

	<p><b>Parameter 2:</b> Set the acceptable high frequency point and acceptable low frequency point for Bypass mode by pressing the Down key or Up key.</p> <p><b>HLS:</b> Bypass high frequency point For 50Hz output frequency models: <b>51-55Hz:</b> setting the frequency high loss point from 51Hz to 55Hz (Default: 53.0Hz) For 60Hz output frequency models: <b>61-65Hz:</b> setting the frequency high loss point from 61Hz to 65Hz (Default: 63.0Hz)</p> <p><b>LLS:</b> Bypass low Frequency point For 50Hz output frequency models: <b>45-49Hz:</b> setting the frequency low loss point from 45Hz to 49Hz (Default: 47.0Hz) For 60Hz output frequency models: <b>55-59Hz:</b> setting the frequency low loss point from 55Hz to 59Hz (Default: 57.0Hz)</p>
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● **09: Programmable outlets enable/disable**

Interface	Setting
	<p><b>Parameter 2:</b> Enable or disable programmable outlets.</p> <p><b>ENA:</b> Programmable outlets enable</p> <p><b>DIS:</b> Programmable outlets disable (Default)</p>

● **10: Programmable outlets setting**

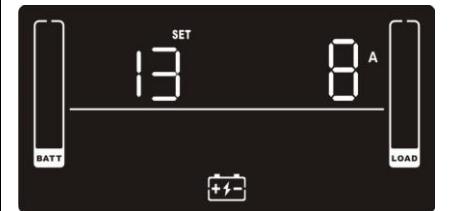
Interface	Setting
	<p><b>Parameter 2:</b> Set up backup time limits for programmable outlets.</p> <p><b>0-999:</b> setting the backup time limits in minutes from 0-999 for programmable outlets which connect to non-critical devices on battery mode. (Default: 999)</p>

● **11: Autonomy/backup time limitation setting**

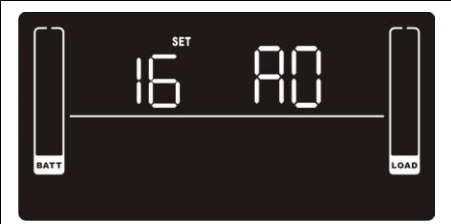
Interface	Setting
	<p><b>Parameter 2:</b> Set up backup time on battery mode for general outlets.</p> <p><b>0-999:</b> setting the backup time in minutes from 0-999 for general outlets on battery mode.</p> <p><b>DIS:</b> Disable the autonomy limitation and the backup time will depend on battery capacity.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

● **13: Maximum charger current setting**


Interface	Setting
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	<p><b>Parameter 2:</b> Set up the charger maximum current.  <b>1/2/4/6/8:</b> setting the charger maximum current 1/2/4/6/8 in Ampere. (Default: 4A)</p>
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● **16: EPO logic setting**

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


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

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


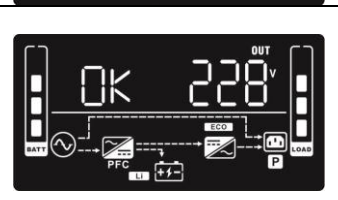
● **18: Display setting for autonomy time**






<p><b>Interface</b></p>	<p><b>Setting</b></p>
	<p><b>Parameter 2:</b> Set up the display setting for autonomy time  <b>EAT:</b> If EAT is selected, it will display the remaining autonomy time. (Default)  <b>RAT:</b> If RAT is selected, it will show accumulated autonomy time so far.</p>

● **00: Exit setting**


<p><b>Interface</b></p>	<p><b>Setting</b></p>
	<p>Exit the setting mode.</p>

**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		BL	Sounding every 2 seconds
Overload		OL	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		ET	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	 <b>BYPASS</b>	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, 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 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 all batteries are connected well.
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.

Symptom	Possible cause	Remedy
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 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 (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
35°C ~ 45°C	Every months	1 hours @5~35°C
25°C ~ 35°C	Every 1-3 months	1 hours@5~25°C
-10°C ~ 25°C	Every 3-12 months	1 hours@5~25°C

## 6. Specifications

<b>MODEL (RT UL model)</b>		N1C.HR2000M
<b>CAPACITY*</b>		2000VA/1800W
<b>INPUT</b>		
Voltage Range	Low Line Transfer	80VAC/70VAC/60VAC/55VAC $\pm$ 5 % ( based on load percentage 100% - 80 % / 80 % - 70 % / 70 - 60 % / 60 % - 0)
	Low Line Comeback	87VAC/77VAC/67VAC/62VAC $\pm$ 5 %
	High Line Transfer	150 VAC $\pm$ 5 %
	High Line Comeback	145 VAC $\pm$ 5 %
Frequency Range		40Hz ~ 70 Hz
Phase		Single phase with ground
Power Factor		$\geq$ 0.99 @ full load
THDi		$\leq$ 5% @ 160-265VAC or 80~140VAC THDU < 1.6% @ input and full linear load condition
<b>OUTPUT</b>		
Output voltage		100/110/115/120/125/127 VAC**
AC Voltage Regulation		$\pm$ 1% (Batt. Mode)
Frequency Range (Synchronized Range)		47 ~ 53 Hz or 57 ~ 63 Hz
Frequency Range		50 Hz $\pm$ 0.1 Hz or 60Hz $\pm$ 0.1 Hz (Batt. Mode)
Current Crest Ratio		3:1
Harmonic Distortion		$\leq$ 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
<b>EFFICIENCY</b>		
AC Mode @ full charged battery		$\geq$ 91%
ECO Mode@ full charged battery		$\geq$ 96%
Battery Mode		$\geq$ 89%
<b>BATTERY(N1C.HR-EBM)</b>		
Battery Type		LIFE-485000
Numbers		2
Recharge Time		2 hours recover to 100% capacity @ 4A charging current
Charging Current		1/2/4(Default)/6/8A
Charging Voltage		52.5 VDC $\pm$ 1%
<b>PHYSICAL (UPS)</b>		
Dimension, D X W X H (mm)		445.1 x 223 x 88
Net Weight (kgs)		6.4kg
<b>PHYSICAL (N1C.HREBM)</b>		
Dimension, D X W X H (mm)		445.1 x 223 x 88
Net Weight (kgs)		12.2kg
<b>ENVIRONMENT</b>		
Operation Humidity		20-95 % RH @ 0- 40°C (non-condensing)
Noise Level		Less than 50dBA @ 1 Meter (With fan speed control)
IP degree		IP20
<b>MANAGEMENT</b>		
Smart RS-232 or USB		Supports Windows® 2000/2003/XP/Vista/2008/7/8/10, 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 the 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.HR2000M	100-125Vac, 50/60Hz, 16A, 1Ø	100/110/115/120/125Vac, 50/60Hz, 1Ø 2000VA/1800W,16A (@125Vac input) ; 2000VA/1800W,16.7A (@120Vac input) ; 2000VA/1740W,17.4A (@115Vac input) ; 2000VA/1640W,18.2A (@110Vac input) ; 1800VA/1500W,18A (@100Vac input)