

User Manual

N1C

**N1C.C1500, N1C.C2200,
N1C.C3000**

Uninterruptible Power Supply System

Version: 1.1

Table of Contents

1. Important Safety Warning	1
1-1. Transportation	1
1-2. Preparation	1
1-3. Installation	1
1-4. Operation	1
1-5. Maintenance, service and faults	1
1-6. Product Handling Guidelines	2
2. Installation and setup	3
2-1. Rear panel view	3
2-2. Setup the UPS	4
3. Operations	7
3-1. Button operation	7
3-2. LED Indicators	7
3-3. Audible Alarm	8
4. Troubleshooting	9
5. Storage and Maintenance	10
6. Specifications	11

1. Important Safety Warning

Please comply with all warnings and operating instructions in this manual strictly. 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 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 heater.
- Do not block ventilation holes in the UPS housing.

1-3. Installation

- Do not connect appliances or devices which would 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 domestic appliances 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 an earthed shockproof outlet which must be easily accessible and close 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.

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 or output terminals block may be electrically live even if the UPS system is not connected to the building wiring outlet.
- Prevent no fluids or other foreign objects from inside of the UPS system.

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 or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exists in the terminals of

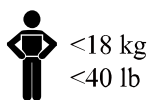
high capability capacitor such as BUS-capacitors. WAIT 5 MINUTES BEFORE REMOVING THE COVER PROTECTIONS!

- Only persons are adequately familiar with batteries and with the required precautionary measures may replace batteries and supervise operations. Unauthorized persons must be kept well away from the batteries.
- **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!
- 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 wristwatches, rings and other metal objects
 - b) Use only tools with insulated grips and 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.
- When changing batteries, install the same number and same type of batteries.
- A battery can present a risk of electric shock and burns by high short-circuit current.
- Failed batteries can reach temperatures that exceed the burn thresholds for touchable surfaces. When replacing batteries, replace with the same type and number of batteries or battery packs.
- Do not attempt to dispose of batteries by burning them. This could cause battery explosion.
- Do not open or destroy batteries. Escaping electrolyte can cause injury to the skin and eyes. It may be toxic.
- Please replace the fuse only with the same type and amperage in order to avoid fire hazards.
- Do not dismantle the UPS system.
- **WARNING:** This is a category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures. (only for 220/230/240 VAC system)

Only for 110/120 VAC system:

- **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 authority to operate the equipment.

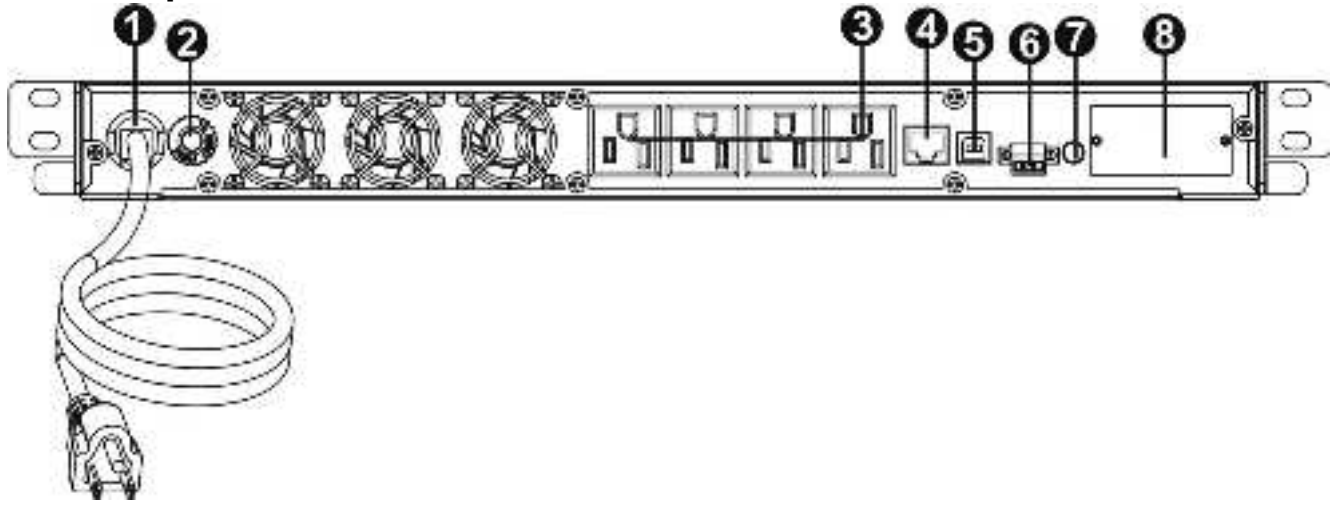
1-6. Product Handling Guidelines



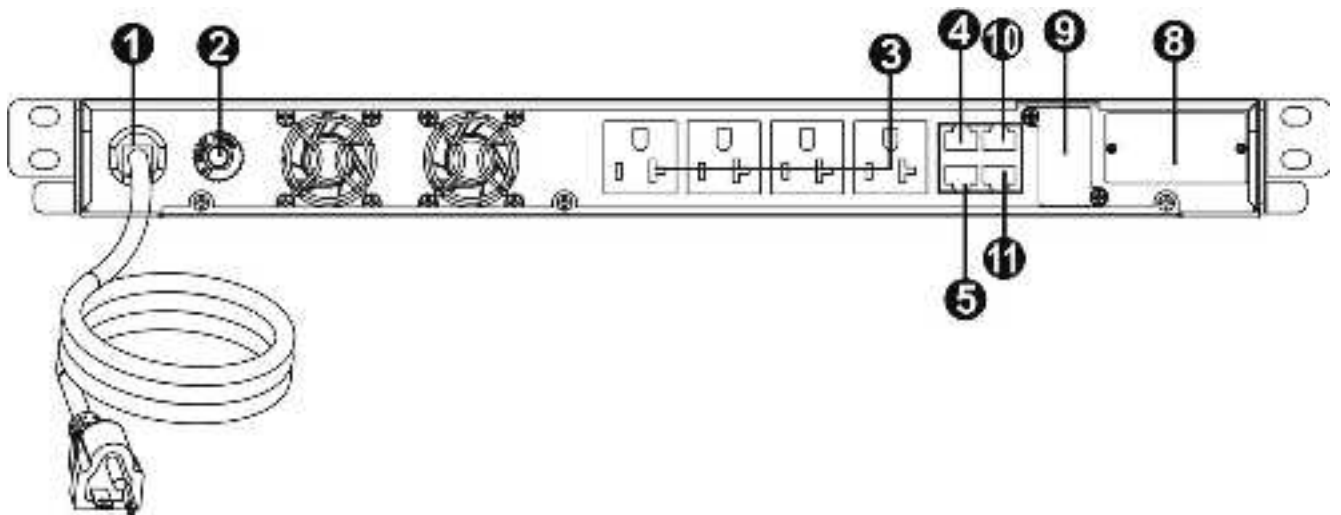
2. Installation and setup

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.

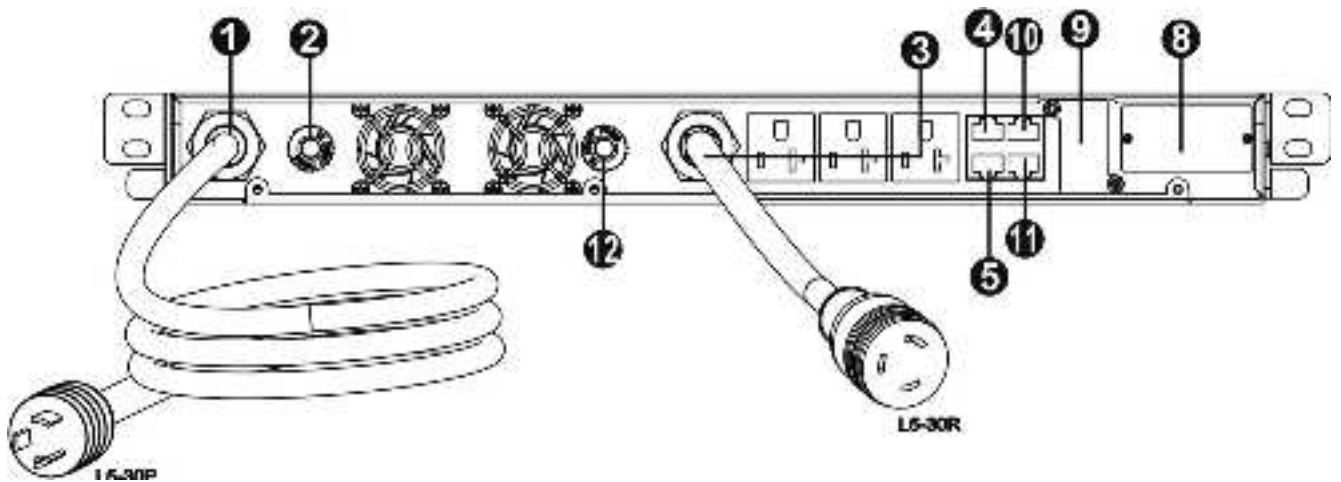
2-1. Rear panel view



1U 1.5K



1U 2.2K

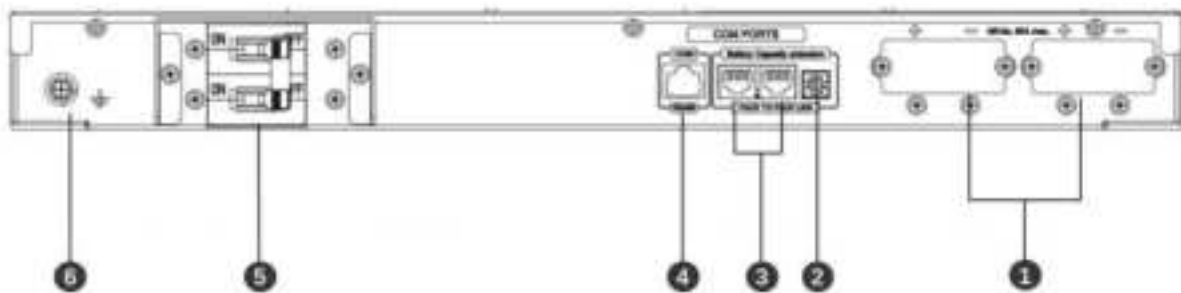


1U 3K

1 AC input

- 2 Input breaker
- 3 Programmable output receptacle
- 4 RS232 communication (DB9 or RJ45 port)
- 5 USB serial communication port
- 6 ROO/RPO function connector
- 7 Mute button
- 8 Intelligent slot(SNMP/AS400. etc)
- 9 External battery connector
- 10 CAN communication port for external battery
- 11 RS485 communication port for external battery
- 12 Output breaker for light load outlets

Battery pack

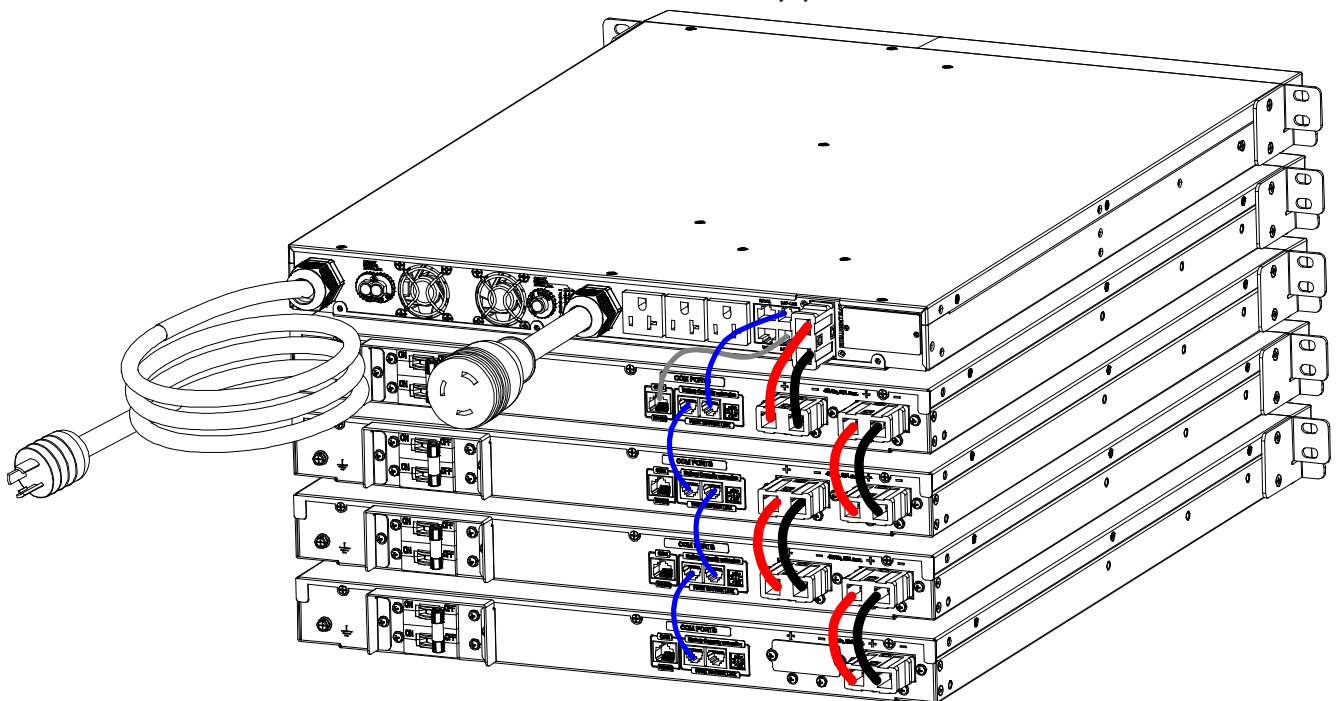


1. External battery connector
2. ID switch
3. Com. port (RJ11)
4. Com. port (RJ45)
5. Breaker
6. Ground screw

2-2. Setup the UPS

Step 1: External battery connection

Follow below chart to connect UPS and external battery pack.



Step 2: UPS input connection

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

Step 3: UPS output connection

The 4 programmable output receptacles can be programmed via USB or RS232 port.

Step 4: Communication connection

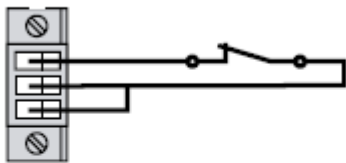
Communication port:



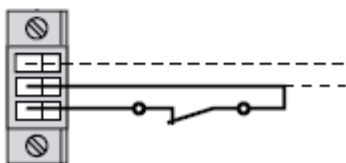
To allow for unattended UPS shutdown/start-up and status monitoring, connect the communication cable one end to the USB/RS-232 port and the other to the communication port of your PC. With the monitoring software installed, you can schedule UPS shutdown/start-up and monitor UPS status through PC.

The UPS is equipped with intelligent slot perfect for SNMP card. When installing with SNMP card in the UPS, it will provide advanced communication and monitoring options.

ROO



RPO



Step 4: Disable/Enable ROO/RPO function

Contact open: UPS shuts down.

Contact closed: UPS start-up (UPS is connected to AC power and AC power is available).

Note: The local ON/OFF control by pressing On/Off button overrides the remote-control function.

Contact open: UPS shuts down and Fault LED (3) will be ON.

To return to normal operation, de-activate external remote contact (Fault LED (3) will be OFF) and restart the UPS by pressing button.

Step 5: Turn on/off the UPS

Press the ON/OFF button on the front panel for two seconds to power on the UPS.

Step 6: Install software

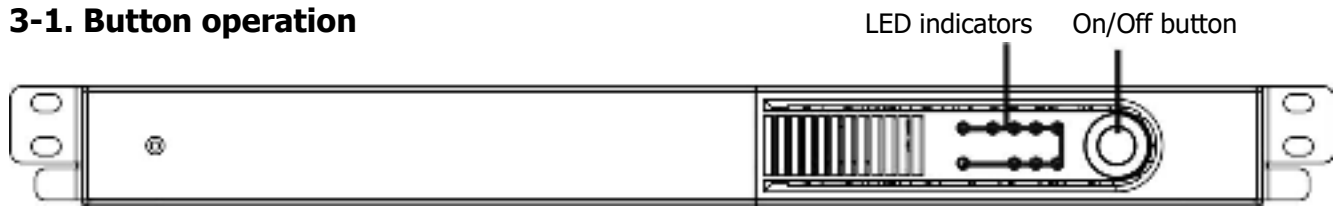
For optimal computer system protection, install UPS monitoring software to fully configure UPS shutdown. You may insert provided CD into CD-ROM to install the monitoring software. If not, please follow steps below to download and install monitoring software from the internet:

1. Go to the website **<http://www.power-software-download.com>**
2. Click ViewPower software icon and then choose your required OS to download the software.

3. Follow the on-screen instructions to install the software.
4. When your computer restarts, the monitoring software will appear as an orange plug icon located in the system tray, near the clock.

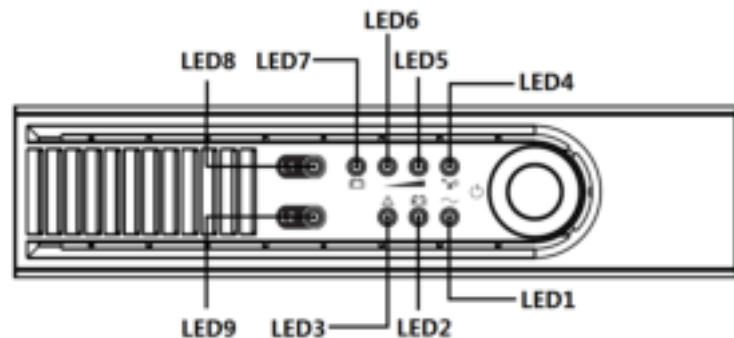
3. Operations

3-1. Button operation



Button	Function
ON/OFF Button	- Turn on the UPS: Press and hold button for at least 2 seconds to turn on the UPS. - Turn off the UPS: Press and hold this button at least 2 seconds to turn off the UPS. UPS will be in standby mode when utility power is normal or transfer to bypass mode if bypass mode is enabled via software.

3-2. LED Indicators



UPS Status	LED	Color	Lighting/Flashing
Line Mode	LED1	Green	Lighting
	LED4 to LED7 indicate load level during line mode. LED4: > 75% load level LED5: 50% ~ 75% load level LED6: 25% ~ 50% load level LED7: 0% ~25% load level	Green	Lighting
Battery Mode	LED2	Yellow	Flashing
	LED4 to LED7 indicate battery capacity during battery mode. LED4: battery capacity > 75% LED5: battery capacity > 50% LED6: battery capacity > 25% LED7: battery capacity > 5%	Green	Lighting
Low battery	LED7	Green	Flashing
	LED3	Red	Lighting
Battery replacement	LED3	Red	Flashing
Fault	LED3	Red	Lighting

On/off status of output receptacles	LED 8: indicating on/off status of general output receptacles (③) LED 9: indicating on/off status of programmable outlet (④)	Green	Lighting
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3-3. Audible Alarm

Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Overload	Sounding twice every second
Fault	Continuously sounding
Bypass Mode	Sounding every 10 seconds

4. Troubleshooting

If the UPS system does not operate correctly, please solve the problem by using the 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 mains is normal but fault LED is flashing. The alarm is sounding every second.	The internal or external battery connection is wrong.	Please re-connect battery wires with correct polarity.
The alarm is sounding twice every second and fault LED is flashing.	UPS is overload	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.
The mains is normal. But the unit is on battery mode.	Battery is not fully charged.	Please charge battery at least 5 hours. If battery is still in low battery level, please contact local dealer.
	Battery defect.	Replace the battery with the same type of battery.
Fault LED is on and alarm is sounding continuously.	UPS fault.	Please contact local dealer directly.

5. Storage and Maintenance

Operation

The UPS system contains no user-serviceable parts. If the battery service life (3~5 years at 25°C ambient temperature) has been exceeded, the batteries must be replaced. In this case, please contact your dealer.



Be sure to deliver the spent battery to a recycling facility or ship it to your dealer in the replacement battery packing material.

Storage

Before storing, charge the UPS 5 hours. Store the UPS covered and upright in a cool, dry location. During storage, recharge the battery in accordance with the following table:

Storage Temperature	Recharge Frequency	Charging Duration
-25°C -50°C	Every 3 months	1-2 hours
50°C -55°C	Every 2 months	1-2 hours

6. Specifications

MODEL		N1C.C1500	N1C.C2200	N1C.C3000
CAPACITY		1500 VA / 1350 W	2200 VA / 1980 W	3000 VA / 2700 W
INPUT				
Rated voltage		110/120 VAC		
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	85VAC/75VAC/65VAC/60VAC ± 5 % (based on load percentage 100% -80 % / 80 % -70 % / 70 -60 % / 60 % -0)		
	High Line Transfer	150 VAC ± 5 %		
	High Line Comeback	140 VAC ± 5 %		
Rated frequency		60Hz or 50Hz		
Frequency Range		40Hz ~ 70 Hz		
Phase		Single phase with ground		
Power Factor		≥0.99 @ Nominal voltage (full load)		
AC Input Fuse/breaker		20A breaker	20A breaker	30A breaker
Input Cable*		6FT with plug NEMA L5-20P or other cables with same specification	6FT with plug NEMA L5-20P or other cables with same specification	6FT with plug NEMA L5-30P or other cables with same specification
OUTPUT				
Short-Circuit Current		Approx.192A peak, 2.9A rms	Approx.250A peak, 3.9A rms	
Output voltage		110/120 VAC		
AC Voltage Regulation		± 1%		
Frequency Range (Synchronized Range)		57 ~ 63 Hz or 47 ~ 53 Hz		
Frequency Range (Bat. Mode)		60Hz or 50 Hz± 0.3 Hz		
Overload		100%~105%: audible warning 105%-130%: UPS shuts down in 10 seconds at battery mode or transfers to bypass mode after 2min when the utility is normal. >130%: UPS shuts down immediately at battery mode or transfer to bypass mode after 10s when the utility is normal.		
Current Crest Ratio		5:1 for 110/120 VAC system or 3:1 for 220/230/240 VAC systems		
Harmonic Distortion		≤3 % THD (Linear Load) ≤ 5 % THD (Non-linear Load)		
Transfer Time	AC Mode to Bat Mode	Zero		
	Inverter to Bypass	4 ms (Typical)		
Waveform (Bat Mode)		Pure Sinewave		
EFFICIENCY				
AC Mode		~ 92% @ 100% load	~ 94% @ 100% load	
Battery Mode		~ 88% @ 100% load	~ 90% @ 100% load	
BATTERY				
Battery Type		Lithium-iron battery, 38.4V / 6Ah	Lithium-iron battery, 48V / 5Ah	
Numbers		1	1	
Charger current		1.5A	1/2.5/5/8A, 2.5A as default***	
Recharge Time		4 hours recover to 90% capacity	2 hours recover to 90% capacity	
Battery fuse		40A/58V*2PCS	40A/58V*4PCS	
PHYSICAL				
Dimension, D X W X H		509 x 438 x 44 mm 20.04 x 17.24 x 1.73 in	580 x 438 x 44 mm 22.83 x 17.24 x 1.73 in	
Net Weight		12.4 kg / 27.34 lb	14.2 kg / 31.3 lb	
N1C.CEBM1U				

Dimension, D X W X H	580 x 438 x 44 mm 22.83 x 17.24 x 1.73 in
Net Weight	14 kg / 30.86 lb
ENVIRONMENT	
Operating Temperature	0 °C to 50 °C
Operating	0 -2000 m
Storage	0 -2000 m
Operation Humidity	20-90 % RH @ 0-50°C (non-condensing)
International Protection Code	IP20
Applicable Power Grid Power Distribution System	TN Power System
Pollution Degree	2
Overvoltage category	II for normal mode
Noise Level	Less than 50dBA @ 1 Meter
MANAGEMENT	
USB/RS-232	Supports Windows® 2000/2003/XP/Vista/2008/7/8, Linux, Unix and MAC
Optional SNMP	Power management from SNMP manager and web browser

* When input power cord is provided, Please use incidental power cord in the package.

**When output voltage is 208Vac, the power will be derated to 80%

***If UPS connect with the external battery, the charge current will be changed to 8A.

RUNTIME TABLE

Load Percent/min		25%	50%	75%	100%
N1C.C3000	Internal battery(LIO 48005)	17.5	8.5	5.5	4
	1Battery Pack(LIO 4802)	70	34	19	13
	2Battery Pack(LIO 4802)	140	68	39	27
	3Battery Pack(LIO 4802)	210	102	56	38
	4Battery Pack(LIO 4802)	280	136	81	55

Load Percent/min		25%	50%	75%	100%
N1C.C2200	Internal battery(LIO 48005)	22.5	11	7	5.2
	1Battery Pack(LIO 4802)	95	46	25	17
	2Battery Pack(LIO 4802)	190	92	53	36
	3Battery Pack(LIO 4802)	286	139	76	51
	4Battery Pack(LIO 4802)	381	185	110	75

Load Percent/min		25%	50%	75%	100%
N1C.C1500	Internal battery(38.4V 6Ah)	28	14.5	9.5	7