

User Manual

N1C

Online UPS

N1C.LS1000 / LS1500

Uninterruptible Power Supply System

Version: 1.0

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1. Important Safety Warning

Please comply with all warnings and operating instructions in this manual. Save this manual properly and read carefully the following instructions before installing the unit. Do not operate this unit before reading through all safety information and operating instructions carefully.

1-1. Transportation

- Please transport the UPS system only in the original package to protect against shock and impact.

1-2. Preparation

- Condensation may occur if the UPS system is moved directly from a cold to warm environment. The UPS system must be absolutely dry before being installed. Please allow at least two hours for the UPS system to acclimate the environment.
- Do not install the UPS system near water or in moist environments.
- Do not install the UPS system where it would be exposed to direct sunlight or near heat sources.
- Do not block ventilation holes in the UPS housing.

1-3. Installation

- Do not connect appliances or devices that overload the UPS system (e.g. laser printers) to the UPS output sockets.
- Place cables in such a way that no one can step on or trip over them.
- Do not connect "inductive motor loads," devices with "high inrush current" or "half wave" loads such as hair dryers to UPS output sockets.
- The UPS can be operated by any individuals with no previous experience.
- Connect the UPS system only to a grounded, shockproof outlet that is easily accessible and close to the UPS system.
- Please use only UL-marked outlets and UL-marked AC cables to connect devices to the UPS system.
- When installing the equipment, it should ensure that the sum of the leakage current of the UPS and the connected devices does not exceed 3.5mA.
- Temperature Rating - Units are considered acceptable for use in a maximum ambient of 50°C (122°F).
- The utility outlet should be installed near the equipment and shall be easily accessible.
- Do not use an extension cable to supply AC power to the UPS.
- CAUTION: The UPS may be heavy for some. Use proper lifting techniques. Lifting the unit may require a minimum of two people.
- Batteries with minimum case flame rating V-2 are intended for use in a computer room as defined in the Standard for the Protection of Information Technology Equipment, ANSI/NFAP 75. Batteries with case flame rating HB are not intended for use in a computer room. (US installations only.)

1-4. Operation

- Do not disconnect the mains cable on the UPS system or the building wiring outlet (shockproof socket outlet) during operations since this would cancel the protective earthing of the UPS system and of all connected loads.
- The UPS system features its own, internal current source (batteries). The UPS output sockets may be electrically live even if the UPS system is not connected to the building wiring outlet.
- In order to fully disconnect the UPS system, first press the OFF/Enter button and ensure the unit is in bypass or standby mode before disconnect the mains.
- Prevent fluids and other foreign objects from getting inside the UPS system.
- The EPO and USB circuits are an IEC 60950-1 safety extra low voltage (SELV) circuit. This circuit must be separated from any hazardous voltage circuits by reinforced insulation.

1-5. Maintenance, service and faults

- The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.
- **Caution** - risk of electric shock. Even after the unit is disconnected from the mains (building wiring outlet), components inside the UPS system are still connected to the battery and electrically live and dangerous.
- Before carrying out any kind of service and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exists in the terminals of high capability capacitor such as BUS-capacitors.
- To avoid electrical shock, turn off the unit and unplug it from the AC power source before servicing the battery.
- Only persons who are adequately familiar with batteries and with the required precautionary measures should replace batteries and supervise operations.
- **Caution** - risk of electric shock. The battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground. Before touching, please verify that no voltage is present!
- **Caution** - Do not dispose of batteries in a fire. The batteries may explode.
- **Caution** - Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- Batteries may cause electric shock and have a high short-circuit current. Please take the precautionary measures specified below and any other measures necessary when working with batteries:
 - a) Remove watches, rings, or other metal objects.
 - b) Use tools with insulated handles.
 - c) Wear rubber gloves and boots.
 - d) Do not lay tools or metal parts on top of batteries.
 - e) Disconnect charging source and load prior to installing or maintaining the battery.
 - f) Remove battery grounds during installation and maintenance to reduce likelihood of shock. Remove the connection from ground if any part of the battery is determined to be grounded.

- When changing batteries, install the same number and same type of batteries.
- Only use batteries obtained from the manufacturer:

Manufacturer	Type	Rated
N1 Critical Technologies	LIFE-02560052NB	25.6 V dc, 5.2 Ah
	LIFE-03840052NB	38.4 V dc, 5.2 Ah

- Please replace the fuse only with the same type and amperage in order to avoid fire hazards.
- Do not dismantle the UPS system or battery.
- **NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
- **WARNING:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's warranty on the equipment.

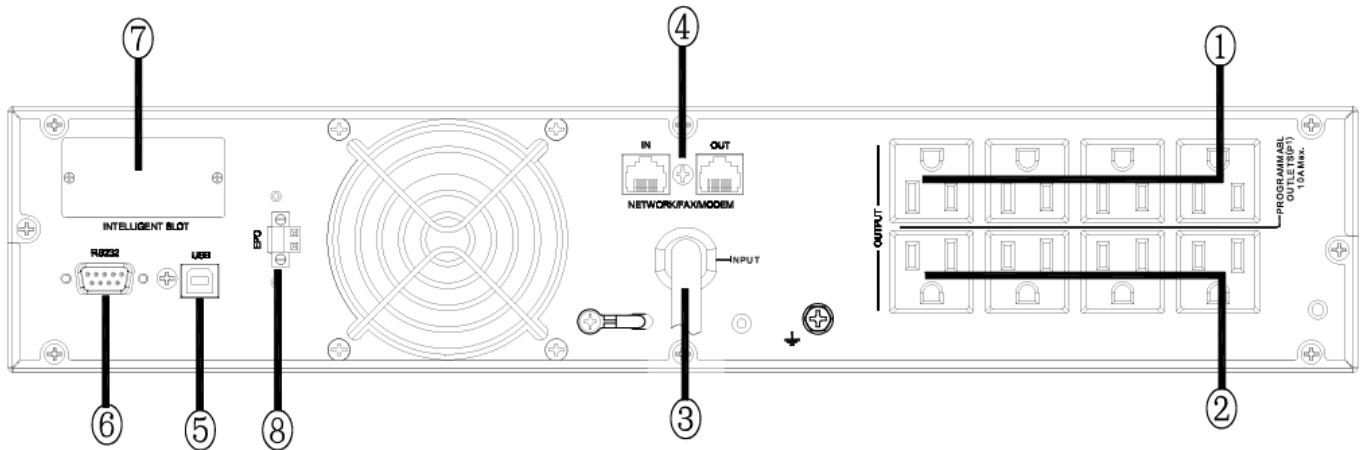
2. Installation and setup

NOTE: Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. Please keep the original package in a safe place for future use.

2-1. Rear panel view

Rack/Tower Models

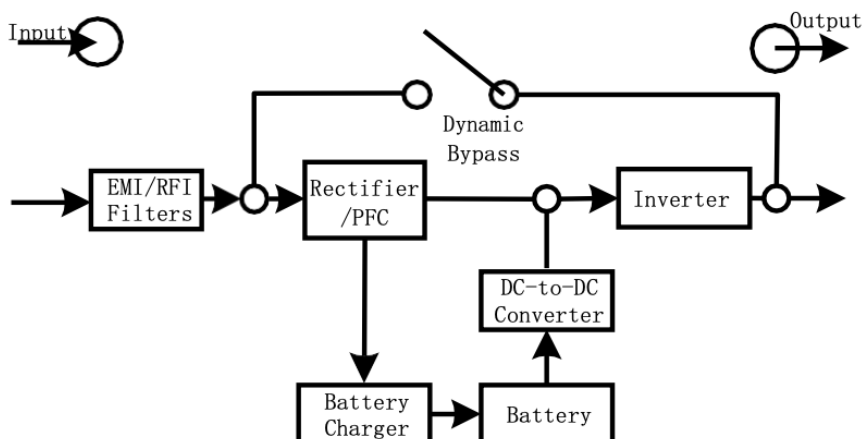
N1C.LS1000/1500



1. Programmable outlets: connect to non-critical loads
2. Output receptacles: connect to mission-critical loads
3. AC input
4. Network/Fax/Modem surge protection
5. USB communication port
6. RS-232 communication port
7. SNMP intelligent slot
8. Emergency power off function connector (EPO)

2-2. Operating principle

The operating principle of the UPS is shown as below



2-3. Setup the UPS

Before installing the UPS, please read below to select proper location:

1. UPS should be placed on the flat and clean surface in an area away from vibration, dust, humidity, high temperature, flammable liquids, gases, corrosive and conductive contaminants. Install the UPS indoors in a clean environment, away from windows and doors. Maintain minimum clearance of 4in/100mm from the front and 12in/300mm from the rear of the UPS to maintain airflow and avoid high temperature.
2. The maximum altitude is 9840ft/3000m to maintain full-load normal operation.
3. UPS is equipped with fan. Use in an area where no objects can interfere with the fan's operation.

Step 1: UPS input connection

Plug the UPS into a two-pole, three-wire, grounded receptacle only. Avoid using extension cords.

- For 100/110/115/120/125/127VAC models: The power cord is attached to the UPS. The input plug is a NEMA 5-15P for 1/1.5K models.
- To reduce the risk of fire, connect only to a circuit provided with (@) A maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70 and the Canadian Electrical Code, Part I, C22.1".

Model	(@)
N1C.LS1000/ N1C.LS1500	15A

Note: Check if the site wiring fault indicator lights up in LCD panel. It will be illuminated when the UPS is plugged into an improperly wired utility power outlet (Refer to Troubleshooting section).

Step 2: UPS output connection

There two kinds of outputs: programmable outlets and general outlets. Please connect non-critical devices to the programmable outlets and critical devices to the general outlets. During power failure, you may extend the backup time to critical devices by setting shorter backup time for non-critical devices. All outlets are initially set to stay on.

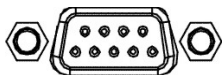
Step 3: Communication connection

Communication port:

USB port



RS-232 port



Intelligent slot



To allow for unattended UPS shutdown/start-up and status monitoring, connect the communication cable one end to the USB/RS-232 port and the other to the communication port of your PC. With the monitoring software installed, you can schedule UPS shutdown/start-up and monitor UPS status through PC.

The UPS is equipped with intelligent slot for either SNMP or AS400/Dry Contact card. When installing either SNMP or AS400/Dry Contact card in the UPS, it will provide advanced communication and monitoring options.

Step 4: Network connection

Network/Fax/Phone surge port



Connect a single modem/phone/fax line into surge-protected "IN" outlet on the back panel of the UPS unit. Connect from "OUT" outlet to the equipment with another modem/fax/phone line cable.

Step 5: Disable and enable EPO function

This UPS is equipped with EPO function. By default, the UPS is delivered from factory with Pin 1 and pin 2 closed (a metal plate is connected to Pin 1 and Pin2) for UPS normal operation. To activate EPO function, remove two screws on EPO port and metal plate will be removed.

Note: The EPO function logic can be set up via LCD setting. Please refer to program 16 in UPS setting for the details.

Step 6: Turn on the UPS

When the UPS is plugged in, it may initially start in standby (charging) or bypass mode. Press the ON/Mute button on the front panel for two seconds to power on the UPS into online/normal mode. The UPS will revert to battery mode during a power loss when in online/normal mode. The UPS will go off during a power loss when in standby or bypass mode. See power flow line indicator on the LCD screen to determine mode.

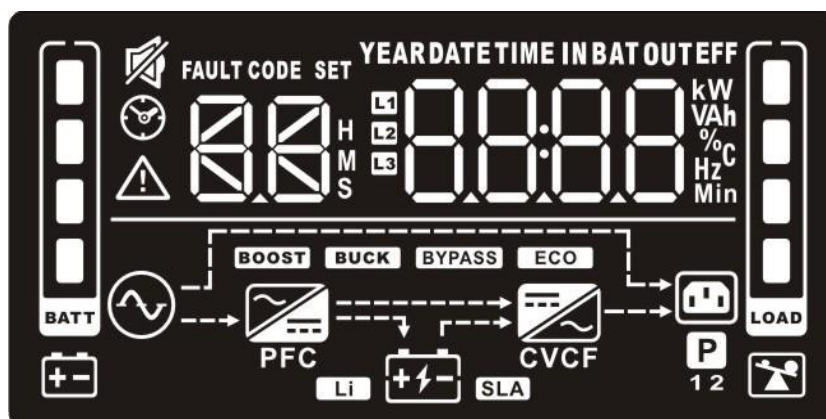
Note: The battery charges fully during the first five hours of normal operation. Do not expect full battery run capability during this initial charge period.

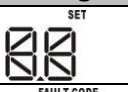
3. Operations

3-1. Button operation

Button	Function
ON/Mute Button	➤ Turn on the UPS: Press and hold ON/Mute button for at least 2 seconds to turn on the UPS. ➤ Mute the alarm: After the UPS is turned on in battery mode, press and hold this button for at least 3 seconds to disable or enable the alarm system. The alarm mute function does not apply to situations when other faults or warnings occur. ➤ Up key: Press this button to display previous selection in UPS setting mode. ➤ Switch to UPS self-test mode: Press ON/Mute buttons for 3 seconds to enter UPS self-testing while in AC mode, ECO mode, or converter mode.
OFF/Enter Button	➤ Turn off the UPS: Press and hold this button at least 2 seconds to turn off the UPS. UPS will be go into Standby mode or transfer toBypass mode if the Bypass setting is enabled. ➤ Confirm selection key: Press this button to confirm selection in UPS setting mode.
Select Button	➤ Switch LCD message: Press this button to change the LCD message for input voltage, input frequency, input current, battery voltage, battery current, battery capacity, ambient temperature, output voltage, output frequency, load current and load percent. ➤ Setting mode: Press and hold this button for 3 seconds to enter UPS setting mode when in Standby and Bypass mode. Menu settings are not accessible in Online/Normal mode. ➤ Down key: Press this button to display next selection in UPS setting mode.
ON/Mute + Select Button	➤ Switch to bypass mode: When the main power is normal, press ON/Mute and Select buttons simultaneously for 3 seconds. Then UPS will enter to bypass mode. This action will be ineffective when the input voltage is out of acceptable range. ➤ Exit setting mode or return to the upper menu: When working in setting mode, press ON/Mute and Select buttons simultaneously for 2 seconds to return to the upper menu.

3-2. LCD Panel



Display	Function
Backup time information	
	Indicates the estimated backup time. H: hours, M: minute, S: second.
Configuration and fault information	
	Indicates the configuration items, which are listed in detail in section 3-5.
	Indicates the warning and fault codes, which are listed in detail in section 3-7 and 3-8.
Mute operation	
	Indicates that the UPS alarm is disabled.
Input, Battery, Temperature, Output & Load information	
	Indicates the input voltage, input frequency, input current, battery voltage, battery current, battery capacity, ambient temperature, output voltage, output frequency, load current and load percent. k: kilo, W: watt, V: voltage, A: ampere, %: percent, °C: centigrade degree, Hz: frequency
Load information	
	Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.
	Indicates overload.
Programmable outlets information	
	Indicates that programmable management outlets are working.
Mode operation information	
	Indicates the UPS connects to the mains (utility or generator power).
	Indicates the battery is working.
	Indicates charging status
	Indicates the bypass circuit is working.
	Indicates the ECO mode is enabled.
	Indicates the AC to DC rectifier circuit is working.
	Indicates the PFC circuit is working.
	Indicates the DC to AC inverter circuit is working.
	Indicates the UPS is working in converter mode.
	Indicates the output is working.
Battery information	
	Indicates the battery level by 0-24%, 25-49%, 50-74%, and 75-100%.
	Indicates low battery.

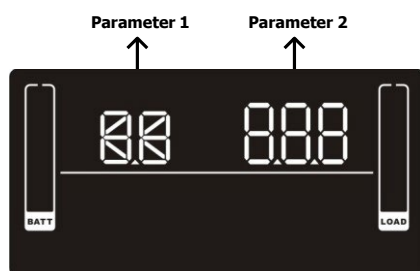
3-3. Audible Alarm

Battery Mode	Sounding every 5 seconds
Low Battery	Sounding every 2 seconds
Overload	Sounding every second
Fault	Continuously sounding
Bypass Mode	Sounding every 10 seconds

3-4. LCD display wordings index

Abbreviation	Display content	Meaning
ENA	ENR	Enable
DIS	di S	Disable
ESC	ESC	Escape
HLS	HLS	High loss
LLS	LLS	Low loss
AO	AO	Active open
AC	AC	Active close
EAT	EAt	Estimated autonomy time
RAT	rAt	Running autonomy time
SD	Sd	Shutdown
OK	OK	OK
ON	ON	ON
BL	bL	Battery Low
OL	OL	Over Load
OI	OI	Over input current
NC	NC	Battery No Connect
OC	OC	Over Charge
SF	SF	Site wiring fault
EP	EP	EPO
TP	tP	Temperature
CH	CH	Charger
BF	bF	Battery Fault
BV	bV	Bypass Out Range
FU	FU	Bypass frequency unstable
BR	bR	Battery Replace
EE	EE	EEPROM error

3-5. UPS Setting



There are three parameters to set up the UPS.
 Parameter 1: Menu program option/choice.
 Parameter 2: Setting options or values for each program.

● 01: Output voltage setting

Interface	Setting
The screenshot shows the UPS display with '01' on the left and '230V' on the right. Above '01' is the word 'SET' and above '230V' is the word 'OUT'. Below the display, there is a small icon of a battery and a small icon of a load.	Parameter 2: Output voltage For 230 Models, You may choose the following output voltage: 200: presents output voltage is 200Vac 208: presents output voltage is 208Vac 220: presents output voltage is 220Vac 230: presents output voltage is 230Vac (Default) 240: presents output voltage is 240Vac For 120 Models, You may choose the following output voltage: 100: presents output voltage is 100Vac 110: presents output voltage is 110Vac 115: presents output voltage is 115Vac 120: presents output voltage is 120Vac (Default) 125: presents output voltage is 125Vac 127: presents output voltage is 127Vac (127 is not applicable to U.S. voltage)

● 02: Frequency Converter enable/disable

Interface	Setting
The screenshot shows the UPS display with '02' on the left and 'd15' on the right. Above '02' is the word 'SET' and above 'd15' is the word 'OUT'. Below the display, there is a small icon of a battery and a small icon of a load. At the bottom center, the text 'CVCF' is visible.	Parameter 2: Enable or disable converter mode. You may choose the following two options: CF ENA: converter mode enable CF DIS: converter mode disable (Default – 60Hz)

● 03: Output frequency setting

Interface	Setting
The screenshot shows the UPS display with '03' on the left and '500Hz' on the right. Above '03' is the word 'SET' and above '500Hz' is the word 'OUT'. Below the display, there is a small icon of a battery and a small icon of a load. At the bottom center, the text 'CVCF' is visible.	Parameter 2: Output frequency setting. You may set the initial frequency on battery mode: BAT 50: presents output frequency is 50Hz BAT 60: presents output frequency is 60Hz If converter mode is enabled, you may choose the following output frequency: CF 50: presents output frequency is 50Hz CF 60: presents output frequency is 60Hz

● 04: ECO enable/disable

Interface	Setting
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	Parameter 2: Enable or disable ECO function. You may choose the following two options: ENA: ECO mode enable DIS: ECO mode disable (Default)
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● **05: ECO voltage range setting**

Interface	Setting
 	Parameter 2: Set the acceptable high voltage point and low voltage point for ECO mode by pressing Down key or Up key. HLS: High loss voltage in ECO mode in parameter 2. For 230 Models, the setting range in parameter 3 is from +7V to +24V of the nominal voltage. (Default: +12V) For 120 Models, the setting range in parameter 3 is from +3V to +12V of the nominal voltage. (Default: +6V) LLS: Low loss voltage in ECO mode in parameter 2. For 230 Models, the setting range in parameter 3 is from -7V to -24V of the nominal voltage. (Default: -12V) For 120 Models, the setting voltage in parameter 3 is from -3V to -12V of the nominal voltage. (Default: -6V)

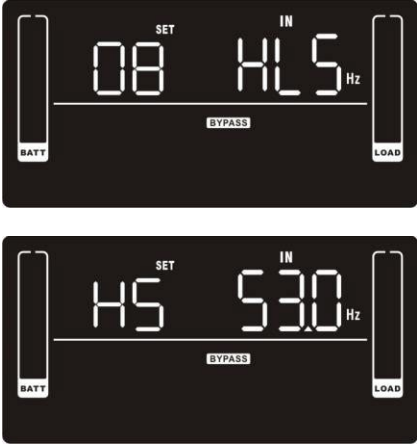
● **06: Bypass enable/disable when UPS is off**

Interface	Setting
	Parameter 2: Enable or disable Bypass function. You may choose the following two options: ENA: Bypass enable DIS: Bypass disable (Default) *Note: Enable bypass if you want the UPS to maintain utility AC to load after pressing the unit's "OFF" button.

● **07: Bypass voltage range setting**

Interface	Setting
 	Parameter 2: Set the acceptable high voltage point and acceptable low voltage point for Bypass mode by pressing the Down key or Up key. HLS: Bypass high voltage point For 230 Models: 230-264: setting the high voltage point in parameter 3 from 230Vac to 264Vac. (Default: 264Vac) For 120 Models: 120-140: setting the high voltage point in parameter 3 from 120Vac to 140Vac. (Default: 132Vac) LLS: Bypass low voltage point For 230 Models: 170-220: setting the low voltage point in parameter 3 from 170Vac to 220Vac. (Default: 170Vac) For 120 Models: 85-115: setting the low voltage point in parameter 3 from 85Vac to 115Vac. (Default: 85Vac)

● **08: Bypass frequency range setting**

Interface	Setting
	Parameter 2: Set the acceptable high frequency point and acceptable low frequency point for Bypass mode by pressing the Down key or Up key. HLS: Bypass high frequency point For 50Hz output frequency models: 51-55Hz: setting the frequency high loss point from 51Hz to 55Hz(Default: 53.0Hz) For 60Hz output frequency models: 61-65Hz: setting the frequency high loss point from 61Hz to 65Hz(Default: 63.0Hz) LLS: Bypass low Frequency point For 50Hz output frequency models: 45-49Hz: setting the frequency low loss point from 45Hz to 49Hz(Default: 47.0Hz) For 60Hz output frequency models: 55-59Hz: setting the frequency low loss point from 55Hz to 59Hz(Default: 57.0Hz)

● **09: Programmable outlets enable/disable**

Interface	Setting
	Parameter 2: Enable or disable programmable outlets. ENA: Programmable outlets enable DIS: Programmable outlets disable (Default) *When setting is disabled, all outlets remain on for the duration of a power outage.

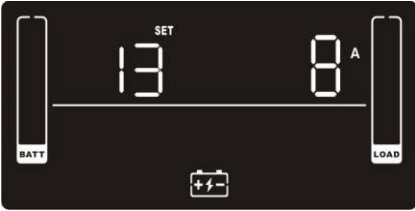
● **10: Programmable outlets setting**

Interface	Setting
	Parameter 2: Set up backup time limits for programmable outlets. 0-999: setting the backup time limits in minutes from 0-999 for programmable outlets which connect to non-critical devices on battery mode. (Default: 999)

● **11: Autonomy limitation setting**

Interface	Setting
	Parameter 2: Set up backup time on battery mode for general outlets. 0-999: setting the backup time in minutes from 0-999 for general outlets on battery mode. DIS: Disable the autonomy limitation and the backup time will depend on battery capacity. (Default) Note: When setting as "0", the backup time will be only 10 seconds.

- **13: Maximum charger current setting**

Interface	Setting
	Parameter 2: Set up the charger maximum current. 1/2/4: setting the charger maximum current 1/2/4in Ampere. (Default: 4A) *A lower amperage setting will result in longer battery recharge times.

- **16: EPO logic setting**

Interface	Setting
	Parameter 2: Set up the EPO function control logic. AO: Active Open (Default). When AO is selected as EPO logic, it will activate EPO function with Pin 1 and Pin 2 in open status. AC: Active Close. When AC is selected as EPO logic, it will activate EPO function with Pin 1 and Pin 2 in close status.

- **17: Site fault detection enable/disable**

Interface	Setting
	Parameter 2: Enable or disable site fault detection. You may choose the following two options: ENA: Site fault detection enable (Default for 120V models) DIS: Site fault detection disable

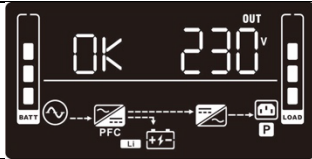
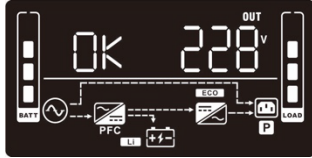
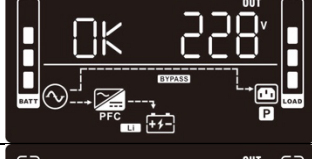
- **18: Display setting for autonomy time**

Interface	Setting
	Parameter 2: Set up the display setting for autonomy time EAT: If EAT is selected, it will display the remaining autonomy time. (Default) RAT: If RAT is selected, it will show accumulated autonomy time (time on battery).

- **00: Exit setting**

Interface	Setting
	Exit the setting mode.

3-6. Operating Mode Description

Operating mode	Description	LCD display
Online mode	When the input voltage is within acceptable range, UPS will provide pure and stable AC power to output. The UPS will also charge the battery at online mode.	
ECO mode	Energy saving mode: When the input voltage is within voltage regulation range, UPS will bypass voltage to output for energy saving. The UPS will also charge the battery at ECO mode.	
Frequency Converter mode	When input frequency is within 40 Hz to 70 Hz, the UPS can be set at a constant output frequency, 50 Hz or 60 Hz. The UPS will still charge battery under this mode.	
Battery mode	When the input voltage is beyond the acceptable range or power failure, the UPS will backup power from battery and alarm is sounding every 5 seconds.	
Bypass mode	When input voltage is within acceptable range but UPS is overload, UPS will enter bypass mode or bypass mode can be set by front panel. Alarm is sounding every 10 seconds.	
Standby mode	UPS is powered off and no output supply power, but still can charge batteries.	
Fault mode	When a fault has occurred, the ERROR icon and the fault code will be displayed.	

3-7. Faults Reference Code

Fault event	Fault code	Icon	Fault event	Fault code	Icon
Bus start fail	01	x	Battery voltage too high	27	x
Bus over	02	x	Battery voltage too low	28	x
Bus under	03	x	Charger output short	2A	x
Inverter soft start fail	11	x	Over temperature	41	x
Inverter voltage high	12	x	Overload	43	
Inverter voltage Low	13	x	Charger failure	45	x
Inverter output short	14	x	Over input current	49	x

3-8. Warning indicator

Warning	Icon (flashing)	Code	Alarm
Low Battery	 	6L	Sounding every 2 seconds
Overload	 	0L	Sounding every second

Over input current		OI	Sounding 2 beep every 10 seconds
Battery is not connected		NC	Sounding every 2 seconds
Over Charge		OC	Sounding every 2 seconds
Site wiring fault		SF	Sounding every 2 seconds
EPO enable		EP	Sounding every 2 seconds
Over temperature		EP	Sounding every 2 seconds
Charger failure		CH	Sounding every 2 seconds

Battery fault		BF	Sounding every 2 seconds (At this time, UPS is off to remind users something wrong with battery)
Out of bypass voltage range		bv	Sounding every 2 seconds
Bypass frequency unstable		FU	Sounding every 2 seconds
Battery replacement		bt	Sounding every 2 seconds
EEPROM error		EE	Sounding every 2 seconds

NOTE: "Site Wiring Fault" function can be enabled/disabled via software. Please check software manual for the details.

4. Troubleshooting

If the UPS system does not operate correctly, refer to the troubleshooting table below:

Symptom	Possible cause	Remedy
No indication and alarm even though the mains is normal.	The AC input power is not connected well.	Check if input power cord firmly connected to the mains.
	The AC input is connected to the UPS output.	Plug AC input power cord to AC input correctly.
The icon  and the warning code  flash on LCD display and alarm is sounding every 2 seconds.	EPO function is activated.	Set the circuit in closed position to disable EPO function.
The icons of  and  and the warning code  flash on LCD display. Alarm is sounding every 2 seconds.	Line and neutral conductors of UPS input are reversed.	Rotate mains power socket by 180° and then connect to UPS system.
The icons of  and  and the warning code  flash on LCD display. Alarm is sounding every 2 seconds.	The external or internal battery is incorrectly connected.	Check if battery is connected properly.
Fault code is shown as 27 on LCD display and alarm is continuously sounding.	Battery voltage is too high or the charger is fault.	Contact your dealer.
Fault code is shown as 28 on LCD display and alarm is continuously sounding.	Battery voltage is too low or the charger is fault.	Contact your dealer.
The icons  and  and the warning code  flash on LCD display. Alarm is sounding every second.	UPS is overload	Remove excess loads from UPS output.
	UPS is overloaded. Devices connected to the UPS are fed directly by the electrical network via the Bypass.	Remove excess loads from UPS output.
	After repetitive overloads, the UPS is locked in the Bypass mode. Connected devices are fed directly by the mains.	Remove excess loads from UPS output first. Then shut down the UPS and restart it.
Fault code is shown as 49 on LCD display and alarm is continuously sounding.	UPS is over input current.	Remove excess loads from UPS output.
Fault code is shown as 43 and the icon  is lighting on LCD display. Alarm is continuously sounding.	The UPS shut down automatically because of overload at the UPS output.	Remove excess loads from UPS output and restart it.

Fault code is shown as 14 on LCD display and alarm is continuously sounding.	The UPS shut down automatically because short circuit occurs on the UPS output.	Check output wiring and if connected devices are in short circuit status.
Fault code is shown as 01, 02, 03, 11, 12, 13 and 41 on LCD display and alarm is continuously sounding.	A UPS internal fault has occurred. There are two possible results: 1. The load is still supplied, but directly from AC power via bypass. 2. The load is no longer supplied by power.	Contact your dealer
Battery backup time is shorter than nominal value.	Batteries are not fully charged	Charge the batteries for at least 5 hours and then check capacity. If the problem still persists, consult your dealer.
	Batteries defect	Contact your dealer to replace the battery.
Fault code is shown as 2A on LCD display and alarm is continuously sounding.	The short circuit occurs on the charger output.	Check if battery wiring of connected external pack is in short circuit status.
Fault code is shown as 45 on LCD display. At the same time, alarm is continuously sounding.	The charger does not have output and battery voltage is less than 10V/PC.	Contact your dealer.

5. Storage and Maintenance

Operation

The UPS system contains no user-serviceable parts. If the battery service life has been exceeded, the batteries must be replaced. In this case, please contact your dealer.

Storage

Store the UPS covered and upright in a cool, dry location.

Specifications

MODEL (RT UL model)		N1C.LS1000	N1C.LS1500
CAPACITY*		1000VA/900W	1500VA/1350W
INPUT			
Voltage Range	Low Line Transfer	80VAC/70VAC/60VAC/55VAC ± 5 % (based on load percentage 100% - 80 % / 80 % - 70 % / 70 - 60 % / 60 % - 0)	
	Low Line Comeback	87VAC/77VAC/67VAC/62VAC ± 5 %	
	High Line Transfer	150 VAC ± 5 %	
	High Line Comeback	145 VAC ± 5 %	
Frequency Range		40Hz ~ 70 Hz	
Phase		Single phase with ground	
Power Factor		≥ 0.99 @ full load	
THDi		≤ 5% @ 80~140VAC THDU < 1.6% @ input and full linear load condition	
OUTPUT			
Output voltage		100/110/115/120/125/127 VAC**	
AC Voltage Regulation		± 1% (Batt. Mode)	
Frequency Range (Synchronized Range)		47 ~ 53 Hz or 57 ~ 63 Hz	
Frequency Range		50 Hz ± 0.1 Hz or 60Hz ± 0.1 Hz (Batt. Mode)	
Current Crest Ratio		3:1	
Harmonic Distortion		≤ 2 % THD (Linear Load) ; 4 % THD (Non-linear Load)	
Transfer Time	AC Mode to Batt. Mode	Zero	
	Inverter to Bypass	< 4 ms	
Waveform (Batt. Mode)		Pure Sinewave	
EFFICIENCY			
AC Mode @ full charged battery		≥ 90%	≥90%
ECO Mode@ full charged battery		≥ 96%	
Battery Mode		≥ 89%	≥89%
BATTERY			
Battery Type		LIFE-02560052NB	LIFE-03840052NB
Numbers		1	1
Recharge Time recover to 100%@ 4A		3 hours	3 hours
Charging Current		1/2/4(Default) A	
Charging Voltage		28 VDC ± 1%	42 VDC ± 1%
PHYSICAL (RT models)			
Dimension, D X W X H (mm)		302 X 438 X 86.2	302 X 438 X 86.2
Net Weight (kgs)		11.1	12.1
ENVIRONMENT			
Operation Humidity		20-95 % RH @ 0- 40°C (non-condensing)	
Noise Level		Less than 50dBA @ 1 Meter (With fan speed control)	
IP degree		IP20	
MANAGEMENT			
Smart RS-232 or USB		Supports Windows® 2000/2003/XP/Vista/2008/7/8/10/11, Linux, Unix and MAC	
Optional SNMP		Power management from SNMP manager and web browser	

* Derate capacity to 90% of capacity when the output voltage is adjusted to 100VAC.

**For 120VAC system, the output power ratings are different based on different input voltage. Please check output power rating table for details. (127 is not applicable to U.S. voltage)

*** Product specifications are subject to change without further notice.

Output Power Rating Table (only for 100/110/115/120/125 VAC system)

Model name	Input rating	Output rating
N1C.LS1000	100-125Vac, 50/60Hz, 12A, 1Ø	100/110/115/120/125Vac, 50/60Hz, 1Ø 1000VA/900W,8A (@125Vac input) ; 1000VA/900W,8.3A (@120Vac input) ; 1000VA/900W,8.7A (@115Vac input) ; 1000VA/900W,9.1A (@110Vac input) ; 900VA/810W,9A (@100Vac input)
N1C.LS1500	100-125Vac, 50/60Hz, 12A, 1Ø	100/110/115/120/125Vac, 50/60Hz, 1Ø 1500VA/1350W,12A (@125Vac input) ; 1500VA/1300W,12.5A (@120Vac input) ; 1500VA/1270W,13A (@115Vac input) ; 1500VA/1200W,13.6A (@110Vac input) ; 1350VA/1040W,13.5A (@100Vac input)