct and make sure the computer is switched on correctly, the IP address at the same segment.

Note 2: After completing the above operations, the indicator light at LAN port on N3410 will stop after a short flash. At this time, the hardware network connection has been established.

Please check the following items when the PC cannot remote the instrument:

1. Please check whether the network cable connection between the PC side and the instrument is loose.
2. Make sure the Ethernet configuration information is correct.
3. PC Ethernet is enabled.
4. Whether the IP address of the instrument and the IP address of the PC are in the same gateway.

3.4.3 RS232 Serial Connection

RS232 cable is provided as standard accessory in N3410 package. Default baud rate for RS232 interface is 9600.

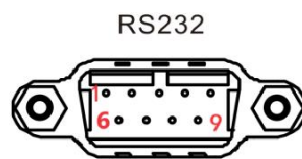


Figure 14 RS232 Interface

The electrical characteristics of RS232 specify a logic “1” of -3V to -15V and a logic “0” of +3V to +15V. The pins of the RS232 interface include Receive Data (RXD), Transmit Data (TXD), etc.

Table 8

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

3.4.4 Remote Sense

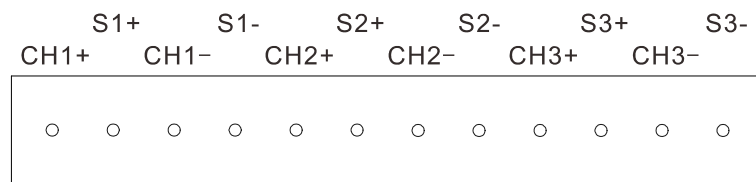


Figure 15 Remote sense

Table 9

Pin	Description
CH1+	CH1 Output +
S1+	CH1 Sense +
CH1-	CH1 Output -
S1-	CH1 Sense -
CH2+	CH2 Output +
S2+	CH2 Sense +
CH2-	CH2 Output -

S2-	CH2 Sense -
CH3+	CH3 Output +
S3+	CH3 Sense +
CH3-	CH3 Output -
S3-	CH3 Sense -

3.4.4.1 Local Sense

With local sense, the output voltage is regulated at the power supply output terminals, and this method does not compensate for the voltage drop across the load line, and is recommended for low load currents, or when the load regulation ratio is not very critical.

3.4.4.2 Remote Sense

When N3410 is working, due to the parasitic resistance of the wire, the voltage at the load input terminal will be lower than the voltage at N3410 output terminal after the current flows through the wire, which will affect the output accuracy of N3410. N3410 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-.

When the load adjustment rate is very critical, it is recommended to use the remote sense, the operation procedure is as follows:

- 1, Turn off the power switch;
- 2, Remove the jumper on the 4PIN green connector;
- 3, choose the appropriate wire to connect S+ to the positive terminal of the load, and S- to the negative terminal of the load;
- 4, plug the connector into the four-wire interface on the back panel of the power

supply;

5, Connect the power supply output terminals to the load normally;

6, Turn on the power switch

Note: The maximum compensated voltage drop at the SENSE terminal is not to exceed 2V.

3.4.5 Grounding Screw

The chassis of N3410 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.

3.5 Model&Accessories Selection

3.5.1 Model Selection

Table 10

Model	Specification	Size
N3411	32V/3A/210W	1½19 inch /2U
N3411P	32V/3A/210W	1½19 inch /2U
N3411E	32V/3A/210W	1½19 inch /2U
N3412	32V/5A/338W	1½19 inch /2U
N3412P	32V/5A/338W	1½19 inch /2U
N3412E	32V/5A/338W	1½19 inch /2U

N3413	60V/3A/378W	1½19 inch /2U
N3413P	60V/3A/378W	1½19 inch /2U
N3413E	60V/3A/378W	1½19 inch /2U

3.5.2 Accessories Selection

When using N3410, users can separately purchase accessories to cope with different needs. Including the following:

1. Sense wire

N3410 can be optionally equipped with SENSE for remote sense, RVVSP 2*0.3 mm², 2-core shielded twisted sheath cable.

2. Rack mounting kit

Can be installed in a standard 19-inch chassis.



Note

Accessories are sold separately, so user needs to purchase separately.

4 Inspection & Installation

4.1 Inspection

After receiving N3410, 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. Check the whole instrument. If N3410 chassis is damaged or has abnormal operation, please contact our authorized distributor or NGI.

Table 11

Accessories	Pc	Description
AC power cord	1	220V AC/10A
RS232 crossover cable	1	Female to female, length1.5m
Network cable	1	Blue, 2m
Testing line	1	4mm Banana Head to 10mm Crocodile Clip Cable, 1 each Red and Black, 10A, 1m
USB flash drive	1	8G
Test report	1	Test report
Quick Selection Guide	1	English type



Note

1. If there is missing or damaged equipment, contact NGI immediately. Please do not send the device back until you have received a positive answer.
 2. If you confirm that there is no problem with the packaging, please store it properly. The instrument should be returned to the factory for service in accordance with the packing requirements.
-

4.2 Connection to Power Cord

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

Warnings

- Make sure that the voltage matches the rated voltage of the instrument;
- Make sure the power switch is off;
- Please use the power cord supplied by our company, and connect the power cord to a three-pronged socket with a protective grounding terminal;

Connect one end of the power cord to the input socket on the back panel of the instrument and the other end to the three-pronged socket with a protective grounding terminal.

Three-pronged sockets should be wired in such a way that, facing the socket, the right hole is connected to the live wire (L), the left hole is connected to the neutral wire (N), and the top hole is connected to the protective earthing conductor (PE). Such wiring helps to ensure that the metal casing of electrical equipment can quickly conduct electricity to ground in the event of a fault, thus reducing the risk of electrocution.

4.3 Power-ON Check

After receiving the N3410, please follow the steps:

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.

5 Operation

5.1 V/I Set

Take channel 2 for example to set voltage and current.

1. Press button below **Channel** on the screen to switch to channel 2.
2. Press button below **V/I-Set** on the screen and move cursor to voltage/current setting area.

3. Press  or .

4. Input digit by pressing numeric buttons or pressing   to move the cursor and rotate  to adjust the value.

5. Press  or  to confirm the setting.

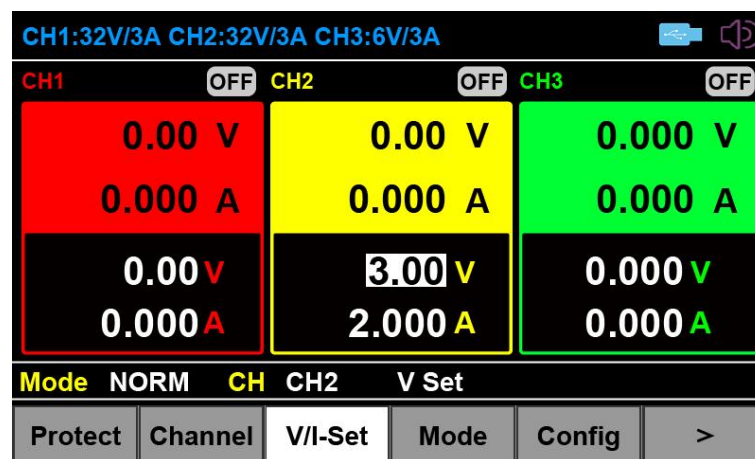


Figure 16 Voltage/Current Setting

5.2 Protect

The OVP/OCP setting range of N3410 series is shown below. By default, OVP/OCP is set to the maximum value.

Table 12

Model	N3411	N3412	N3413
OVP Setting Range (CH1/CH2)	0~64.05V	0~64.05V	0~127.05V
OCP Setting Range (CH1/CH2)	0~6.5A	0~10.71A	0~6.5A

Steps to set protection parameters:

1. Press button below **Protect** on the screen.
2. Press  or  on OVP/OCP setting area.
3. Input digit by pressing numeric buttons or pressing   to move the cursor and rotate  to adjust the value.
4. Press  or  to confirm the setting.
5. Press button below **Channel** on the screen to switch to other channels.
6. Press  to return to previous page.

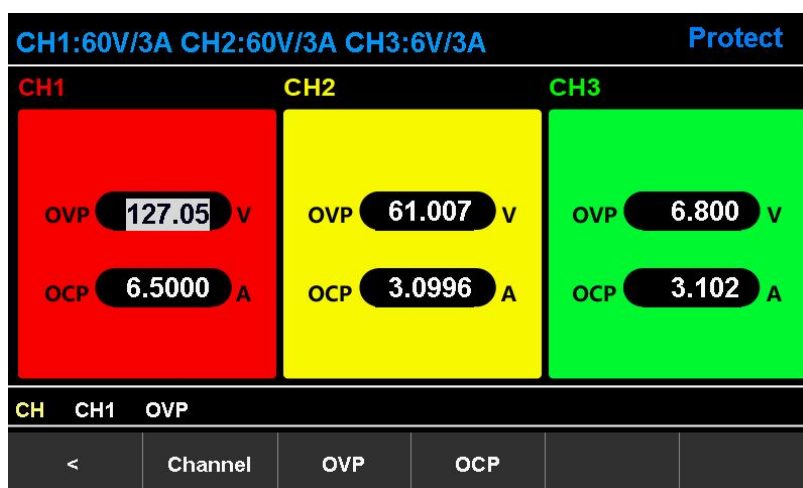


Figure 17 Protection Setting

When the output voltage/current is higher than OVP/OCP set value, N3410 will shut off output, and alarm OVP/OCP will be displayed on the screen. At this time, users can press  for three times continuously to clear the protection.

When overvoltage/overcurrent protection occurs, please also check whether OVP/OCP setting value is lower than output voltage/current. If this is not the case, please contact our authorized distributor or NGL.

Note: When overvoltage/overcurrent occurs, the protection circuit inside N3410 will shut off output. If an active load such as a battery is connected to N3410 output interface, when overvoltage/overcurrent occurs, the current from the active load such as the battery is poured into the internal circuit of N3410, which will damage N3410. To avoid this situation, users can connect a diode in series with the output interface, as shown in the figure below.

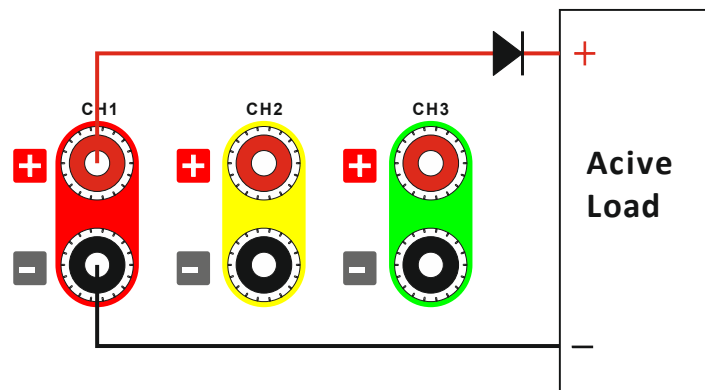


Figure 18 Active load wiring diagram

5.3 Output Mode Setting

Please press the button below **Mode** on the screen to enter output mode setting. The default is normal (NORM) mode. In normal mode, channel 1, channel 2, and channel 3 output separately and are set individually. The other three optional output modes are parallel (PARALL), series (SERIES), and trace (TRACE) modes. Users can switch to the corresponding mode by pressing the corresponding button below the different modes, as shown in the figure below.

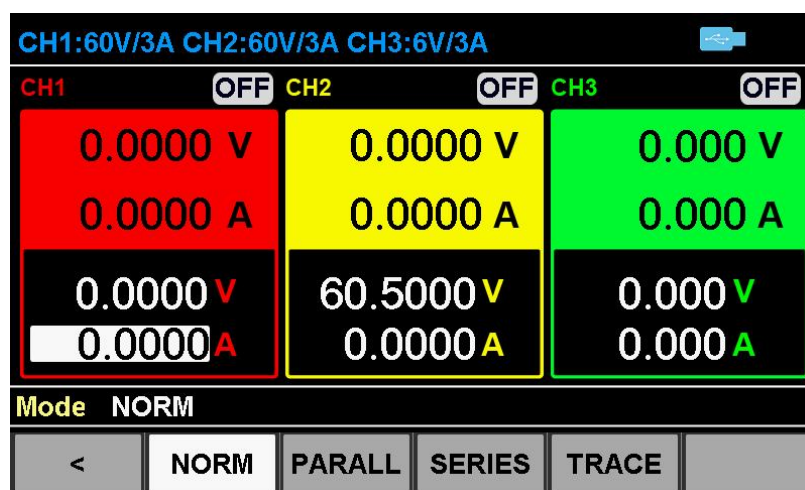


Figure 19 Output Mode Setting

5.3.1 Parallel Mode

Please press the button below **PARALL** on the screen and switch to parallel mode.

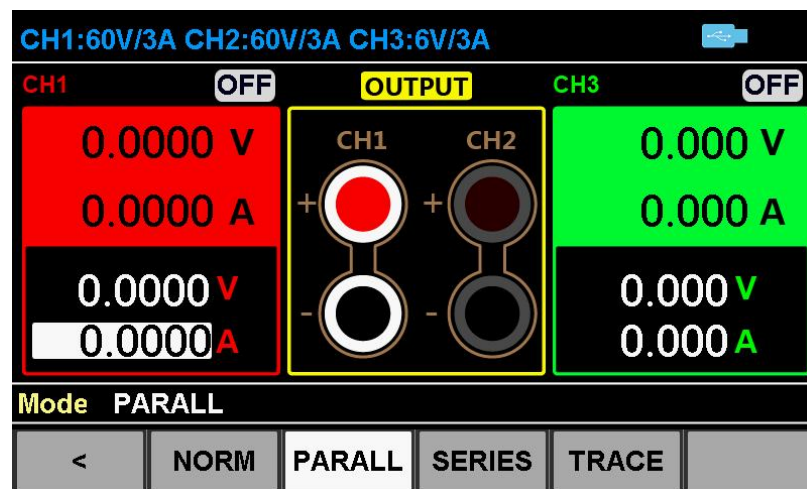


Figure 20 Parallel Mode

In parallel mode, the power supply can output 0-6A for N3411E/N3413E/N3411/N3411P/N3413/N3413P.

The power supply can output 0-32V for N3411E/N3412E/N3411/N3411P/N3412/N3412P and 0-60V for N3413E/ N3413/N3413P.

The parallel connection method is shown in the figure below.

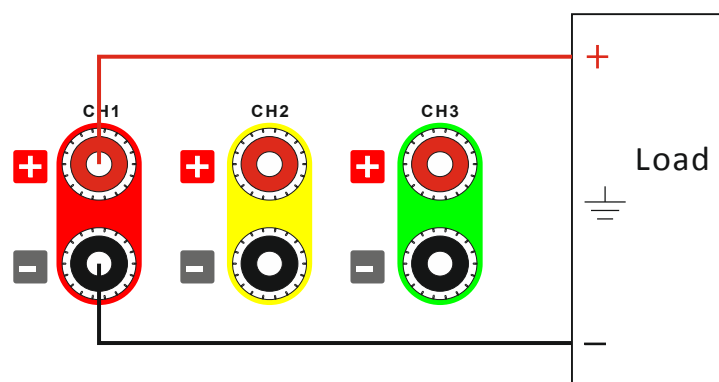


Figure 21 Parallel Mode Wiring Diagram

Steps to set voltage and current in parallel mode:

1. Press or on voltage/current setting area.
2. Input digit by pressing numeric buttons or pressing to move the cursor

and rotate  to adjust the value.

3. Press  or  to confirm the setting.

After completing setting, please press . ON icon will show at channel 1 and channel 2. The power supply starts output.

5.3.2 Series Mode

Please press the button below **SERIES** on the screen and switch to series mode.

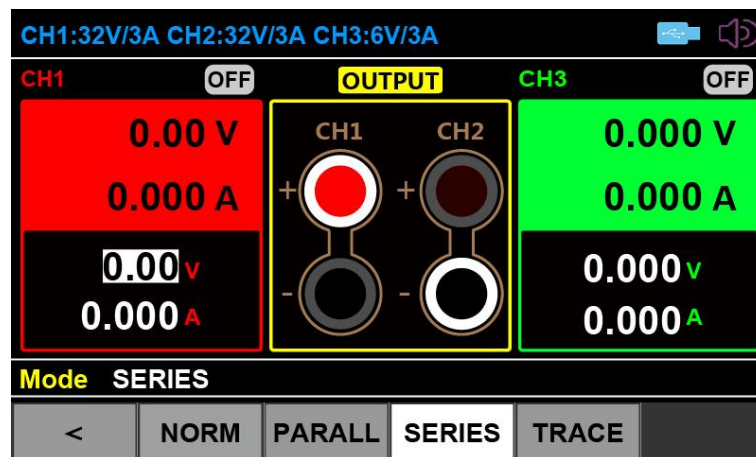


Figure 22 Series Mode

In series mode, the power supply can output 0-64V for N3411E/N3412E/N3411/N3411P/N3412/N3412P.

The power supply can output 0-3A for N3411E/N3413E/N3411/N3411P/N3413/N3413P and 0-5A for N3412E/ N3412/N3412P.

The series connection method is shown in the figure below.

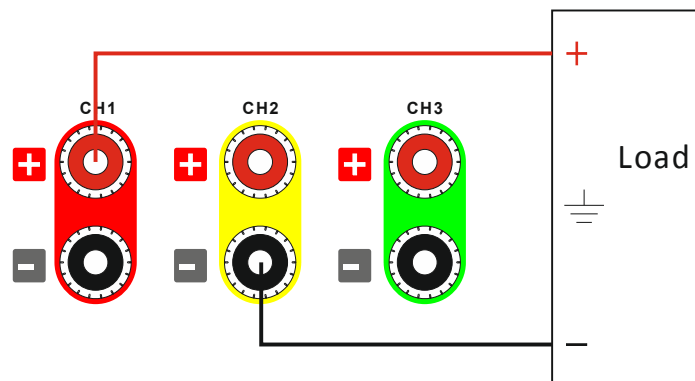


Figure 23 Series Mode Wiring Diagram

1. Press  or  on voltage/current setting area.
2. Input digit by pressing numeric buttons or pressing   to move the cursor and rotate  to adjust the value.
3. Press  or  to confirm the setting.

After completing setting, please press . ON icon will show at channel 1 and channel 2. The power supply starts output.

Note: It is not recommended to use constant current in series mode.

5.3.3 Trace Mode

Please press the button below **TRACE** on the screen and switch to trace mode.

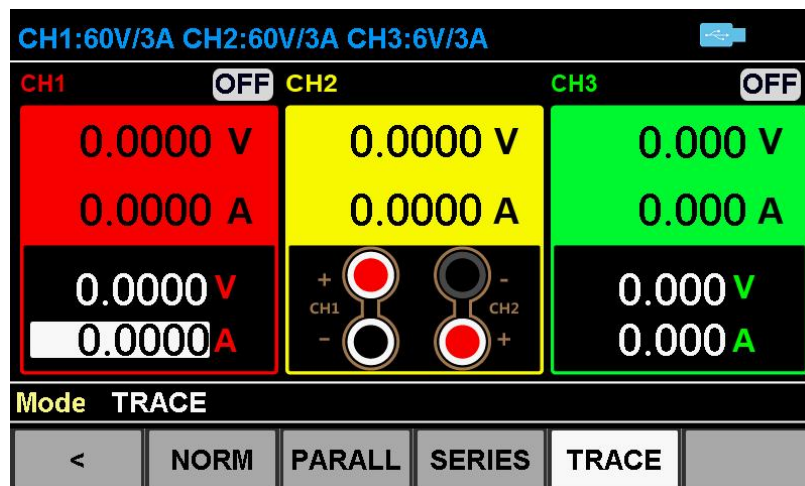


Figure 24 Trace Mode

In trace mode, channel 2 follows channel 1 to output the same value of negative voltage and negative current. Channel 2 trace voltage output can be set to -32V, and current output can be set to -3A, following channel 1. The trace connection method is shown in the figure below.

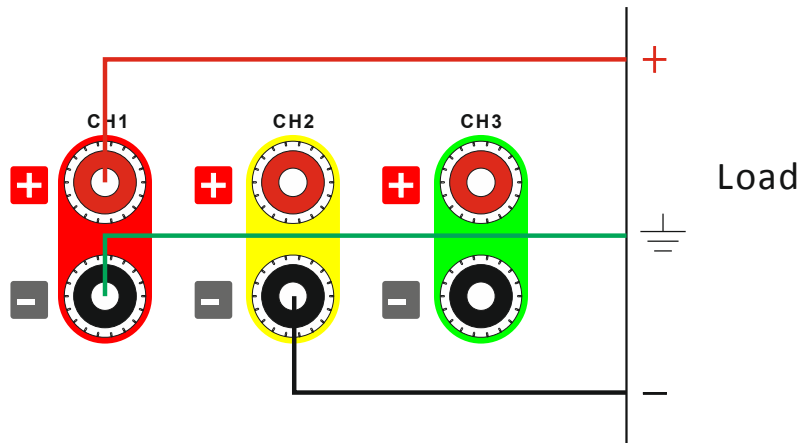


Figure 25 Trace Mode Wiring Diagram

Steps to set voltage and current in trace mode:

1. Press  or  on voltage/current setting area.
2. Input digit by pressing numeric buttons or pressing   to move the cursor and rotate  to adjust the value.
3. Press  or  to confirm the setting.

After completing setting, please press . ON icon will show at channel 1 and channel 2. Channel 2 follows channel 1 to output the same voltage and current in negative.

5.4 Configuration

Users can set IP address, baud rate, beeper, sample rate and output position in configuration interface.

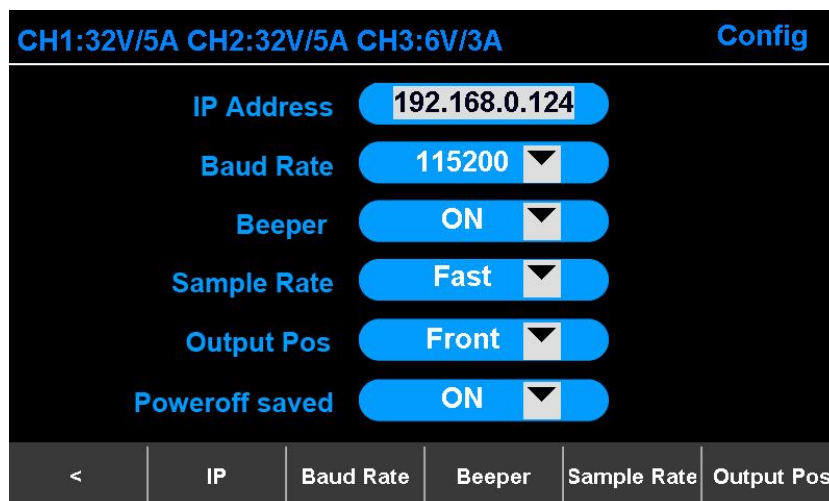


Figure 26 Configuration Interface

Steps to set parameters under **Config**:

1. Press button below **Config** on the screen to enter configuration interface.
2. Press button below **IP** on the screen.
3. Press  or  on IP address setting area.
4. Input digit by pressing numeric buttons or pressing   to move the cursor and rotate  to adjust the value.
5. Press  or  to confirm the setting.
6. Press buttons below **Baud Rate/Beeper/Sample Rate/Output Pos/Poweroff saved** separately.
7. Press  or  on Baud Rate/Sound/Sample Rate/Output Pos/Poweroff Saved setting area.
8. Press   or rotate  to select the required parameter.
9. Press  or  to confirm the setting.

Note: Output Pos is for output wiring position. The options are front and rear.

5.5 SEQ

The principle of sequence mode is easy to understand. it outputs voltage and current according to the test steps edited by the user, and switches to the next step when the time of a single step is reached.

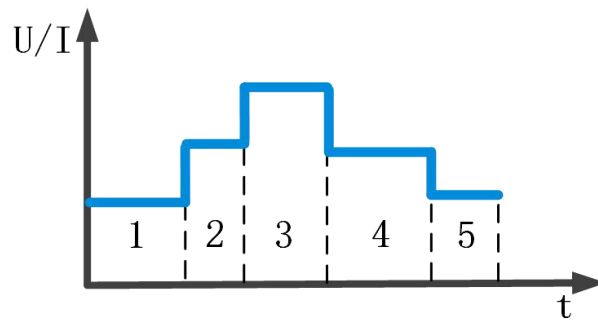


Figure 27 SEQ mode

Please press $\triangleright$ to find more functions and press button below **SEQ** on the screen.

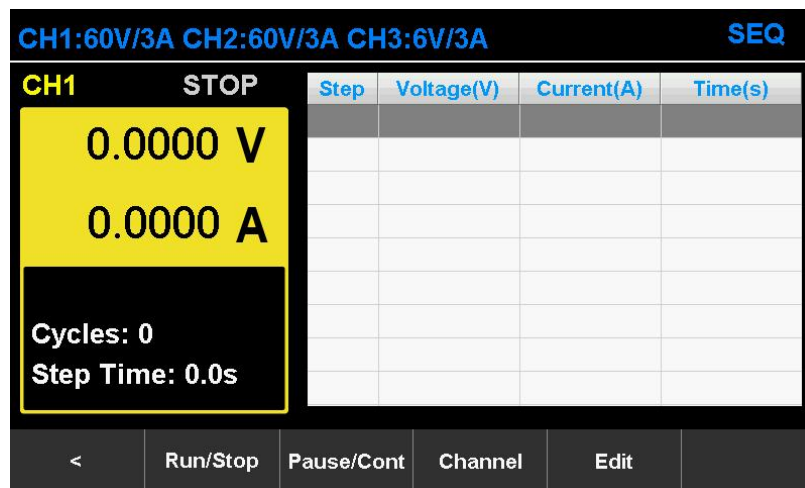


Figure 28 SEQ Interface

- Run/Stop
- Pause/Cont: pause or continue
- Channel: channel switch

- Edit: SEQ file edit

5.6 SEQ Edit

Please press button below **Edit** on the screen under SEQ interface.

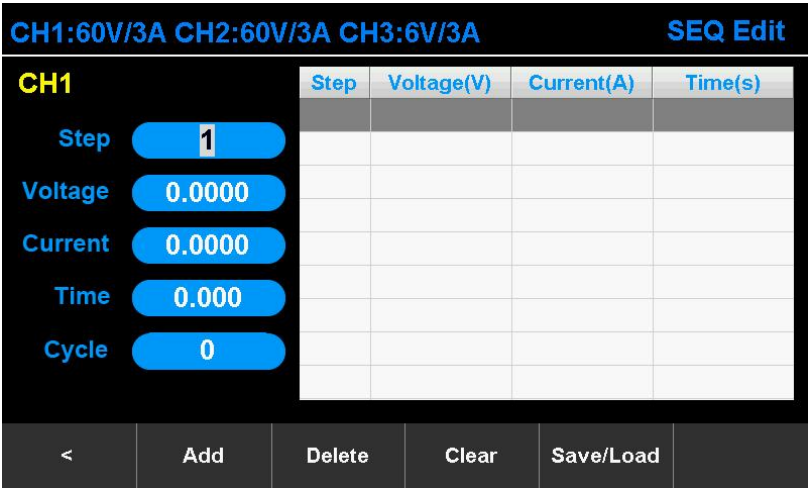


Figure 29 SEQ Edit

Table 13

NO.	Item	Function
1	Step	Toggles the current test step, up to 500 steps
2	Time	Set the step running time, range 0.001 to 60000s
3	Voltage	Set voltage
4	Current	Set current
5	Cycle	Cycle times

- Add

The operation steps can be added by pressing button below Add on the screen. It supports maximum 500 steps. The setting procedure is as follows.

Rotate  or press   to move cursor to **Step**→ Press  or  → Input digits

by numeric buttons→ Press  or  to confirm setting.

- Delete: delete the present step
- Clear: clear all steps
- Save/Load: save or download

Please press button below **Save/Load** on the screen to enter SEQ Load interface.

Please rotate  or press   to move to the required parameter. There are four parameters: Operation, Position, File name and Start Load.

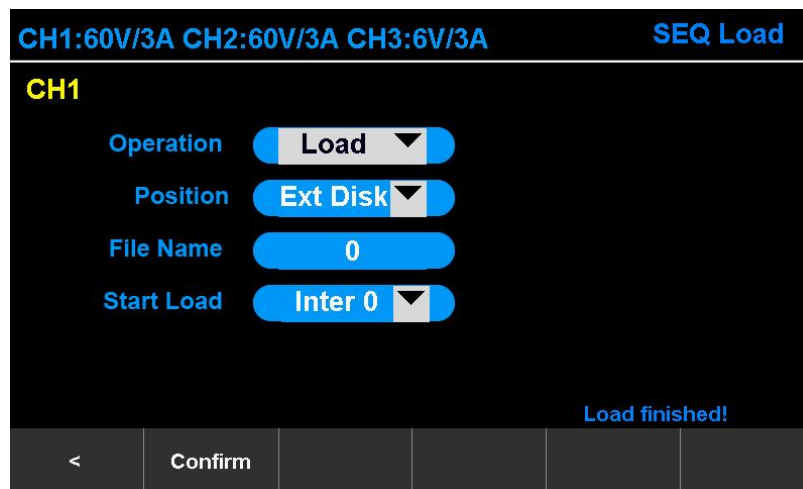


Figure 30 SEQ Load

- Operation: two options- Load or Save
- Position: select the storage position for Save/Load. Options are Ext Disk(USB flash drive) and Inter N(N3410, N for 0-9).
- File name: set file name
- Start Load

After N3410 is turned on, the device will load the file saved in this location to the local location.

5.7 Timer

After the timer function is turned on, at this time users start output of the power supply, the countdown starts on the interface. When the time is up, the power supply shuts off the output. The time accuracy is 1s. In the power output state, the countdown is still workable with timer function turned off. Every time a channel output is turned on, the countdown will start again.

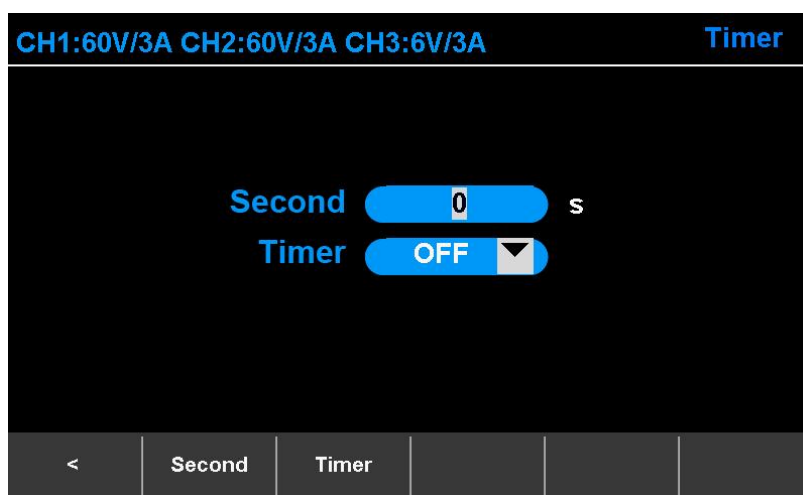


Figure 31 Timer Setting

Steps to set parameters under **Timer**:

1. Press $\triangleright$ to find more functions.
2. Press button below **Timer** on the screen to enter timer interface.
3. Press button below **Second** on the screen.
4. Press $\odot$ or Enter on time setting area.
5. Input digit by pressing numeric buttons or pressing $\square\leftarrow$ $\rightarrow\square$ to move the cursor and rotate $\odot$ to adjust the value.
6. Press $\odot$ or Enter to confirm the setting.
7. Press button below **Timer**.
8. Press $\odot$ or Enter on Timer setting area.
9. Press $\square\leftarrow$ $\rightarrow\square$ or rotate $\odot$ to select the required state.
10. Press $\odot$ or Enter to confirm the setting.

5.8 Graph

Please press $\triangleright$ to find more functions and press button below **Graph** on the screen.

The Graph interface can display the real-time graph of voltage and current of the specific channel, as shown in the figure below.

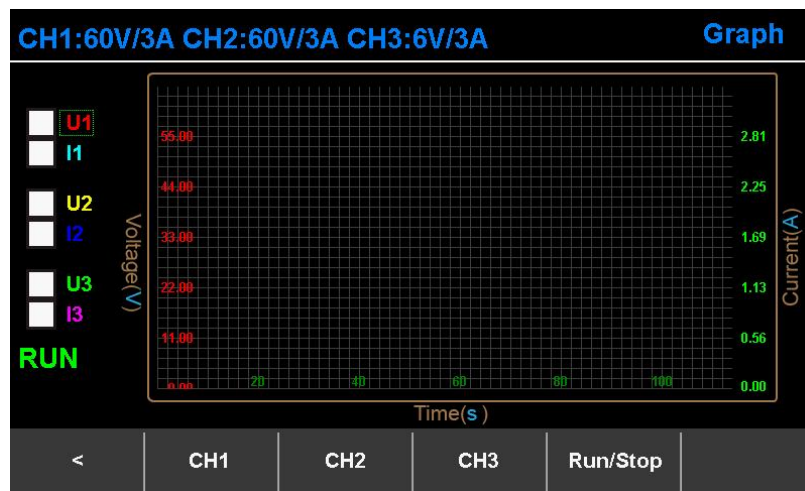


Figure 32 Graph Interface

- CH1/CH2/CH3: set displaying or concealing the graph for specific channel
- Run/Stop

6 Application Software Installation & Configuration

6.1 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: 80G and above
- ◆ Port: Ethernet port
- ◆ Operating system: Microsoft Windows 7 and above

6.2 Application Software Installation and Uninstallation

6.2.1 Installation

- 1) Find the installation program "N341X" from the USB flash drive in accessory bag.
- 2) Make double-click on the file and begin installation.

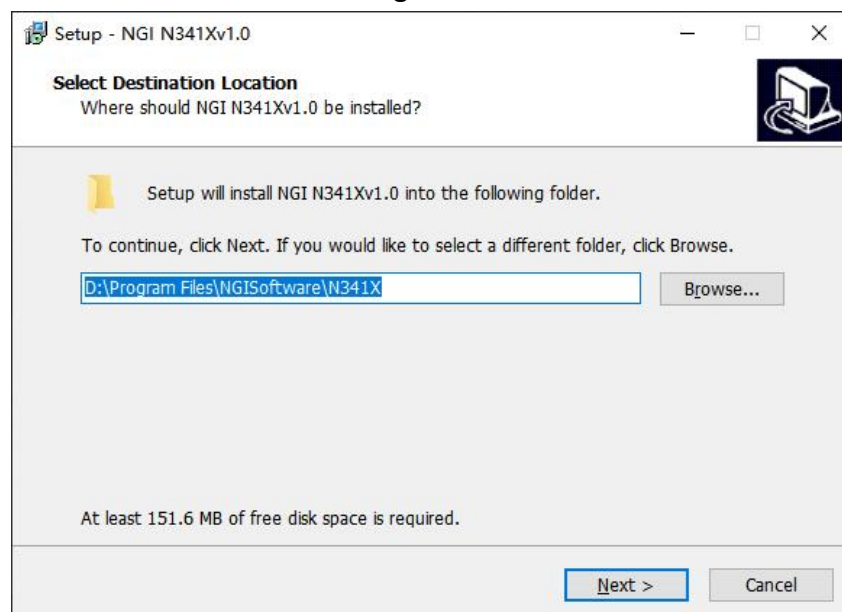


Figure 33 Program Installation

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

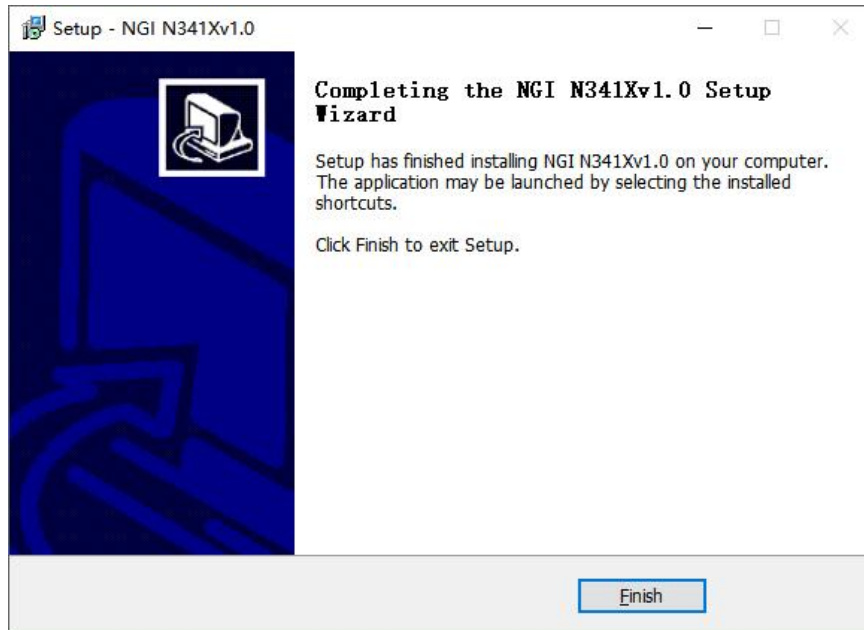


Figure 34 Installation Completed

6.2.2 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.

6.3 Connection to PC and Preparation

6.3.1 Port Connection

Please plug the Ethernet cable to PC Ethernet port and the other side to N3410 LAN port. After N3410 series is turn on, enter the system configuration interface to check the network IP. PC needs to keep the same network segment with N3410 in order to search the device. When master computer is in remote sense, configure the system parameters in the device interface , as shown in the following figure.

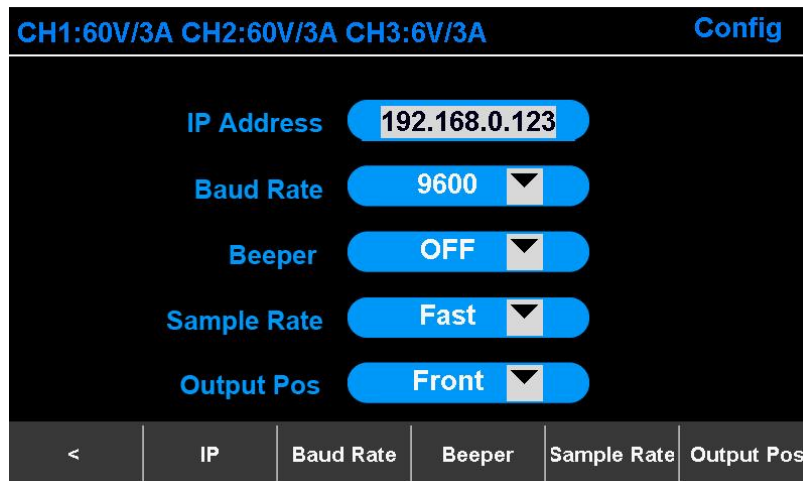


Figure 35 System Configuration

After the master computer is disconnected, wait for 3s-5s, and then press the **LOCK** to release the remote mode.

6.3.2 Disabling operating system standby mode

■ Windows 7 settings

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

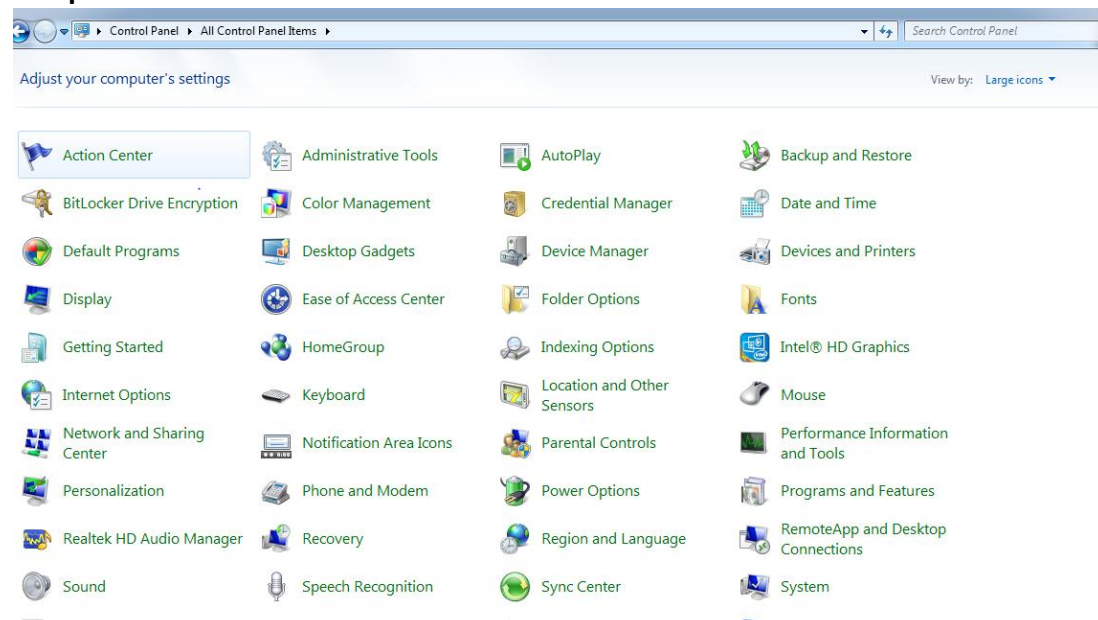


Figure 36 Windows 7 settings

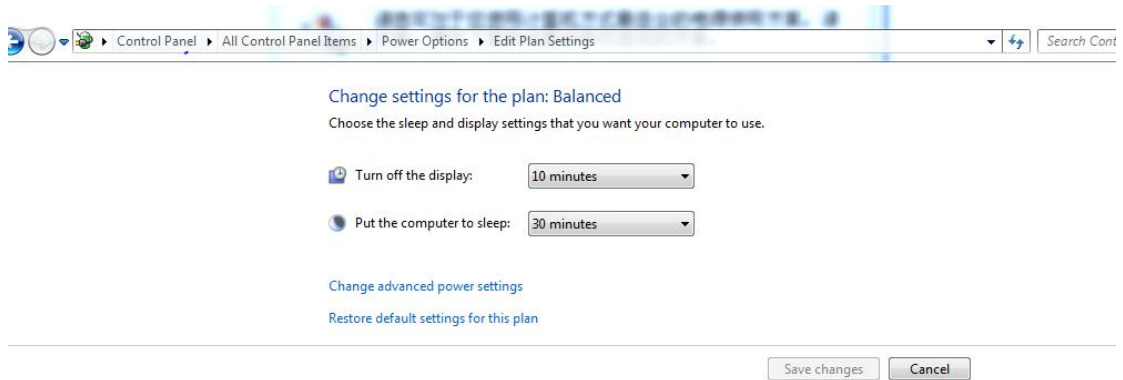


Figure 37 Windows 7 settings

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

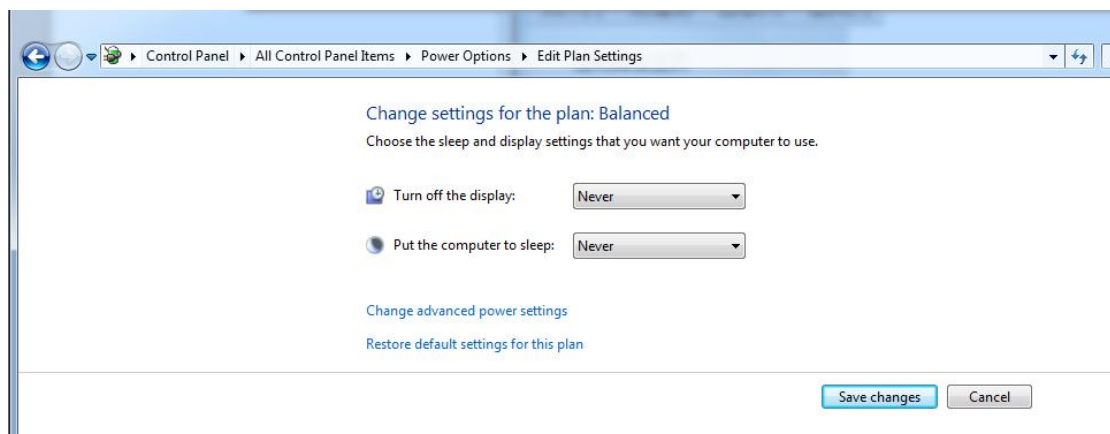


Figure 38 Windows 7 settings

■ Windows 10 settings

Click **Start**→Click **Settings**.

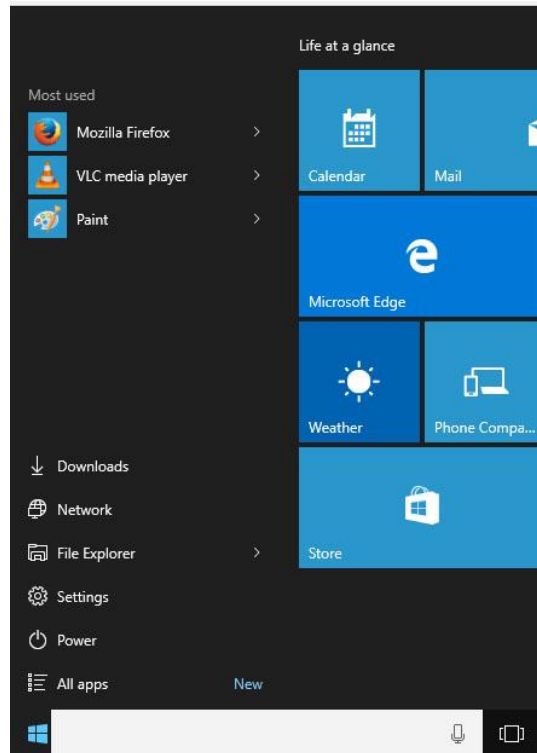


Figure 39 Windows 10 settings

Click **System**.

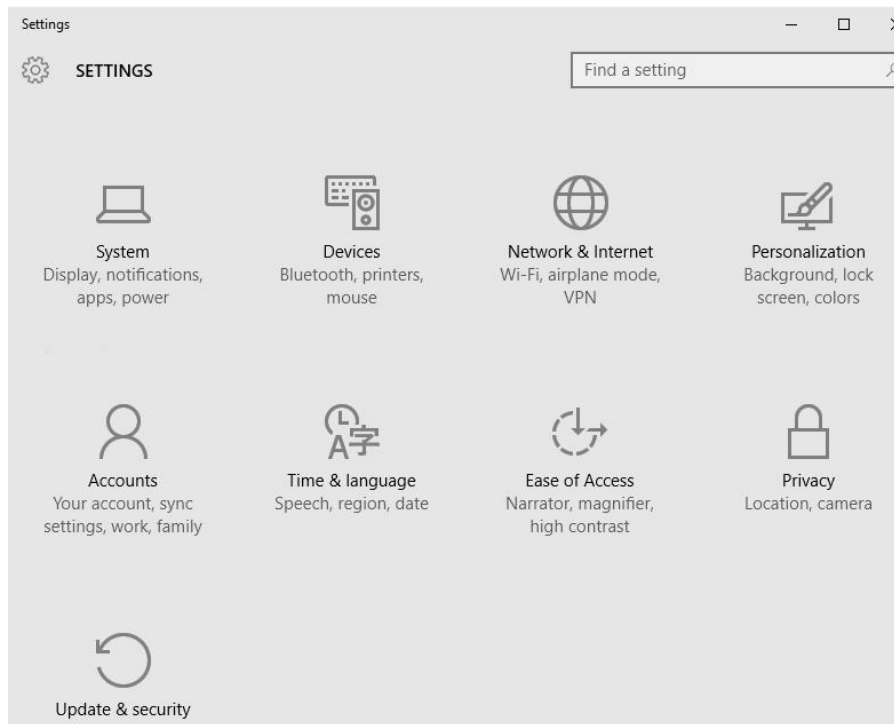


Figure 40 Windows 10 settings

Click **Power & sleep**.

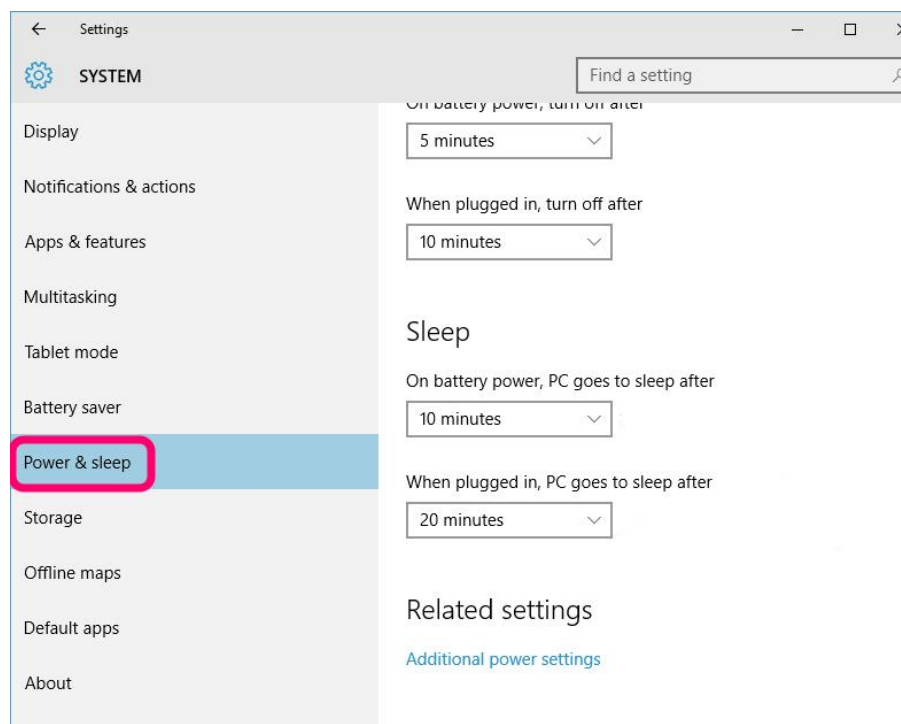


Figure 41 Windows 10 settings

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

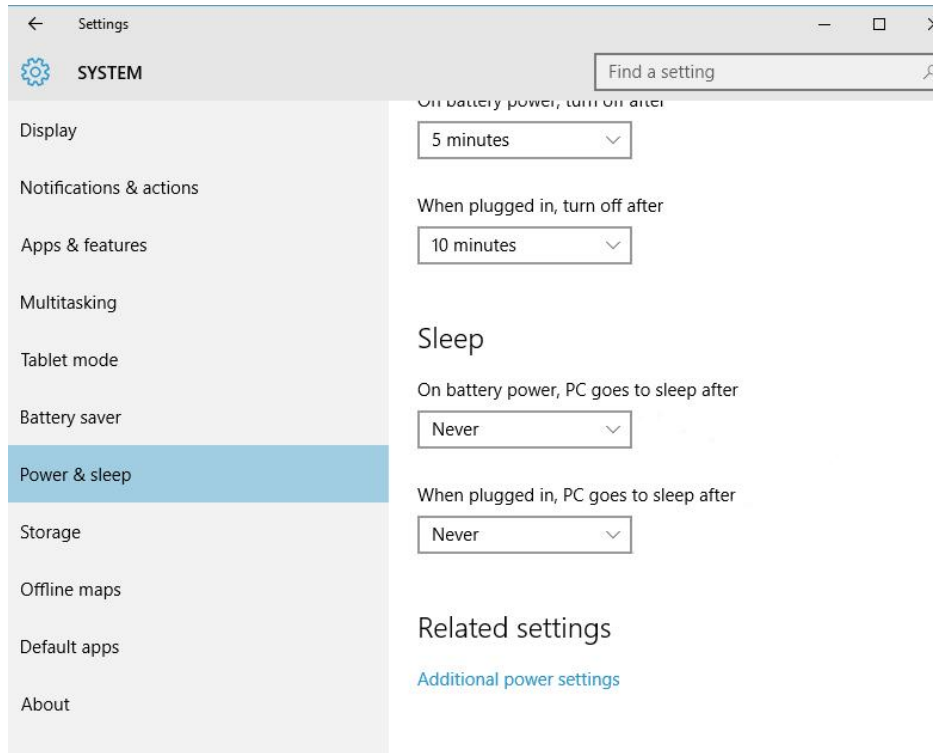


Figure 42 Windows 10 settings

6.3.3 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 N3410. But IP addresses should be different.

■ Windows 7 Setting

Take computer IP address 192.168.0.121 on Windows 7 setting for example.

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

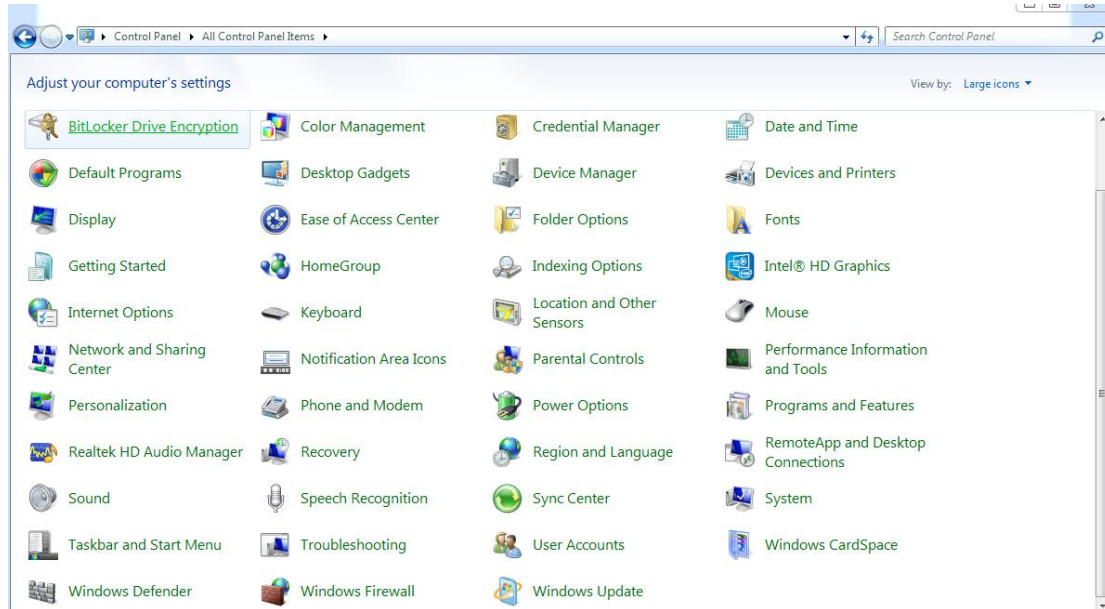


Figure 43 Network IP Address Setting

Click **Change adapter settings**.

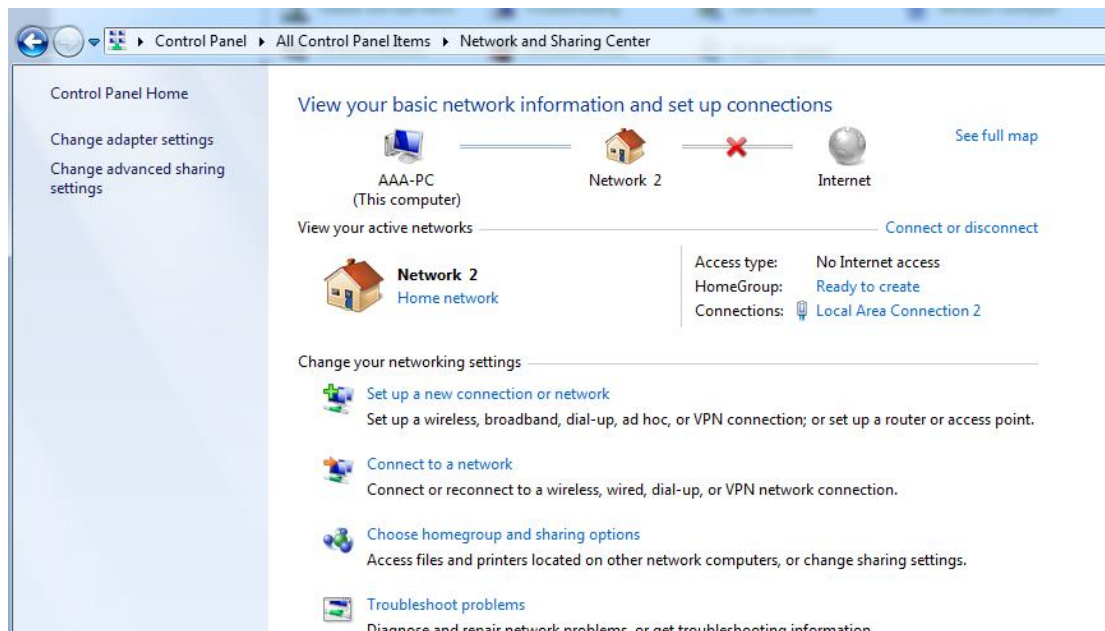


Figure 44 Network IP Address Setting

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

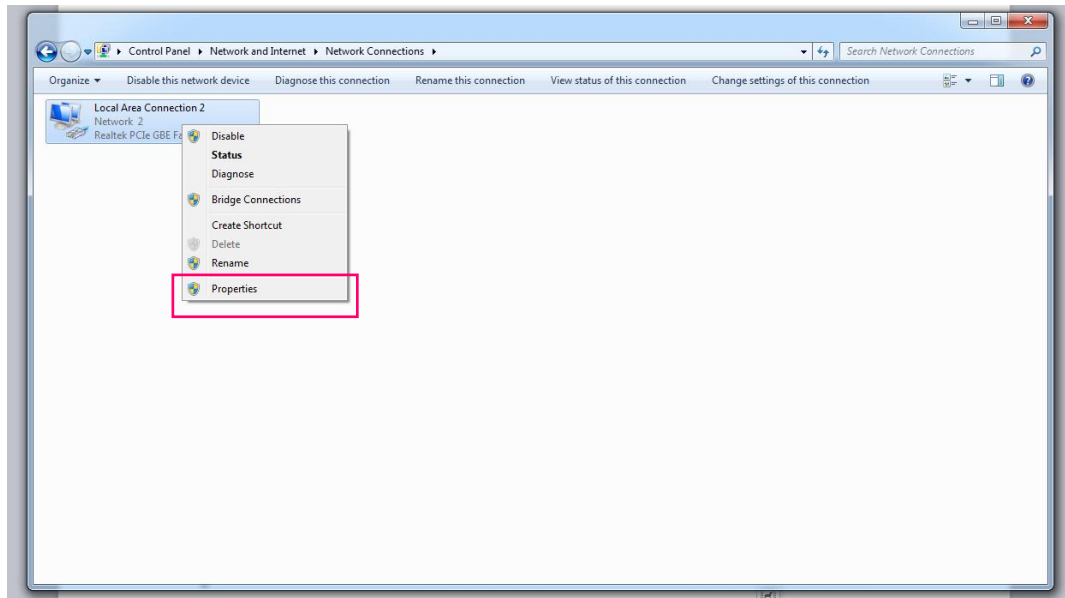


Figure 45 Network IP Address Setting

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

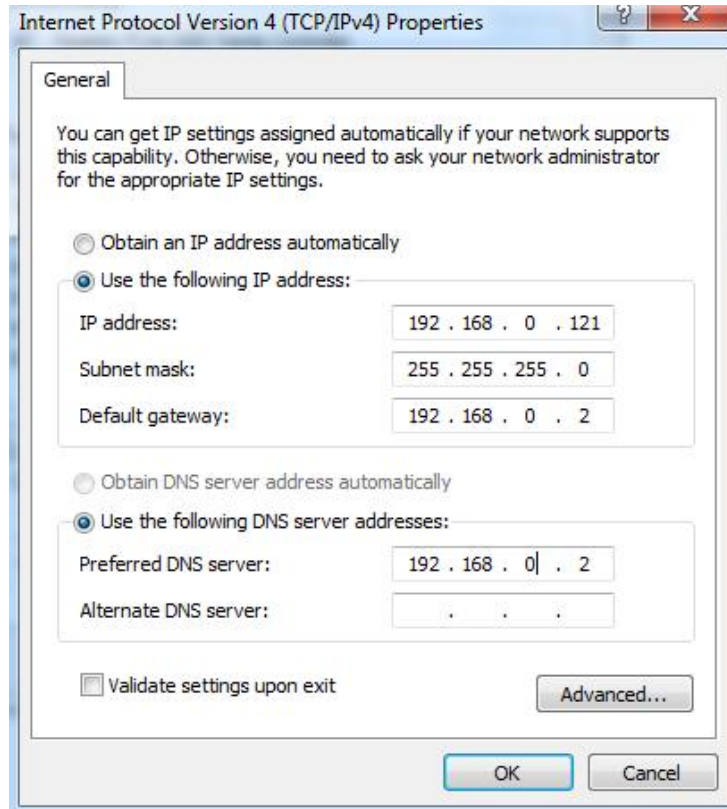


Figure 46 Network IP Address Setting

Click **Start**→Input **cmd**.

Input ping 192.168.0.123(default IP of N3410) and check if N3410 can communicate properly.



Figure 47 Run Command

If communicating properly, the below information will be reverted.

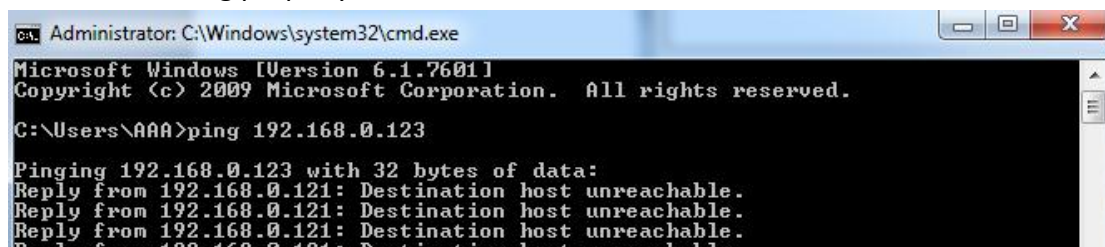


Figure 48 Communication Test

■ Windows 10 Setting

Take computer IP address 192.168.0.121 on Windows 10 setting for example.

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

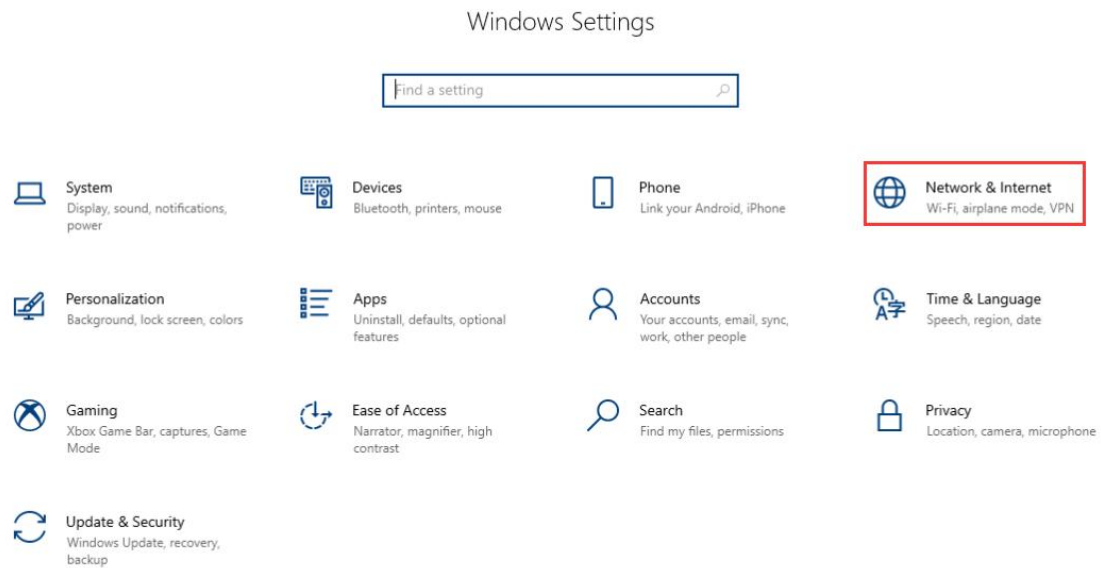


Figure 49 Network IP Address Setting

Click **Change adapter options**.

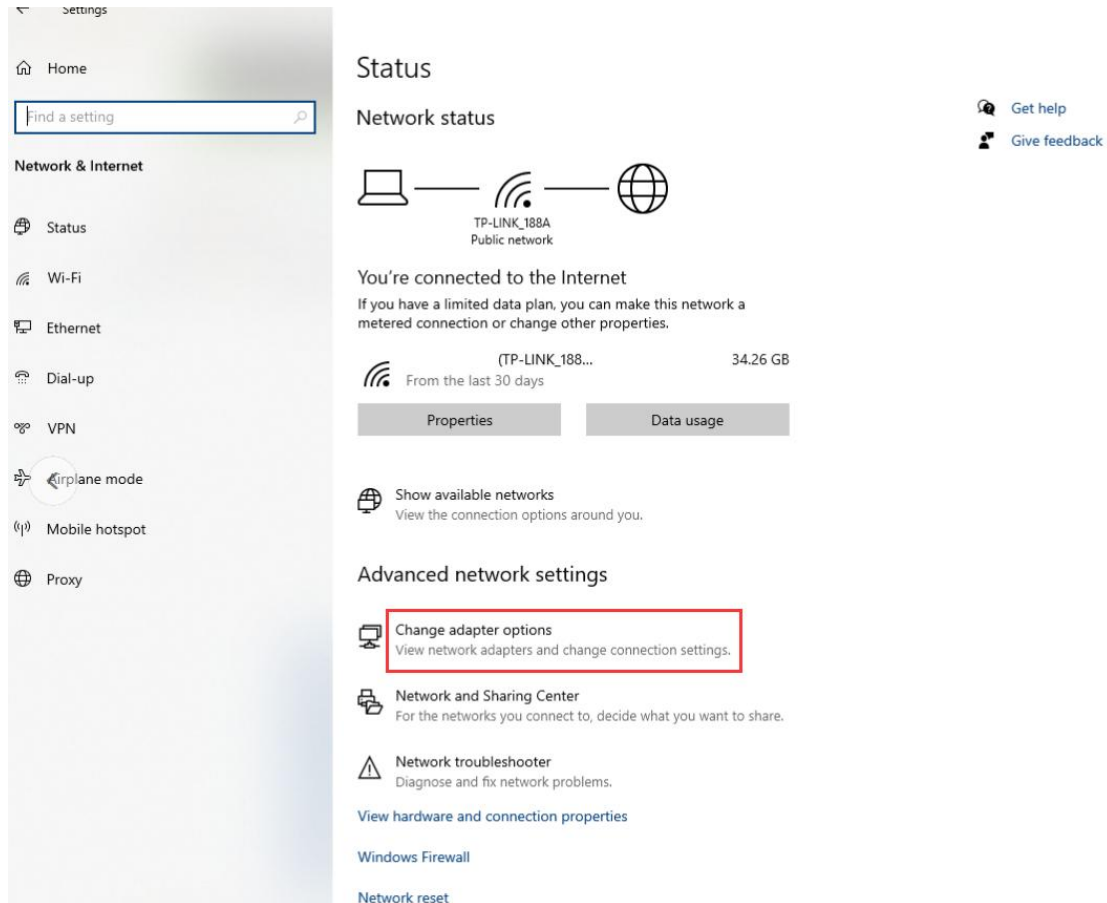


Figure 50 Network IP Address Setting

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

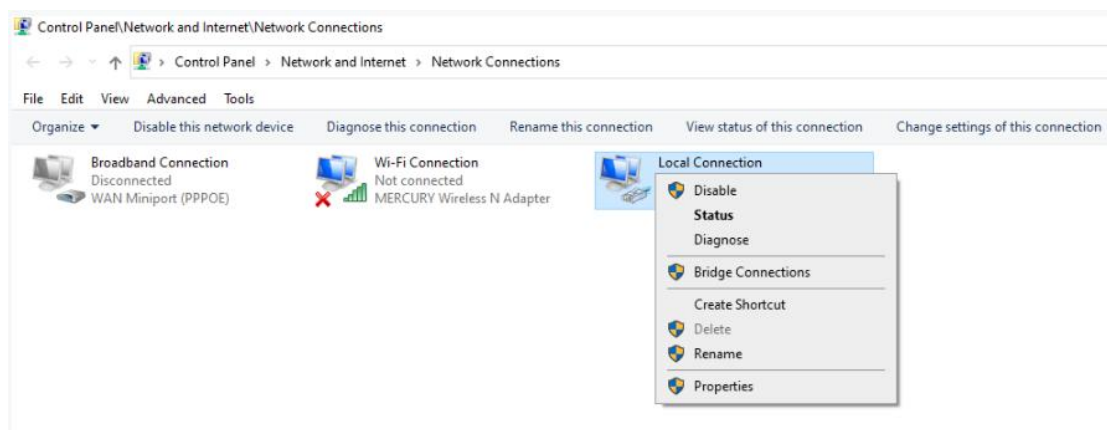


Figure 51 Network IP Address Setting

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

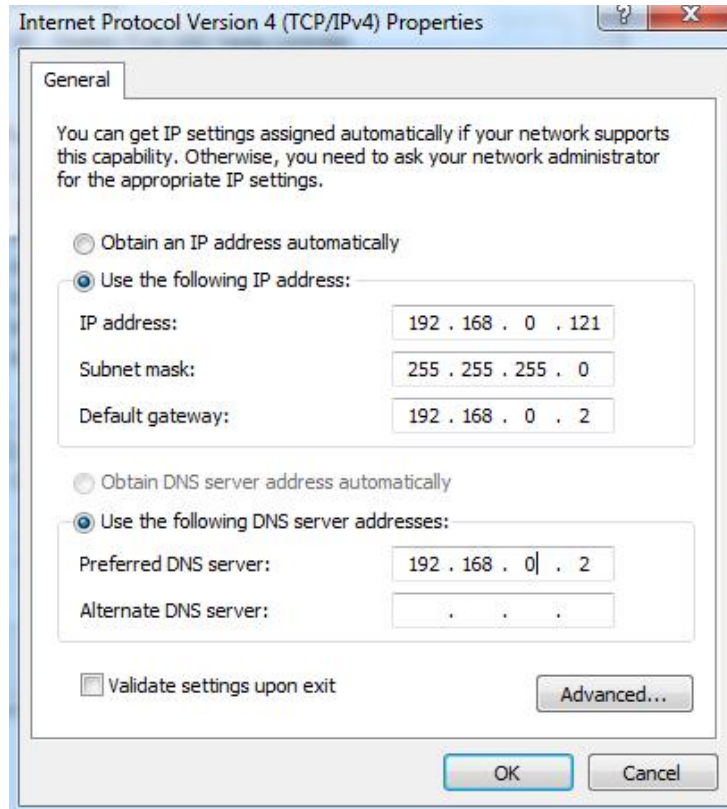


Figure 52 Network IP Address Setting

Click **Start**→Input **cmd**.

Input ping 192.168.0.123(default IP of N3410) and check if N3410 can communicate properly.

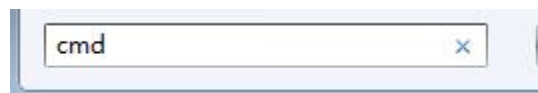


Figure 53 Run Command

If communicating properly, the below information will be reverted.

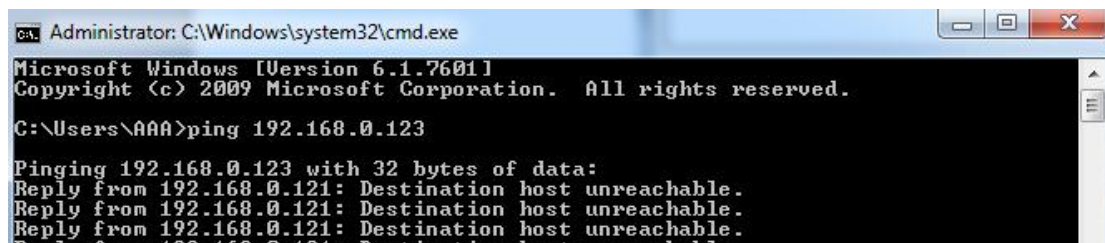


Figure 54 Communication Test

6.4 Menu

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 55 Shortcut

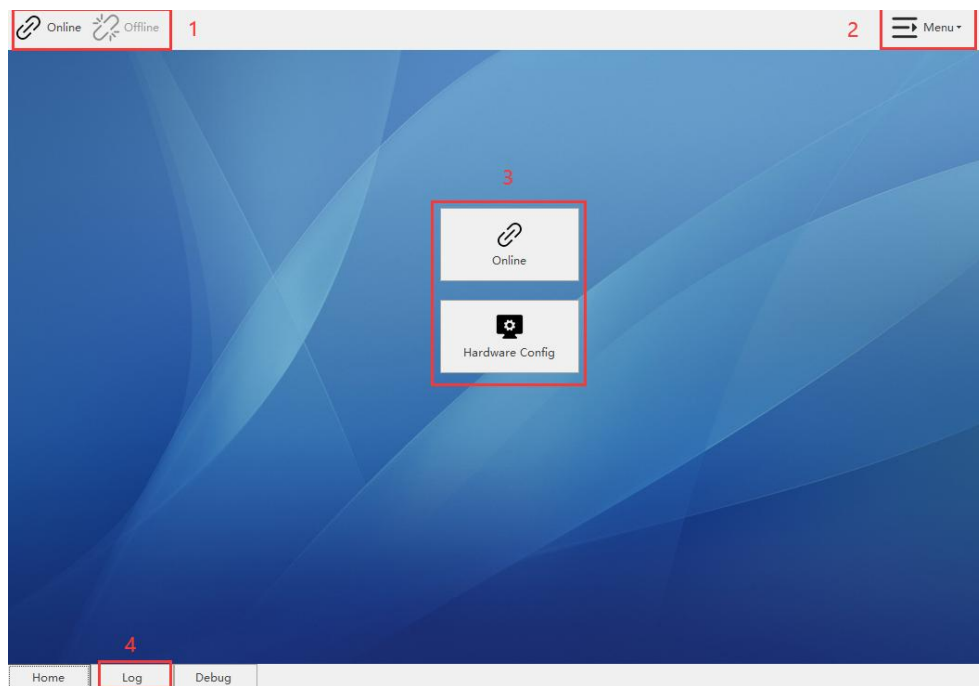


Figure 56 Application Software Interface

Application software interface introduction:

1. Toolbar

It includes Online and Offline.

2. Menu

It includes Hardware Config, Advanced Config, Open Software Directory, About and Exit.

3. Shortcut menu

4. Log

Operation, fault and status information can be found in Log.

6.5 Configuration

6.5.1 Hardware Configuration

Steps for hardware configuration:

1. Click **Hardware Config**.
2. Click **Scan**→Select 192.168.0.XXX network→Click **OK**→Click **Save** after the device is searched.

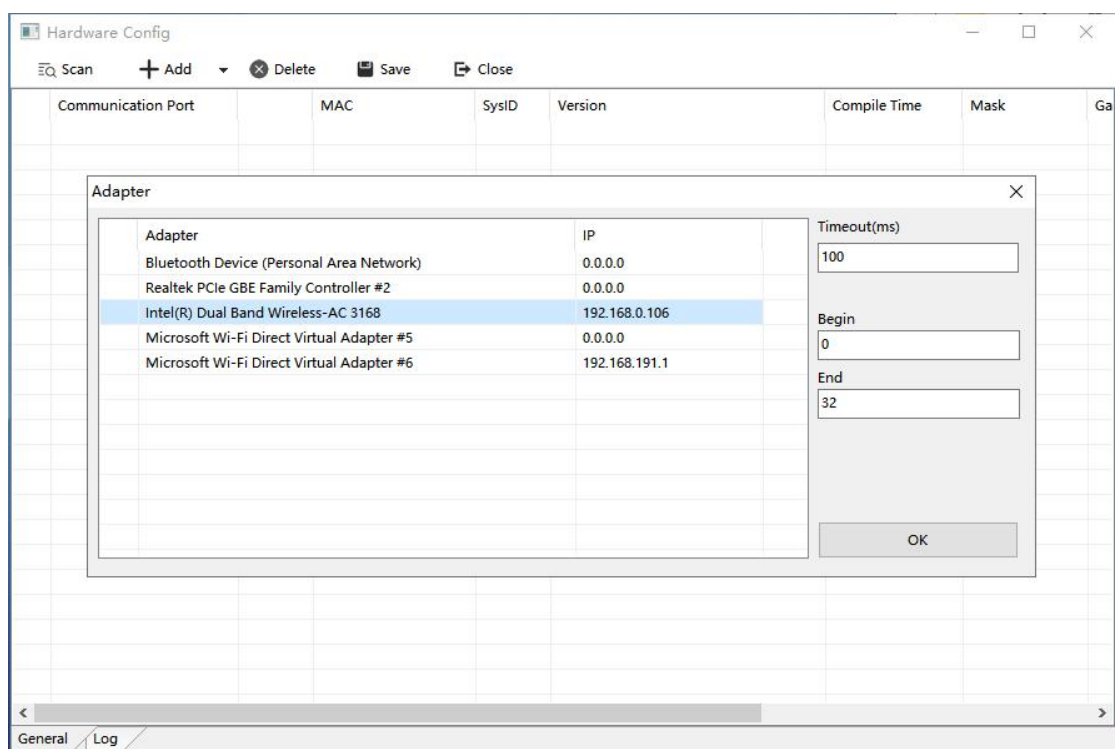


Figure 57 Hardware Configuration

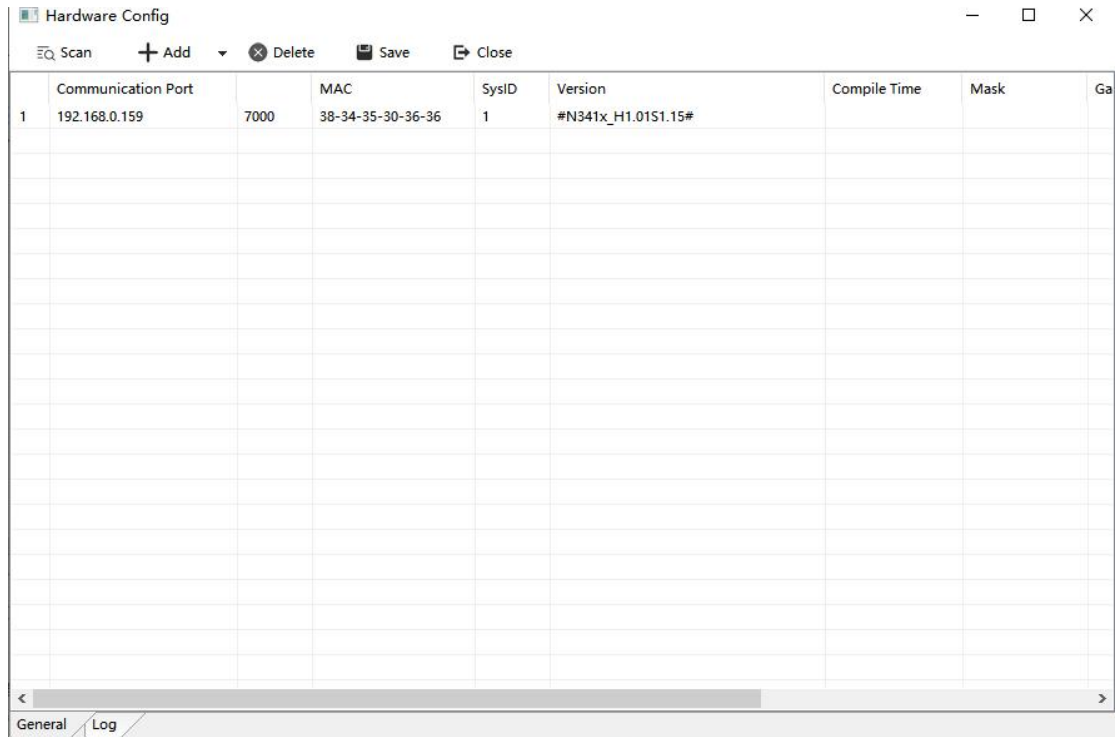


Figure 58 Hardware Configuration

Note: Hardware configuration is required for the first time use or when the device is replaced.

6.5.2 Advanced Configuration

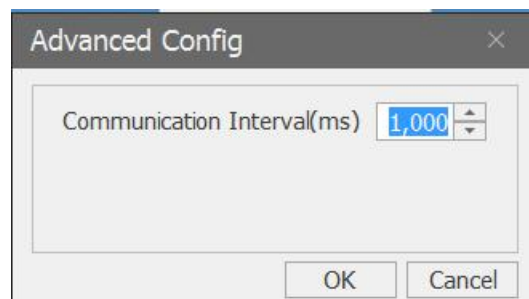


Figure 59 Advanced Configuration

Communication interval: Specify the time interval for acquiring voltage and current

values.

6.5.3 Online/Offline

Online means the communication between N3410 and PC is enabled.

Offline means the communication between N3410 and PC is disabled.



Figure 60 Online/Offline

The Online interface mainly includes three parts:

Toolbar, Operation interface and Data display.

The Data display can display current and power values in real time, and visualise the change trend through the graph;

Click operation interface can quickly enter the parameter setting, in which the V/I mode can switch the output mode; click on the start recording that is to start saving data, file data (.ndat format) will be automatically saved to the history of the data, users can choose to view the history of the data in the toolbar.

7 Function

7.1 Device List

In the device list, click the list item to display the control interface of the device.



Figure 61 Interface

7.2 Info Echo

To display the voltage, current value in real time.



Figure 62 Info Echo

To display device on/off and readback status.

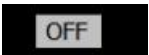


Figure 63 Status Echo

7.3 Graph Echo

To display the graph of the channel

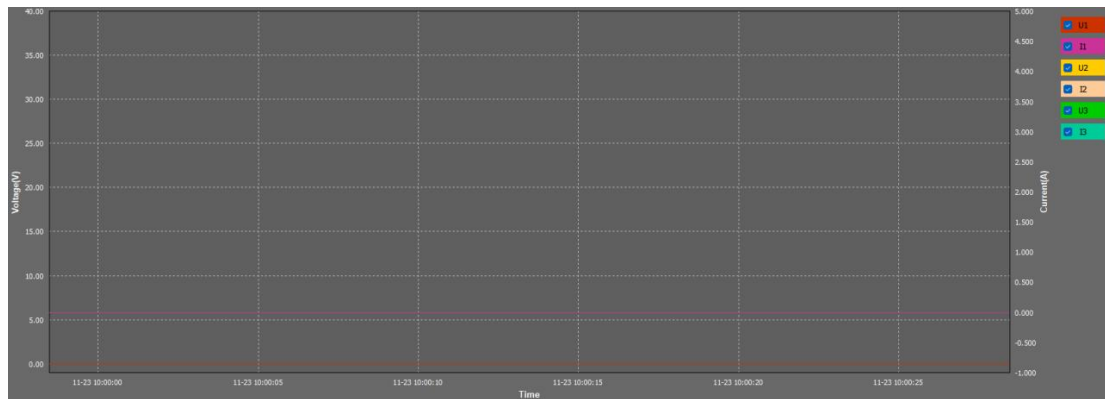


Figure 64 Graph Echo

7.4 Device ON/OFF

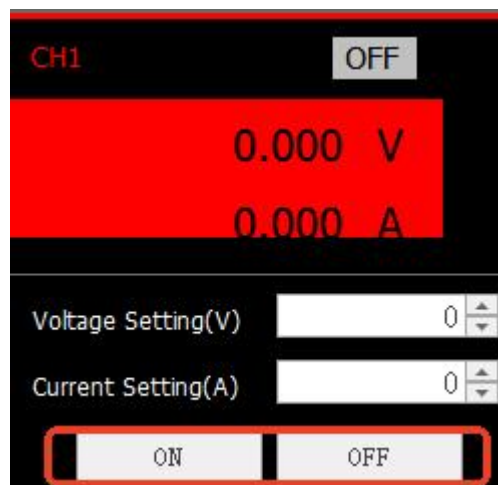


Figure 65 Device ON/OFF

Operation steps:

Input Setting:

Press on to turn on; press off to turn off.

7.5 All Channel ON/OFF

To control device in batch.

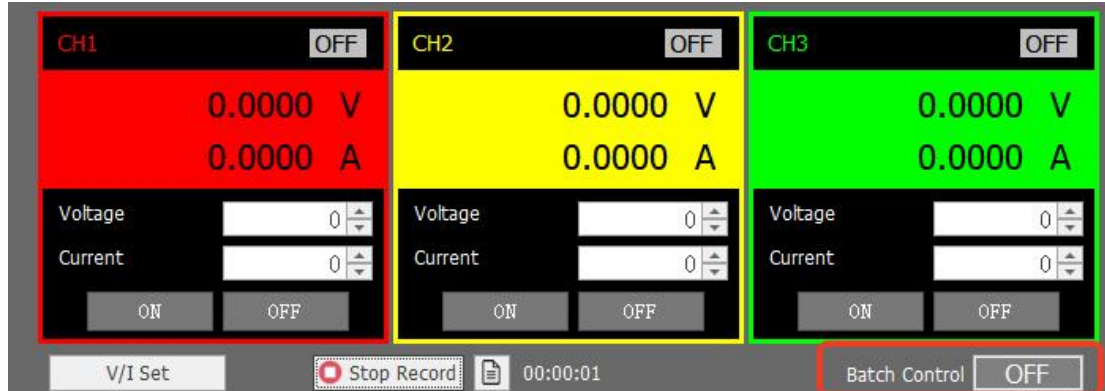


Figure 66 Batch Control

7.6 Control Mode



Figure 67 Mode selection



Figure 68 Parallel Mode

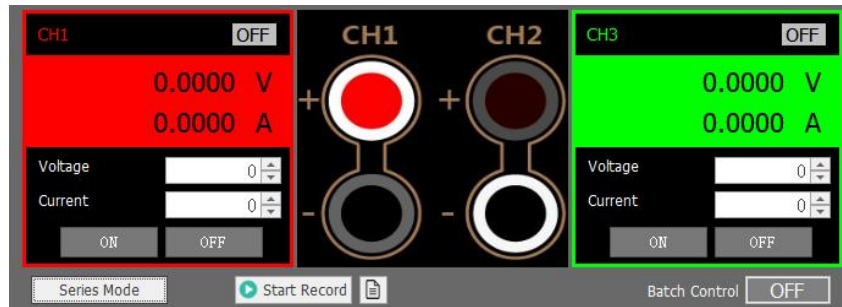


Figure 69 Series Mode

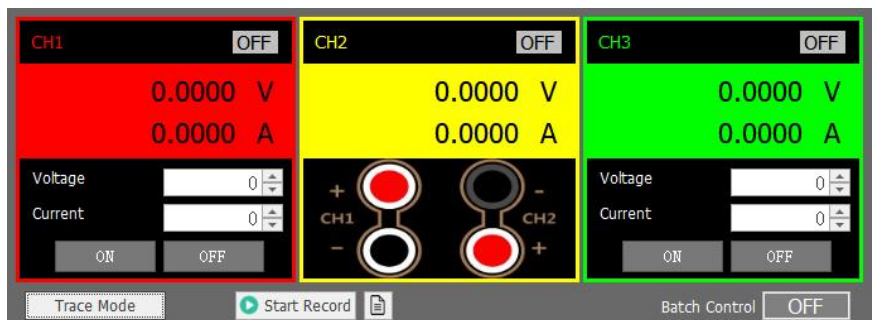


Figure 70 Trace Mode

7.7 Log

After online, click Start Record, the software starts recording data. The test data is packed and saved to the default directory, which can be viewed in Historical Data.



Figure 71 Start recording

After ending the recording, select History Data in the toolbar to view the test data.

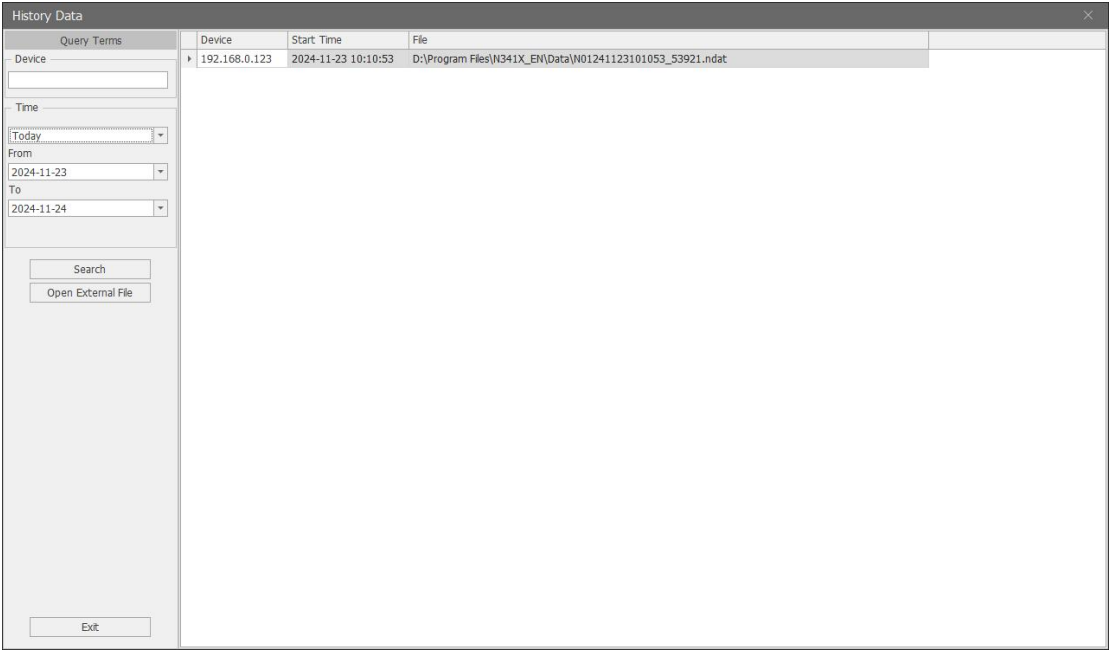


Figure 72 Test data

Double-click on the test data to enter the data analysis interface, where you can view the data charts as well as voltage, current, power.

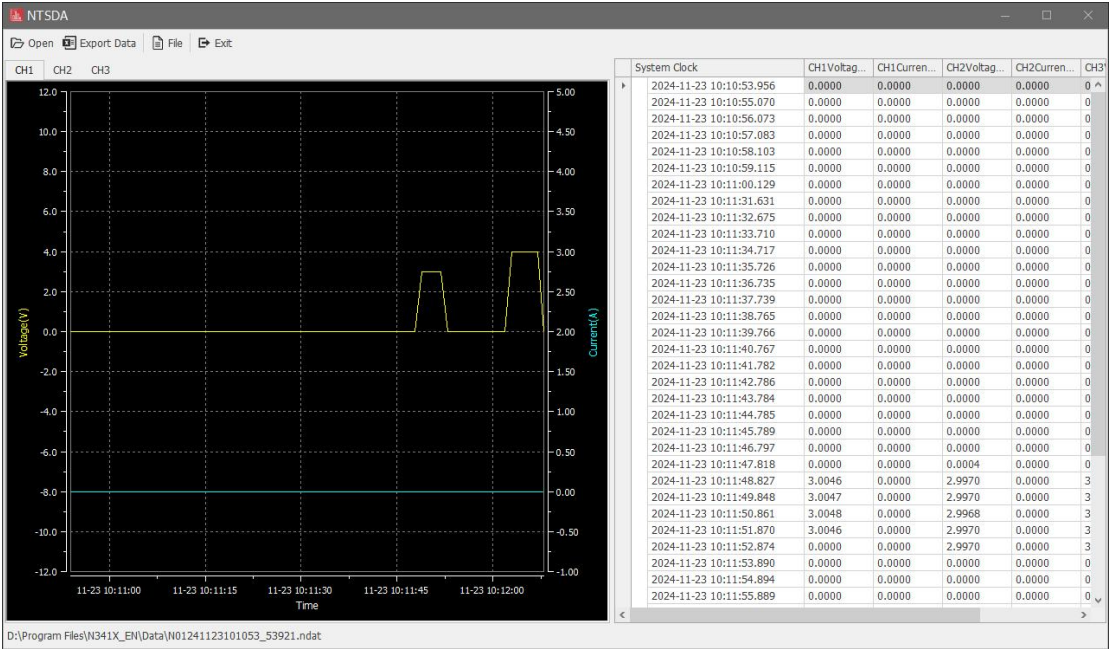


Figure 73 Data analysis

8 Maintenance and Self-inspection

8.1 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.**

8.2 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 N3410 series should be calibrated once a year.

9 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.

Model: N3411

Model	N3411/N3411P	
Channel	CH1/CH2	CH3
Voltage	32V	6V
Current	3A	3A
Voltage (Series)	64V	N/A
Current (Parallel)	6A	N/A
Total Power	210W	
Setting Resolution (Voltage)	0.1mV	1mV
Setting Resolution (Current)	0.1mA	1mA
Setting Accuracy (Voltage)	$<0.01\% + 10\text{mV}$	$<0.03\% + 10\text{mV}$
Setting Accuracy (Current)	$<0.05\% + 5\text{mA}$	$<0.05\% + 10\text{mA}$
Setting Temperature Coefficient	30ppm/°C	
Readback Resolution (Voltage)	0.1mV	1mV
Readback Resolution (Current)	0.1mA	1mA
Readback Accuracy (Voltage)	$<0.01\% + 10\text{mV}$	$<0.03\% + 10\text{mV}$
Readback Accuracy (Current)	$<0.05\% + 5\text{mA}$	$<0.05\% + 10\text{mA}$
Readback Temperature Coefficient	30ppm/°C	
Long-term Stability	$\leq 50\text{ppm}/1000\text{h}$	
Voltage Ripple Noise (20Hz-20MHz)	$\leq 5\text{mVp-p}$	$\leq 10\text{mVp-p}$

Voltage Ripple Noise (20Hz-20MHz)	$\leq 1\text{mVrms}$	
Current Ripple Noise(20Hz-20MHz)	$\leq 3\text{mA}_{\text{rms}}$	
	Dynamic Characteristics	
Voltage Rise Time(no load) (10%-90% variation time)	20ms	
Voltage Rise Time(full load) (10%-90% variation time)	50ms	21ms
Voltage Fall Time(no load) (10%-90% variation time)	400ms	200ms
Voltage Fall Time(full load) (10%-90% variation time)	45ms	13ms
Transient Recovery Time	$\leq 1\text{ms}$	
Line Regulation (Voltage)	$\leq 0.01\% + 1\text{mV}$	$\leq 0.01\% + 3\text{mV}$
Line Regulation (Current)	$\leq 0.01\% + 1\text{mA}$	$\leq 0.02\% + 3\text{mA}$
Load Regulation (Voltage)	$\leq 0.01\% + 3\text{mV}$	
Load Regulation (Current)	$\leq 0.01\% + 3\text{mA}$	$\leq 0.02\% + 3\text{mA}$
	Others	
Isolation (output to ground)	500VDC	
Programming Response Time	$\leq 5\text{ms}$	
Communication Interface	LAN/RS232	
AC Input	Single phase, please refer to the voltage mark at the rear panel.	
Temperature	Operating temperature: $0^{\circ}\text{C} - 40^{\circ}\text{C}$, storage temperature: $-20^{\circ}\text{C} \sim 60^{\circ}\text{C}$	
Operating Environment	Altitude <2000m, relative humidity: 5%-90%RH(non-condensing), atmospheric pressure: 80-110kPa	
Dimensions	88.0mm(H)*214mm(W)*413.0mm(D)	
Net Weight	Approx.9kg	

Model: N3411P

Model	N3411/N3411P	
Channel	CH1/CH2	CH3
Voltage	32V	6V
Current	3A	3A
Voltage (Series)	64V	N/A
Current (Parallel)	6A	N/A
Total Power	210W	
Setting Resolution (Voltage)	0.1mV	1mV
Setting Resolution (Current)	0.1mA	1mA
Setting Accuracy (Voltage)	<0.01%+10mV	<0.03%+10mV
Setting Accuracy (Current)	<0.05%+5mA	<0.05%+10mA
Setting Temperature Coefficient	30ppm/°C	
Readback Resolution (Voltage)	0.1mV	1mV
Readback Resolution (Current)	0.1mA	1mA
Readback Accuracy (Voltage)	<0.01%+10mV	<0.03%+10mV
Readback Accuracy (Current)	<0.05%+5mA	<0.05%+10mA
Readback Temperature Coefficient	30ppm/°C	
Long-term Stability	≤50ppm/1000h	
Voltage Ripple Noise (20Hz-20MHz)	≤5mVp-p	≤10mVp-p
Voltage Ripple Noise (20Hz-20MHz)	≤1mVrms	
Current Ripple Noise(20Hz-20MHz)	≤3mA _{rms}	
	Dynamic Characteristics	
Voltage Rise Time(no load) (10%-90% variation time)	20ms	
Voltage Rise Time(full load) (10%-90% variation time)	50ms	21ms
Voltage Fall Time(no load) (10%-90% variation time)	400ms	200ms

Voltage Fall Time(full load) (10%-90% variation time)	45ms	13ms
Transient Recovery Time	≤1ms	
Line Regulation (Voltage)	≤0.01%+1mV	≤0.01%+3mV
Line Regulation (Current)	≤0.01%+1mA	≤0.02%+3mA
Load Regulation (Voltage)	≤0.01%+3mV	
Load Regulation (Current)	≤0.01%+3mA	≤0.02%+3mA
	DVM Measurement	
Channel	1CH	
Range	±600V/±60V/±6V	
Resolution	5 $\frac{1}{2}$ bit	
Accuracy	0.01%+0.01%F.S.	
Frequency	4Hz	
Input Impedance	10MΩ	
Wiring	Pluggable wiring terminal	
Temperature Coefficient	20ppm/°C	
	Others	
Isolation (output to ground)	500VDC	
Programming Response Time	≤5ms	
Communication Interface	LAN/RS232	
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	
Dimensions	88.0mm(H)*214mm(W)*413.0mm(D)	
Net Weight	Approx.9kg	

Model: N3411E

Model	N3411E	
Channel	CH1/CH2	CH3
Voltage	32V	6V
Current	3A	3A
Voltage (Series)	64V	N/A
Current (Parallel)	6A	N/A
Total Power	210W	
Setting Resolution (Voltage)	10mV	1mV
Setting Resolution (Current)	1mA	
Setting Accuracy (Voltage)	<0.01%+20mV	<0.03%+10mV
Setting Accuracy (Current)	<0.05%+10mA	<0.05%+10mA
Setting Temperature Coefficient	50ppm/°C	
Readback Resolution (Voltage)	10mV	1mV
Readback Resolution (Current)	1mA	
Readback Accuracy (Voltage)	<0.01%+20mV	<0.03%+10mV
Readback Accuracy (Current)	<0.05%+10mA	<0.05%+10mA
Readback Temperature Coefficient	50ppm/°C	
Long-term Stability	≤50ppm/1000h	
Voltage Ripple Noise (20Hz-20MHz)	≤5mVp-p	≤10mVp-p
Voltage Ripple Noise (20Hz-20MHz)	≤1mVrms	
Current Ripple Noise(20Hz-20MHz)	≤3mArms	
	Dynamic Characteristics	
Voltage Rise Time(no load) (10%-90% variation time)	20ms	
Voltage Rise Time(full load) (10%-90% variation time)	50ms	21ms
Voltage Fall Time(no load) (10%-90% variation time)	400ms	200ms

Voltage Fall Time(full load) (10%-90% variation time)	45ms	13ms
Transient Recovery Time	≤1ms	
Line Regulation (Voltage)	≤0.01%+1mV	≤0.01%+3mV
Line Regulation (Current)	≤0.01%+1mA	≤0.02%+3mA
Load Regulation (Voltage)	≤0.01%+3mV	
Load Regulation (Current)	≤0.01%+3mA	≤0.02%+3mA
	Others	
Isolation (output to ground)	500VDC	
Programming Response Time	≤5ms	
Communication Interface	LAN/RS232	
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	
Dimensions	88.0mm(H)*214mm(W)*413.0mm(D)	
Net Weight	Approx.9kg	

Model: N3412

Model	N3412	
Channel	CH1/CH2	CH3
Voltage	32V	6V
Current	5A	3A
Voltage (Series)	64V（5A）	N/A
Current (Parallel)	10A	N/A
Total Power	338W	
Setting Resolution (Voltage)	0.1mV	1mV
Setting Resolution (Current)	0.1mA	1mA
Setting Accuracy (Voltage)	<0.01%+10mV	<0.03%+10mV
Setting Accuracy (Current)	<0.05%+10mA	<0.05%+10mA
Setting Temperature Coefficient	30ppm/℃	
Readback Resolution (Voltage)	0.1mV	1mV
Readback Resolution (Current)	0.1mA	1mA
Readback Accuracy (Voltage)	<0.01%+10mV	<0.03%+10mV
Readback Accuracy (Current)	<0.05%+10mA	<0.05%+10mA
Readback Temperature Coefficient	30ppm/℃	
Long-term Stability	≤50ppm/1000h	
Voltage Ripple Noise (20Hz-20MHz)	≤5mVp-p	≤10mVp-p
Voltage Ripple Noise (20Hz-20MHz)	≤1mVrms	
Current Ripple Noise(20Hz-20MHz)	≤3mA _{rms}	
	Dynamic Characteristics	
Voltage Rise Time(no load) (10%-90% variation time)	20ms	
Voltage Rise Time(full load) (10%-90% variation time)	50ms	21ms
Voltage Fall Time(no load) (10%-90% variation time)	400ms	200ms

Voltage Fall Time(full load) (10%-90% variation time)	45ms	13ms
Transient Recovery Time	≤1ms	
Line Regulation (Voltage)	≤0.01%+1mV	≤0.01%+3mV
Line Regulation (Current)	≤0.01%+3mA	≤0.02%+3mA
Load Regulation (Voltage)	≤0.01%+3mV	
Load Regulation (Current)	≤0.01%+3mA	≤0.02%+3mA
	Others	
Isolation (output to ground)	500VDC	
Programming Response Time	≤5ms	
Communication Interface	LAN/RS232	
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	
Dimensions	88.0mm(H)*214mm(W)*461.0mm(D)	
Net Weight	Approx.11kg	

Model: N3412P

Model	N3412P	
Channel	CH1/CH2	CH3
Voltage	32V	6V
Current	5A	3A
Voltage (Series)	64V（5A）	N/A
Current (Parallel)	10A	N/A
Total Power	338W	
Setting Resolution (Voltage)	0.1mV	1mV
Setting Resolution (Current)	0.1mA	1mA
Setting Accuracy (Voltage)	<0.01%+10mV	<0.03%+10mV
Setting Accuracy (Current)	<0.05%+10mA	<0.05%+10mA
Setting Temperature Coefficient	30ppm/℃	
Readback Resolution (Voltage)	0.1mV	1mV
Readback Resolution (Current)	0.1mA	1mA
Readback Accuracy (Voltage)	<0.01%+10mV	<0.03%+10mV
Readback Accuracy (Current)	<0.05%+10mA	<0.05%+10mA
Readback Temperature Coefficient	30ppm/℃	
Long-term Stability	≤50ppm/1000h	
Voltage Ripple Noise (20Hz-20MHz)	≤5mVp-p	≤10mVp-p
Voltage Ripple Noise (20Hz-20MHz)	≤1mVrms	
Current Ripple Noise(20Hz-20MHz)	≤3mA _{rms}	
	Dynamic Characteristics	
Voltage Rise Time(no load) (10%-90% variation time)	20ms	
Voltage Rise Time(full load) (10%-90% variation time)	50ms	21ms
Voltage Fall Time(no load) (10%-90% variation time)	400ms	200ms

Voltage Fall Time(full load) (10%-90% variation time)	45ms	13ms
Transient Recovery Time	≤1ms	
Line Regulation (Voltage)	≤0.01%+1mV	≤0.01%+3mV
Line Regulation (Current)	≤0.01%+3mA	≤0.02%+3mA
Load Regulation (Voltage)	≤0.01%+3mV	
Load Regulation (Current)	≤0.01%+3mA	≤0.02%+3mA
	DVM Measurement	
Channel	1CH	
Range	±600V/±60V/±6V	
Resolution	5 $\frac{1}{2}$ bit	
Accuracy	0.01%+0.01%F.S.	
Frequency	4Hz	
Input Impedance	10MΩ	
Wiring	Pluggable wiring terminal	
Temperature Coefficient	20ppm/°C	
	Others	
Isolation (output to ground)	500VDC	
Programming Response Time	≤5ms	
Communication Interface	LAN/RS232	
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	
Dimensions	88.0mm(H)*214mm(W)*461.0mm(D)	
Net Weight	Approx.11kg	

Model: N3412E

Model	N3412E	
Channel	CH1/CH2	CH3
Voltage	32V	6V
Current	5A	3A
Voltage (Series)	64V（5A）	N/A
Current (Parallel)	10A	N/A
Total Power	338W	
Setting Resolution (Voltage)	10mV	1mV
Setting Resolution (Current)	1mA	
Setting Accuracy (Voltage)	<0.01%+20mV	<0.03%+10mV
Setting Accuracy (Current)	<0.05%+20mA	<0.05%+10mA
Setting Temperature Coefficient	50ppm/℃	
Readback Resolution (Voltage)	10mV	1mV
Readback Resolution (Current)	1mA	
Readback Accuracy (Voltage)	<0.01%+20mV	<0.03%+10mV
Readback Accuracy (Current)	<0.05%+20mA	<0.05%+10mA
Readback Temperature Coefficient	50ppm/℃	
Long-term Stability	≤50ppm/1000h	
Voltage Ripple Noise (20Hz-20MHz)	≤5mVp-p	≤10mVp-p
Voltage Ripple Noise (20Hz-20MHz)	≤1mVrms	
Current Ripple Noise(20Hz-20MHz)	≤3mArms	
	Dynamic Characteristics	
Voltage Rise Time(no load) (10%-90% variation time)	20ms	
Voltage Rise Time(full load) (10%-90% variation time)	50ms	21ms
Voltage Fall Time(no load) (10%-90% variation time)	400ms	200ms

Voltage Fall Time(full load) (10%-90% variation time)	45ms	13ms
Transient Recovery Time	≤1ms	
Line Regulation (Voltage)	≤0.01%+1mV	≤0.01%+3mV
Line Regulation (Current)	≤0.01%+3mA	≤0.02%+3mA
Load Regulation (Voltage)	≤0.01%+3mV	
Load Regulation (Current)	≤0.01%+3mA	≤0.02%+3mA
	Others	
Isolation (output to ground)	500VDC	
Programming Response Time	≤5ms	
Communication Interface	LAN/RS232	
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	
Dimensions	88.0mm(H)*214mm(W)*461.0mm(D)	
Net Weight	Approx.11kg	

Model: N3413

Model	N3413/N3413P	
Channel	CH1/CH2	CH3
Voltage	60V	6V
Current	3A	3A
Voltage (Series)	120V（3A）	N/A
Current (Parallel)	6A（60V）	N/A
Total Power	378W	
Setting Resolution (Voltage)	0.1mV	1mV
Setting Resolution (Current)	0.1mA	1mA
Setting Accuracy (Voltage)	<0.02%+20mV	<0.03%+10mV
Setting Accuracy (Current)	<0.05%+5mA	<0.05%+10mA
Setting Temperature Coefficient	30ppm/℃	
Readback Resolution (Voltage)	0.1mV	1mV
Readback Resolution (Current)	0.1mA	1mA
Readback Accuracy (Voltage)	<0.02%+20mV	<0.03%+10mV
Readback Accuracy (Current)	<0.05%+5mA	<0.05%+10mA
Readback Temperature Coefficient	30ppm/℃	
Long-term Stability	≤50ppm/1000h	
Voltage Ripple Noise (20Hz-20MHz)	≤10mVp-p	≤10mVp-p
Voltage Ripple Noise (20Hz-20MHz)	≤1mVrms	
Current Ripple Noise(20Hz-20MHz)	≤3mA _{rms}	
	Dynamic Characteristics	
Voltage Rise Time(no load) (10%-90% variation time)	20ms	
Voltage Rise Time(full load) (10%-90% variation time)	50ms	21ms
Voltage Fall Time(no load) (10%-90% variation time)	800ms	200ms

Voltage Fall Time(full load) (10%-90% variation time)	45ms	13ms
Transient Recovery Time	≤1ms	
Line Regulation (Voltage)	≤0.01%+1mV	≤0.01%+3mV
Line Regulation (Current)	≤0.01%+3mA	≤0.02%+3mA
Load Regulation (Voltage)	≤0.01%+3mV	
Load Regulation (Current)	≤0.01%+6mA	≤0.02%+3mA
	Others	
Isolation (output to ground)	500VDC	
Programming Response Time	≤5ms	
Communication Interface	LAN/RS232	
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	
Dimensions	88.0mm(H)*214mm(W)*461.0mm(D)	
Net Weight	Approx.11kg	

Model: N3413P

Model	N3413P	
Channel	CH1/CH2	CH3
Voltage	60V	6V
Current	3A	3A
Voltage (Series)	120V（3A）	N/A
Current (Parallel)	6A（60V）	N/A
Total Power	378W	
Setting Resolution (Voltage)	0.1mV	1mV
Setting Resolution (Current)	0.1mA	1mA
Setting Accuracy (Voltage)	<0.02%+20mV	<0.03%+10mV
Setting Accuracy (Current)	<0.05%+5mA	<0.05%+10mA
Setting Temperature Coefficient	30ppm/℃	
Readback Resolution (Voltage)	0.1mV	1mV
Readback Resolution (Current)	0.1mA	1mA
Readback Accuracy (Voltage)	<0.02%+20mV	<0.03%+10mV
Readback Accuracy (Current)	<0.05%+5mA	<0.05%+10mA
Readback Temperature Coefficient	30ppm/℃	
Long-term Stability	≤50ppm/1000h	
Voltage Ripple Noise (20Hz-20MHz)	≤10mVp-p	≤10mVp-p
Voltage Ripple Noise (20Hz-20MHz)	≤1mVrms	
Current Ripple Noise(20Hz-20MHz)	≤3mArms	
	Dynamic Characteristics	
Voltage Rise Time(no load) (10%-90% variation time)	20ms	
Voltage Rise Time(full load) (10%-90% variation time)	50ms	21ms
Voltage Fall Time(no load) (10%-90% variation time)	800ms	200ms

Voltage Fall Time(full load) (10%-90% variation time)	45ms	13ms
Transient Recovery Time	≤1ms	
Line Regulation (Voltage)	≤0.01%+1mV	≤0.01%+3mV
Line Regulation (Current)	≤0.01%+3mA	≤0.02%+3mA
Load Regulation (Voltage)	≤0.01%+3mV	
Load Regulation (Current)	≤0.01%+6mA	≤0.02%+3mA
	DVM Measurement	
Channel	1CH	
Range	±600V/±60V/±6V	
Resolution	5 $\frac{1}{2}$ bit	
Accuracy	0.01%+0.01%F.S.	
Frequency	4Hz	
Input Impedance	10MΩ	
Wiring	Pluggable wiring terminal	
Temperature Coefficient	20ppm/°C	
	Others	
Isolation (output to ground)	500VDC	
Programming Response Time	≤5ms	
Communication Interface	LAN/RS232	
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	
Dimensions	88.0mm(H)*214mm(W)*461.0mm(D)	
Net Weight	Approx.11kg	

Model: N3413E

Model	N3413E	
Channel	CH1/CH2	CH3
Voltage	60V	6V
Current	3A	3A
Voltage (Series)	120V（3A）	N/A
Current (Parallel)	6A（60V）	N/A
Total Power	378W	
Setting Resolution (Voltage)	10mV	1mV
Setting Resolution (Current)	1mA	
Setting Accuracy (Voltage)	<0.02%+40mV	<0.03%+10mV
Setting Accuracy (Current)	<0.05%+10mA	<0.05%+10mA
Setting Temperature Coefficient	50ppm/℃	
Readback Resolution (Voltage)	10mV	1mV
Readback Resolution (Current)	1mA	
Readback Accuracy (Voltage)	<0.02%+40mV	<0.03%+10mV
Readback Accuracy (Current)	<0.05%+10mA	<0.05%+10mA
Readback Temperature Coefficient	50ppm/℃	
Long-term Stability	≤50ppm/1000h	
Voltage Ripple Noise (20Hz-20MHz)	≤10mVp-p	≤10mVp-p
Voltage Ripple Noise (20Hz-20MHz)	≤1mVrms	
Current Ripple Noise(20Hz-20MHz)	≤3mArms	
	Dynamic Characteristics	
Voltage Rise Time(no load) (10%-90% variation time)	20ms	
Voltage Rise Time(full load) (10%-90% variation time)	50ms	21ms
Voltage Fall Time(no load) (10%-90% variation time)	800ms	200ms

Voltage Fall Time(full load) (10%-90% variation time)	45ms	13ms
Transient Recovery Time	≤1ms	
Line Regulation (Voltage)	≤0.01%+1mV	≤0.01%+3mV
Line Regulation (Current)	≤0.01%+3mA	≤0.02%+3mA
Load Regulation (Voltage)	≤0.01%+3mV	
Load Regulation (Current)	≤0.01%+6mA	≤0.02%+3mA
	Others	
Isolation (output to ground)	500VDC	
Programming Response Time	≤5ms	
Communication Interface	LAN/RS232	
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	
Dimensions	88.0mm(H)*214mm(W)*461.0mm(D)	
Net Weight	Approx.11kg	

Note 1: For other specifications, please contact NGL.

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

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.



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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