



Tower Online UPS

UPO11-1/1.5/2/3AX

Uninterruptible Power Supply System

Table of Contents

1. Important Safety Warning	3
1-1. Transportation	3
1-2. Preparation	3
1-3. Installation	3
1-4. Operation	3
1-5. Maintenance, service and faults	4
2. Installation and setup	5
2-1. Rear panel view	6
2-2. Setup the UPS	6
3. Operations	9
3-1. Button operation	9
3-2. LCD Panel	10
3-3. Audible Alarm	11
3-4. LCD display wordings index	11
3-5. UPS Setting	12
3-6. Operating Mode Description	17
3-7. Faults Reference Code	19
3-8. Warning indicator	19
4. Troubleshooting	21
5. Storage and Maintenance	22
6. Specifications	23

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.
- Please use only VDE-tested, CE-marked mains cable (e.g. the mains cable of your computer) to connect the UPS system to the building wiring outlet (shockproof outlet).
- Please use only VDE-tested, CE-marked power cables to connect the loads 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.
- In order to fully disconnect the UPS system, first press the OFF/Enter button to disconnect the mains.
- 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 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.
- 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:
 - remove wristwatches, rings and other metal objects
 - use only tools with insulated grips and handles.
- When changing batteries, install the same number and same type of batteries.
- 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.

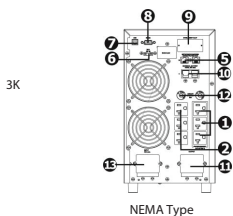
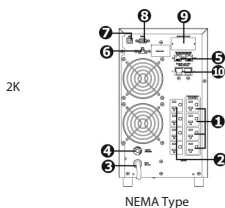
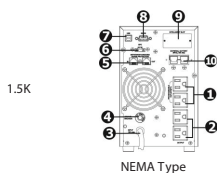
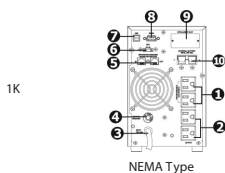
2. Installation and setup

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.

NOTE: There are two different types of online UPS: standard and long-run models. Please refer to the following model table.

Model	Type	Model	Type
1K- 1.5K- 2K- 3K	Standard	1KL- 1.5KL- 2KL- 3KL	Long-run

2-1. Rear panel view

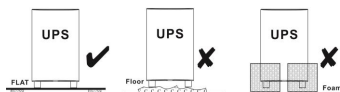


1. Programmable outlets: connect to non-critical loads.
2. Output receptacles: connect to mission-critical loads.
3. AC input
4. Input circuit breaker
5. Network/Fax/Modem surge protection
6. Emergency power off function connector (EPO)
7. USB communication port
8. RS-232 communication port
9. SNMP intelligent slot
10. External battery connection (only available for L model)
11. Output terminal
12. Output circuit breaker
13. Input terminal

2-2. Setup the UPS

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

1. UPS should be placed on the flat and clean surface. Place it 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, where it is away from window and door. Maintain minimum clearance of 100mm in the bottom of the UPS to avoid dust and high temperature.



2. Maintain an ambient temperature range of 0°C to 45°C for UPS optimal operation. For every 5°C above 45°C, the UPS will derate 12% of nominal capacity at full load. The highest working temperature requirement for UPS operation is 50°C.
3. It's required to maintain maximum altitude of 1000m to keep UPS normal operation at full load UPS. If it's used in high altitude area, please reduce connected load. Altitude derating power with connected loads for UPS normal operation is listed as below:

Altitude m	Derating factor**
1 000	1.0
1 500	0.99
2 000	0.91
2 500	0.88
3 000	0.82
3 500	0.79
4 000	0.74
4 500	0.7
5 000	0.67

NOTES - Refer to table 1

Based on severity of dry air = 1.225 kg/m³ at sea-level, +15 °C.

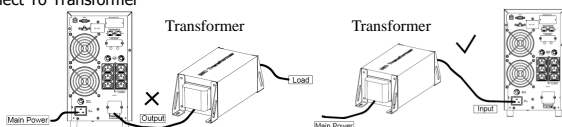
** Since fan flow efficiency varies with altitude, forced air-cooled equipment will have a smaller derating.

4. Place UPS:

It's equipped with fan for cooling. Therefore, place the UPS in a well-ventilated area. It's required to maintain minimum clearance of 100mm in the front of the UPS and 300mm in the back and two sides of the UPS for heat dissipation and easy-maintenance.

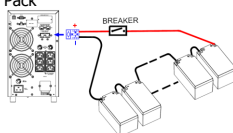


5. Connect To Transformer



Please do NOT connect transformer to output of the UPS. Otherwise, it will cause UPS internal fault and force UPS to enter to fault mode. Please connect transformer to input of the UPS.

6. Connect to External Battery Pack



When connecting external battery packs, please be sure to connect polarity correctly. Connect positive pole of battery pack to positive pole of external battery connector in UPS and negative pole of battery pack to negative pole of external battery connector in UPS. Polarity misconnection will cause UPS internal fault. It's recommended to add one breaker between positive pole of battery pack and positive pole of external battery connector in UPS to prevent damage to battery packs from internal fault.

The required specification of breaker: voltage $\geq 1.25 \times$ battery voltage/set; current $\geq 50A$

Please choose battery size and connected numbers according to backup time requirement and UPS specifications. To extend battery lifecycle, it's recommended to use them in the temperature range of 15°C to 25°C.

Step 1: External battery connection

Follow the right chart to make external battery connection.

**Step 2: UPS input connection**

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

Avoid

- For 200/208/220/230/240VAC models: The power cord is supplied in the UPS package.
- For 100/110/115/120/127VAC models: The power cord is attached to the UPS. The input plug is a NEMA 5-15P for 1K, 1KL, 1.5K and 1.5KL models, NEMA 5-20P for 2K and 2KL models.

Note: For Low voltage models: 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). Please also install a circuit breaker (40A) between the mains and AC input in 3K model for safety operation.

Step 3: UPS output connection

- For socket-type outputs, 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.
- For terminal-type input or outputs, please follow below steps for the wiring configuration:
 - a) Remove the small cover of the terminal block
 - b) Suggest using AWG14 or 2.1mm² power cords. Suggest using AWG12-10 or 3.3mm²-5.3mm² power cords for NEMA type.
 - c) Upon completion of the wiring configuration, please check whether the wires are securely affixed.
 - d) Put the small cover back to the rear panel.

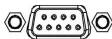
Step 4: Communication connection

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 perfect for either SNMP or AS400 card. When installing either SNMP or AS400 card in the UPS, it will provide advanced communication and monitoring options.

Step 5: Network connection

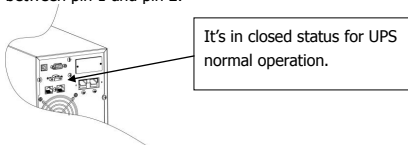
Network/Fax/Phone surge port



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 6: Disable and enable EPO function

Keep the pin 1 and pin 2 closed for UPS normal operation. To activate EPO function, cut the wire between pin 1 and pin 2.



Step 7: Turn on the UPS

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

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.

Step 8: Install software

For optimal computer system protection, install UPS monitoring software to fully configure UPS shutdown. Use supplied RS-232 or USB communication cable to connect RS-232/USB port of UPS and RS-232/USB port of PC. Then, follow below steps to install monitoring software.

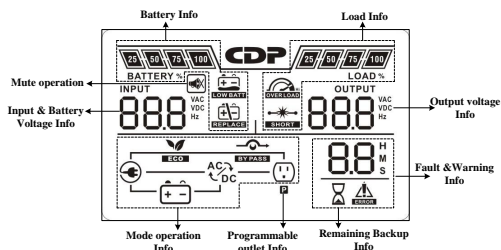
1. Insert the included installation CD into CD-ROM drive and then follow the on-screen instructions to proceed software installation. If there no screen shows 1 minute after inserting the CD, please execute setup.exe file for initiating software installation.
2. Follow the on-screen instructions to install the software.
3. 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/Mute Button	<ul style="list-style-type: none"> ➤ 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. But it's not applied to the situations when warnings or errors 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	<ul style="list-style-type: none"> ➤ Turn off the UPS: Press and hold this button at least 2 seconds to turn off the UPS. UPS will be in standby mode under power normal or transfer to Bypass mode if the Bypass enable setting by pressing this button. ➤ Confirm selection key: Press this button to confirm selection in UPS setting mode.
Select Button	<ul style="list-style-type: none"> ➤ Switch LCD message: Press this button to change the LCD message for input voltage, input frequency, battery voltage, output voltage and output frequency. It will return back to default display when pausing for 10 seconds. ➤ Setting mode: Press and hold this button for 3 seconds to enter UPS setting mode when Standby and Bypass mode. ➤ Down key: Press this button to display next selection in UPS setting mode.
ON/Mute + Select Button	<ul style="list-style-type: none"> ➤ 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 0.2 seconds to return to the upper menu. If it's already in top menu, press these two buttons at the same time to exit the setting mode.

3-2. LCD Panel



Display	Function
Backup time information	
 88 H M S	Indicates the estimated backup time. H: hours, M: minute, S: second
Configuration and fault information	
88	Indicates the configuration items, and the configuration items are listed in details in section 3-5.
88 	Indicates the warning and fault codes, and the codes are listed in details in section 3-7 and 3-8.
Mute operation	
	Indicates that the UPS alarm is disabled.
Output information	
888 ^{VAC} _{VDC} _{Hz}	Indicates the output voltage and output frequency. Vac: AC voltage, Vdc: DC voltage, Hz: frequency
Load information	
 25 50 75 100 LOAD %	Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.
	Indicates overload.
	Indicates the load or the UPS output is short circuit.
Programmable outlets information	
	Indicates that programmable management outlets are working.
Mode operation information	
	Indicates the UPS connects to the mains.
	Indicates the battery is working.
	Indicates the bypass circuit is working.

	Indicates the ECO mode is enabled.
	Indicates the inverter circuit is working.
	Indicates the output is working.
Battery information	
	Indicates the battery level by 0-24%, 25-49%, 50-74%, and 75-100%.
	Indicates the battery is fault.
	Indicates low battery level and low battery voltage.
Input & battery voltage information	
	Indicate the input voltage, input frequency and battery voltage. Vac: AC voltage, Vdc: DC voltage, Hz: frequency

3-3. Audible Alarm

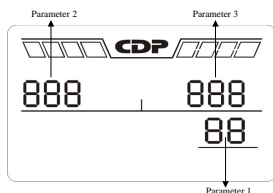
Battery Mode	Sounding every 5 seconds
Low Battery	Sounding every 2 seconds
Overload	Sounding every second
Fault	Continuously sounding
Bypass Mode	Sounding every 10 seconds

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
BAT	bAT	Battery
BAH	bAH	Battery AH
CHA	CHR	Charger current
CBV	CBV	Charger boost voltage
CFV	CFV	Charger float voltage
CF	CF	Converter
ON	ON	ON
EP	EP	EPO
TP	TP	Temperature

CH	CH	Charger
FU	FU	Bypass frequency unstable
EE	EE	EEPROM error
BR	bF	Battery Replacement

3-5. UPS Setting



There are three parameters to set up the UPS.

Parameter 1: It's for program alternatives. Refer to below table.

Parameter 2 and parameter 3 are the setting options or values for each program.



01: Output voltage setting

Interface	Setting
	<p>Parameter 3: Output voltage For 200/208/220/230/240 VAC models, you may choose the following output voltage:</p> <p>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</p>
	<p>For 100/110/115/120/127 VAC models, you may choose the following output voltage:</p> <p>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) 127: presents output voltage is 127Vac</p>

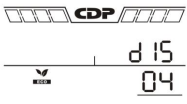
02: Frequency Converter enable/disable

Interface	Setting
	<p>Parameter 2 & 3: Enable or disable converter mode. You may choose the following two options:</p> <p>CF ENA: converter mode enable CF DIS: converter mode disable (Default)</p>

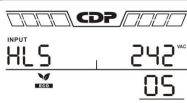
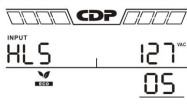
- **03: Output frequency setting**

Interface	Setting
 <p>The LCD display shows the CDP logo at the top. Below it, 'CF' is displayed on the left and '500^{Hz}' on the right. Underneath '500^{Hz}' is the number '03'. A horizontal line is positioned between 'CF' and '500^{Hz}'.</p>	<p>Parameter 2 & 3: 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</p>
 <p>The LCD display shows the CDP logo at the top. Below it, 'bAt' is displayed on the left and '500^{Hz}' on the right. Underneath '500^{Hz}' is the number '03'. A horizontal line is positioned between 'bAt' and '500^{Hz}'.</p>	

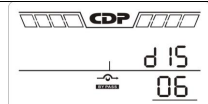
- **04: ECO enable/disable**

Interface	Setting
 <p>The LCD display shows the CDP logo at the top. Below it, 'd 15' is displayed on the left and '04' on the right. A horizontal line is positioned between 'd 15' and '04'. Below the display is a small icon of a battery with a downward arrow and the text 'ECO'.</p>	<p>Parameter 3: Enable or disable ECO function. You may choose the following two options: ENA: ECO mode enable DIS: ECO mode disable (Default)</p>

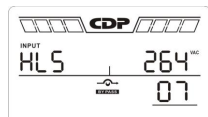
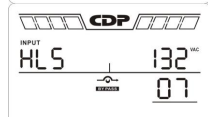
- **05: ECO voltage range setting**

Interface	Setting
 <p>The LCD display shows the CDP logo at the top. Below it, 'INPUT HLS' is displayed on the left and '242^{VAC}' on the right. Underneath '242^{VAC}' is the number '05'. A horizontal line is positioned between 'INPUT HLS' and '242^{VAC}'. Below the display is a small icon of a battery with a downward arrow and the text 'ECO'.</p>	<p>Parameter 2 & 3: 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 200/208/220/230/240 VAC models, the setting range in parameter 3 is from +7V to +24V of the nominal voltage. (Default: +12V) For 100/110/115/120/127 VAC 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 200/208/220/230/240 VAC models, the setting range in parameter 3 is from -7V to -24V of the nominal voltage. (Default: -12V) For 100/110/115/120/127 VAC models, the setting voltage in parameter 3 is from -3V to -12V of the nominal voltage. (Default: -6V)</p>
 <p>The LCD display shows the CDP logo at the top. Below it, 'INPUT HLS' is displayed on the left and '127^{VAC}' on the right. Underneath '127^{VAC}' is the number '05'. A horizontal line is positioned between 'INPUT HLS' and '127^{VAC}'. Below the display is a small icon of a battery with a downward arrow and the text 'ECO'.</p>	

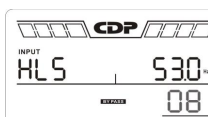
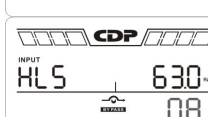
● **06: Bypass enable/disable when UPS is off**

Interface	Setting
 <p>The LCD display shows 'd 15' in the top right and '06' in the bottom right. A bypass icon is visible in the center.</p>	<p>Parameter 3: Enable or disable Bypass function. You may choose the following two options:</p> <p>ENA: Bypass enable</p> <p>DIS: Bypass disable (Default)</p>

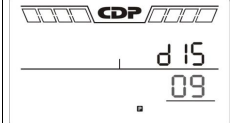
● **07: Bypass voltage range setting**

Interface	Setting
 <p>The LCD display shows 'HLS' on the left, '264^{vac}' on the right, and '07' at the bottom. A bypass icon is in the center.</p>	<p>Parameter 2 & 3: Set the acceptable high voltage point and acceptable low voltage point for Bypass mode by pressing the Down key or Up key.</p> <p>HLS: Bypass high voltage point For 200/208/220/230/240 VAC models: 230-264: setting the high voltage point in parameter 3 from 230Vac to 264Vac. (Default: 264Vac) For 100/110/115/120/127 VAC models: 120-140: setting the high voltage point in parameter 3 from 120Vac to 140Vac. (Default: 132Vac)</p> <p>LLS: Bypass low voltage point For 200/208/220/230/240 VAC models: 170-220: setting the low voltage point in parameter 3 from 170Vac to 220Vac. (Default: 170Vac) For 100/110/115/120/127 VAC models: 85-115: setting the low voltage point in parameter 3 from 85Vac to 115Vac. (Default: 85Vac)</p>
 <p>The LCD display shows 'HLS' on the left, '132^{vac}' on the right, and '07' at the bottom. A bypass icon is in the center.</p>	

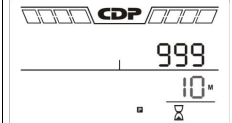
● **08: Bypass frequency range setting**

Interface	Setting
 <p>The LCD display shows 'HLS' on the left, '530^{Hz}' on the right, and '08' at the bottom. A bypass icon is in the center.</p>	<p>Parameter 2 & 3: Set the acceptable high frequency point and acceptable low frequency point for Bypass mode by pressing the Down key or Up key.</p> <p>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)</p> <p>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)</p>
 <p>The LCD display shows 'HLS' on the left, '630^{Hz}' on the right, and '08' at the bottom. A bypass icon is in the center.</p>	

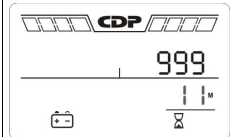
- **09: Programmable outlets enable/disable**

Interface	Setting
	<p>Parameter 3: Enable or disable programmable outlets. ENA: Programmable outlets enable DIS: Programmable outlets disable (Default)</p>


- **10: Programmable outlets setting**

Interface	Setting
	<p>Parameter 3: 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)</p>


- **11: Autonomy limitation setting**

Interface	Setting
	<p>Parameter 3: 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.</p>


- **12: Battery total AH setting**

Interface	Setting
	<p>Parameter 3: Set up the battery total AH of the UPS. 7-999: setting the battery total capacity from 7-999 in AH. Please set the correct battery total capacity if external battery bank is connected.</p>


- **13: Charger maximum current setting**

Interface	Setting
 <p>CHA 8 13</p>	<p>Parameter 3: Set up the charger maximum current. 1/2/4/6/8: setting the charger maximum current 1/2/4/6/8* in Ampere. (Default: 8A) *Note: This setting is only available for super charger.</p>


- **14: Charger Boost voltage setting**

Interface	Setting
 <p>CBV 236^{vc} 14</p>	<p>Parameter 3: Set up the charger boost voltage. 2.25-2.40: setting the charger boost voltage from 2.25 V/cell to 2.40V/cell. (Default: 2.36V/cell)</p>

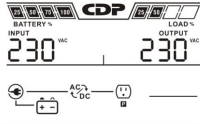
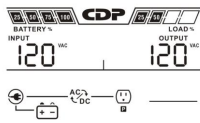
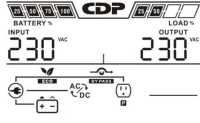
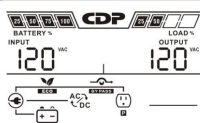
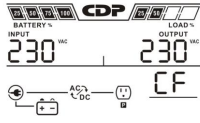
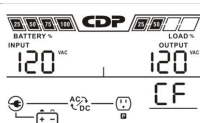
- **15: Charger Float voltage setting**

Interface	Setting
 <p>CFV 228^{vc} 15</p>	<p>Parameter 3: Set up the charger float voltage. 2.20-2.33: setting the charger float voltage from 2.20 V/cell to 2.33V/cell. (Default: 2.28V/cell)</p>

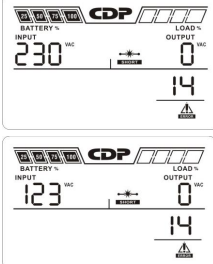
- **00: Exit setting**

Interface	Setting
 <p>ESC 00</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.	 









<p>Battery mode</p>	<p>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.</p>	
<p>Bypass mode</p>	<p>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.</p>	
<p>Standby mode</p>	<p>UPS is powered off and no output supply power, but still can charge batteries.</p>	






Fault mode	When a fault has occurred, the ERROR icon and the fault code will be displayed.	
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3-7. Faults Reference Code

Fault event	Fault code	Icon	Fault event	Fault code	Icon
Bus start fail	01	x	Inverter output short	14	
Bus over	02	x	Battery voltage too high	27	
Bus under	03	x	Battery voltage too low	28	
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

3-8. Warning indicator












Warning	Icon (flashing)	Alarm
Low Battery		Sounding every 2 seconds
Overload		Sounding every second
Battery is not connected		Sounding every 2 seconds
Over Charge		Sounding every 2 seconds
Site wiring fault		Sounding every 2 seconds
EPO enable		Sounding every 2 seconds
Over temperature		Sounding every 2 seconds
Charger failure		Sounding every 2 seconds


Battery fault		Sounding every 2 seconds (At this time, UPS is off to remind users something wrong with battery)
Out of bypass voltage range		Sounding every 2 seconds
Bypass frequency unstable		Sounding every 2 seconds
EEPROM error		Sounding every 2 seconds
Battery replacement		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  flashing 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 icon  and  flashing on LCD display and 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 icon  and  flashing on LCD display and 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 and the icon  is lighting 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 and the icon  is lighting on LCD display and alarm is continuously sounding.	Battery voltage is too low or the charger is fault.	Contact your dealer.
The icon  and  is flashing on LCD display and 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 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 and the icon  is lighting 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 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
-25°C - 40°C	Every 3 months	1-2 hours
40°C - 45°C	Every 2 months	1-2 hours

6. Specifications

MODEL	UPO11-1AX	UPO11-1.5AX	UPO11-2AX	UPO11-3AX	
CAPACITY*	1000VA/900W	1500VA/1350W	2000VA/1800W	3000VA / 2700W	
INPUT					
Voltage Range	Low Line Transfer	80Vac/70Vac/60Vac/55Vca \pm 5% or 160Vac/140Vac/120Vac/110Vac \pm 5% (based on load percentage 100% - 80 % / 80 % - 70 % / 70 - 60 % / 60 % - 0)			
	Low Line Comeback	84Vac \pm 5% or 168 Vac \pm 5%			
	High Line Transfer	150 Vac \pm 5 % or 300 Vac \pm 5 %			
	High Line Comeback	145 Vac \pm 5 % or 290 Vac \pm 5 %			
Frequency Range	40Hz ~ 70 Hz				
Phase	Single phase with ground				
Power Factor	\geq 0.99 @ full load				
OUTPUT					
Output voltage	100/110/115/120Vac or 200/208/220/230/240Vac				
AC Voltage Regulation	\pm 1% (Batt. Mode)				
Frequency Range (Synchronized Range)	47 ~ 53 Hz or 57 ~ 63 Hz				
Overload	100%- 110 Alarm; 110/130 Battery mode the UPS shuts down in 30 seconds / normal mode the UPS transfers to bypass mode when the utility is normal; >130% battery mode the UPS shuts down immediately / normal mode de UPS transfers to bypass when the utility is normal				
Frequency Range (Batt. Mode)	50 Hz \pm 0.25 Hz or 60Hz \pm 0.3 Hz				
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 (typical)			
Waveform (Batt. Mode)	Pure Sinewave				
EFFICIENCY					
AC Mode	90%		91%		
Battery Mode	89%		90%		
BATTERY					
Standard Model	Battery Type	12V/7AH	12V/9AH	12V/7AH	12V/9AH
	Numbers	3	3	6	6
	Recharge Time	4 hours recover to 90% capacity (Typical)			
	Charging Current	1.0 A(max.)			
Long-run Model	Charging Voltage	41.0 VDC \pm 1%		82.1 VDC \pm 1%	
	Battery Type & Numbers	Depending on the capacity of external batteries			
	Charging Current	1.0 A/2.0 A/4.0A/6.0 A /8.0 A(max.) (Selectable via LCD setting)			
	Charging Voltage	41.0 VDC \pm 1%	82.1 VDC \pm 1%	82.1 VDC \pm 1%	109.6VDC \pm 1%
PHYSICAL					
Type tower	Dimension, D X W X H (mm)	397 X 145 X 220		421 X 190 X 318	
	Net Weight (kgs)	13	13.8	26	28
	ENVIRONMENT				
Operation Humidity	20-90 % RH @ 0- 40°C (non-condensing)				
Noise Level	Less than 50dBA @ 1 Meter				
MANAGEMENT					
Smart RS-232 or USB	Supports Windows® 98/2000/2003/XP/Vista/2008/7, Linux and MAC				
Optional SNMP	Power management from SNMP manager and web browser				

* Derate capacity to 60% of capacity in Frequency converter mode and to 80% when the output voltage is adjusted to 100Vac, 200Vac or 208Vac.

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

Enter this link to register your product.



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Colombia: 01800-5181617

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