



# User Manual

IOGEAR Professional  
Online UPS

---

GBB1000N/GBB1500N/GBB2000N/GBB3000N

PART NO. M1630/M1631/M1632/M1633



## Table of Contents

<b>Safety Instructions</b>	<b>4</b>	<b>LCD/Button Operations</b>	<b>27</b>
<b>Introduction - IOGEAR Professional Online UPS</b>	<b>8</b>	Button Operation	27
Features	8	Audible Alarm	30
Operating principle	8	LCD Display Wording Index	31
Package Contents	9	UPS Setting	32
<b>Hardware Setup</b>	<b>12</b>	Suggested Battery Charger Current	41
Mounting	12	Operating Mode Description	42
Tower Stand	16	Faults Reference Code	43
Mounting UPS with Battery Box	19	Warning Indicator	44
Connecting Internal Battery	21	Specifications	45
Installation	23	Troubleshooting	47
External Battery	24	<b>EMC Information</b>	<b>50</b>
<b>General Operations</b>	<b>26</b>	<b>Limited Warranty</b>	<b>51</b>
Turning On the UPS	26	<b>Contact</b>	<b>51</b>
EPO Function	26		
Initial Software	26		

# Safety Instructions

## Transportation

- Please transport the UPS system only in the original package for shock and impact protection

## 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 with the environment
- Do not install the UPS system near water or in moist environment
- Do not install the UPS system in direct sunlight exposure or near heating sources
- Do not block ventilation holes in the UPS housing

## Installation

- Do not connect appliances or devices which would overload the UPS system (e.g. laser printers) to the UPS output sockets
- Place cables safely in a way that no one can step on or trip over them
- Do not connect domestic appliances such as hair dryers to the 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 (or UL-marked for 100/110/115/120/127 VAC models) main cable (e.g. the main cable of your computer) to connect the UPS system to the building wiring outlet (shockproof outlet)
- Please use only VDE-tested, CE-marked (or UL-marked for 100/110/115/120/127 VAC models) power cables to connect the loads to the UPS system
- When installing the equipment, 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 40C (104F)
- For Pluggable Equipment – the socket-outlet shall be installed near the equipment and shall be easily accessible
- Operating altitude from 0-3000 meter

## Operation

- Do not disconnect the main cables 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 main cables.
- Prevent any fluids or other foreign objects from entering the inside of the UPS system

## **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 personnel who are adequately familiar with batteries and with the required precautionary measures may replace batteries and supervise operations. Unauthorized person must be kept well away from the batteries.
- Caution – Risk of electric shock. The battery circuit is not isolated from the input voltage. Hazardous voltage 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 measure specified below and any other measures necessary when working with batteries:
  - Remove watches, rings, or other metal objects
  - Use tools with insulated handles
  - Wear rubber gloves and boots
  - Do not lay tools or metal parts on top of batteries
  - Disconnect charging source and load prior to installing or maintaining the battery
  - 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
- For internal battery:
  - Instructions shall carry sufficient information to enable the replacement of the battery with a suitable manufacturer and catalogue number
  - Safety instructions to allow access by Service Personnel shall be stated in the installation/service handbook
  - If batteries are to be installed by Service Personnel, instructions for interconnections, including terminal torque, shall be provided
- Do not attempt to dispose of batteries by burning them. This could cause battery explosion.
- Do not open or destroy the 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.

### Conventions

This manual uses the following conventions:

Monospaced	Indicates text that you should key in
[ ]	Indicates keys you should press. For example, [Enter] means to press the Enter key.
1.	Numbered lists represent procedures with sequential steps
■	Bullet lists provide information, but do not involve sequential steps
→	Indicates selecting the option (on a menu or dialog box, for example), that comes next. For example, Start → Run means to open the Start menu, then select Run
	Indicates critical information

### Battery Information- External Battery Package

Rated	Description	Model Name
1000VA(2B)	2*2x9AH, 4 pcs batteries in total	GBP24V18AH
1500VA(3B)	2*3x9AH, 6 pcs batteries in total	GBP36V18AH
2000VA(4B)	2*4x9AH, 8 pcs batteries in total	GBP48V18AH
3000VA(6B)	2*6x9AH, 12 pcs batteries in total	GBP72V18AH

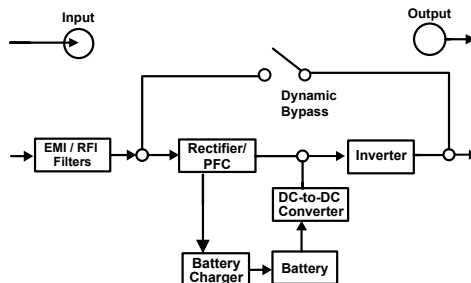
# Introduction - IOGEAR Professional Online UPS

## Features

- True double-conversion – Output power factor is 1, which means all of the power supplied is being used for productive work and makes the work the most efficient
- Output voltage regulation < 1% - Provides higher performance and efficiency for critical applications
- Programmable power management outlets – Users can easily and independently control load segments. During power failure, this feature enables users to extend battery time to mission-critical devices by shutting down the noncritical device.
- Emergency power off function (EPO) – EPO connector at rear panel allows for emergency UPS Power Off from a remote location
- SNMP + USB + RS-232 allows for multiple communications – Allows either USB or RS-232 communication port to work with SNMP interface simultaneously
- Hot swappable battery design – All potential UPS maintenance including complete power module exchange, can be performed without powering down the connected equipment. As long as utility power is on, the UPS and connected equipment may be left on while replacing a new battery
- ECO mode for energy saving – Offers up to 97% efficiency to cut energy usage and cost. UPS power application via static bypass, timely returning to online double conversion when the need arises
- Provides more voltage cut-off protection and surge immunity by Metal Oxide Varistor (MOV), an electronic component that protects equipment from voltage surges in a power line (i.e. lightning strikes) for full time equipment protection. The MOV absorbs the energy in a surge, preventing it from damaging other devices in a circuit
- High power factor charger up to 1000W capacity with very low ripple current when charging battery
- Multi-functional LCD interface – Displays immediate, detailed information on input voltage, battery capacity, power status, battery status, operating status and assessed backup runtime, etc.
- Smart battery charger design to optimize battery performance – it will adjust charging voltage according to outside temperature and extend the useful service life of batteries

## Operating principle

- The operating principle of the UPS is shown as below





- The UPS is composed of mains input, EMI/RFI filters, rectifier/PFC, inverter, battery charger, DC-to-DC converter, battery, dynamic bypass and UPS output.
- To reduce the risk of fire, connect only to a circuit provided with (A) 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	(A)
GBB1000N, GBB1000SN, GBB1500N, GBB2000N, GBB2000SN	20A
GBB3000N	40A

## Package Contents

IOGEAR UPS package consists of:

1 x Online UPS

1 x Rack Mounting Kit Set

4 x Tower Stand

1 x Rail Slide Kit Set

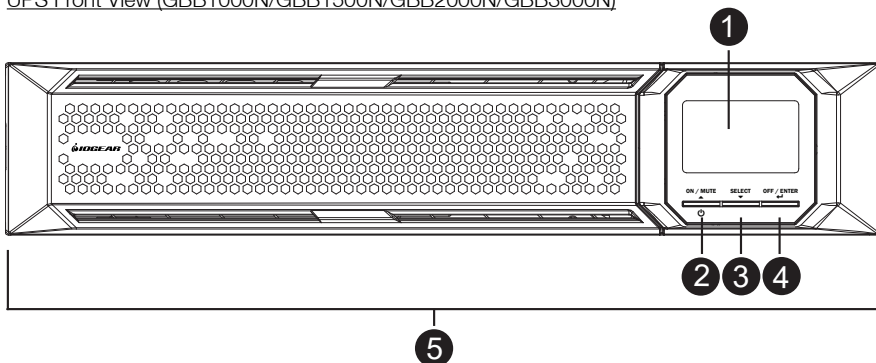
1 x RS-232 Cable

1 x USB Type-A to B cable

1 x User Manual

## Components

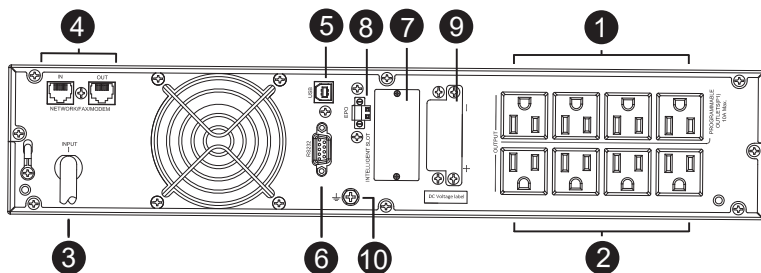
UPS Front View (GBB1000N/GBB1500N/GBB2000N/GBB3000N)



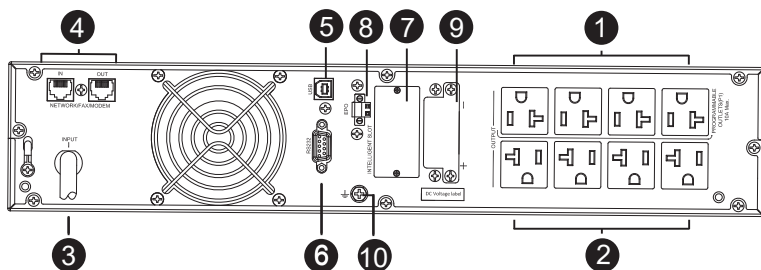
No	Component	Description
1	Display LCD	
2	On / Mute Button	Push this button to turn on the LCD
3	Select Button	Push this button to go to the next selection
4	Off / Enter Button	Push this button to turn off the LCD
5	Removable Front Panel	

# UPS Front View (GBB1000N/GBB1500N/GBB2000N/GBB3000N)

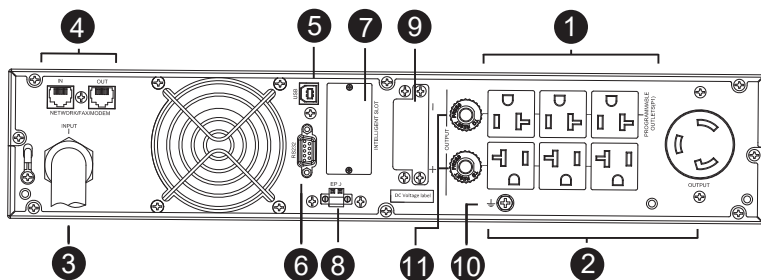
## 1K/1.5K to GBB1000N/GBB1500N



## GBB2000N



## GBB3000N



No	Component	Description
1	Programmable Outlets	For non-critical load connection. These outlets can be programmed to provide backup power and surge protection
2	Backup and Surge Protected Outlets	For critical load connection. These outlets provide backup power and surge protection
3	AC Input	This serves as a power cable. Connect the power cable to an AC power socket
4	Network / Fax / Modem Surge Protection	Protects standard RJ-45 based products (LAN lines) and cabling systems from surges
5	USB Communication Port	For scheduled UPS shutdown / start-up and status monitoring
6	RS-232 Communication Port	For scheduled UPS shutdown / start-up and status monitoring
7	SNMP Intelligent Slot	The UPS is equipped with intelligent slot perfect for SNMP. When installing SNMP in the UPS, it will provide advanced communication and monitoring options
8	Emergency Power Off Function Connector (EPO)	Enables an emergency UPS Power Off from a remote location
9	External Battery Connection Port	This port connects to external battery pack for backup power. For external battery pack, please refer to Battery Information
10	Grounding Terminal	Connect to a suitable grounding object
11	Output Circuit Breaker	Circuit breaker will stick out if an overload condition forces IOGEAR UPS to disconnect itself from utility power. User can reset the circuit breaker by pushing the button inward

## Hardware Setup

### Mounting

IOGEAR's UPS unit can be either desktop mounted (vertically or horizontally) or rack mounted (in a 19" rack chassis)

#### Rack Mount

A rail slide kit and rack mounting kit is provided in the package for rack mounting. The rail slide kit is installed on the rack and the rack mounting kit installs the UPS to onto the rack. To mount the UPS, please follow below steps:

1. Make sure that the rail slide kit includes all of the components, shown in the diagram below.

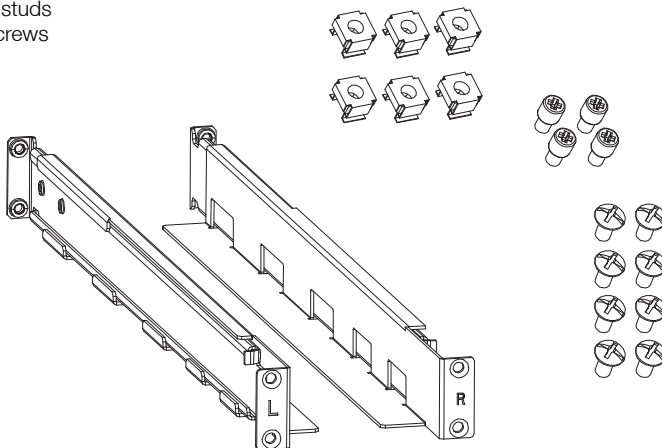
The components include:

2 x slide rails (1 for each side, indicated by L and R in the diagram below)

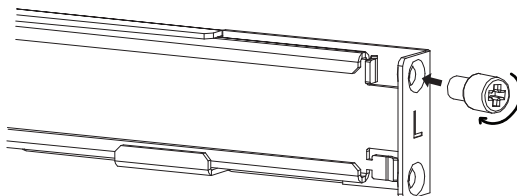
6 x M6 nuts

4 x fixing studs

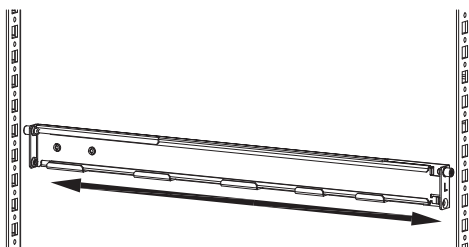
8 x M6 screws



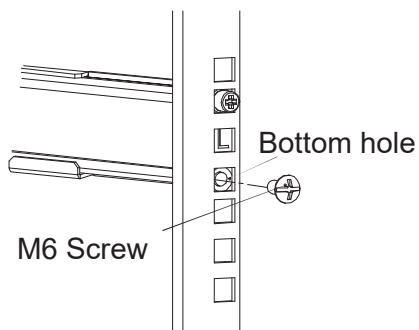
2. Insert the 4 fixing studs: two screw holes are available on both ends of a slide rail. Screw a fixing stud into the top screw hole as shown below.



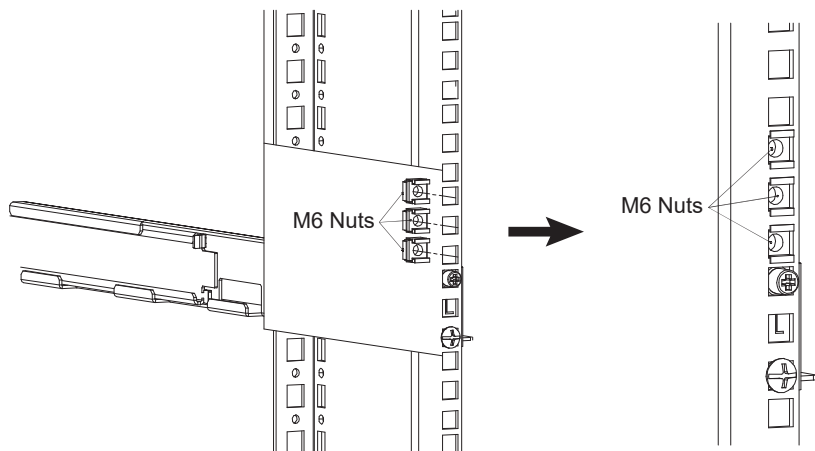
3. Have the rail near the supporting columns, pull the two ends of the rail slider apart. While at it, fit the fixing studs into the columns' holes on the same level. This step serves to hold the slider rail in place for the latter steps.



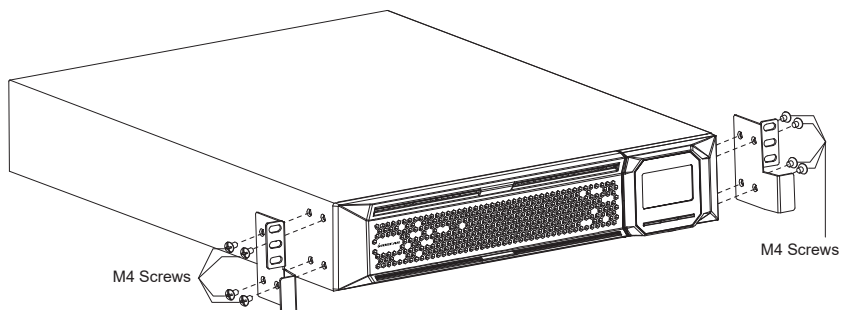
4. Screw a M6 screw into each of the bottom holes to fix the rail slider in place for both ends of the rail and for both rail sliders. (a total of 4 M6 screws will be used here)



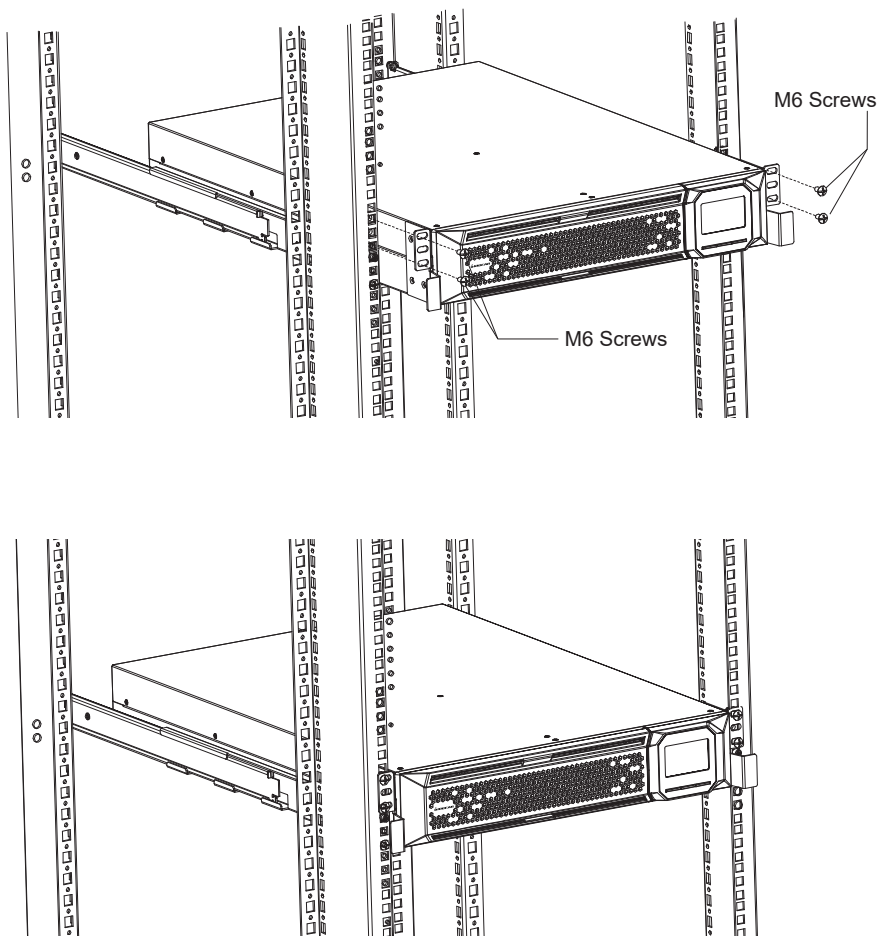
5. Insert the M6 nuts onto the support columns as shown below



6. Attach the mounting kit onto the UPS by screwing M4 screws into the mounting kit screw holes and the UPS as shown below



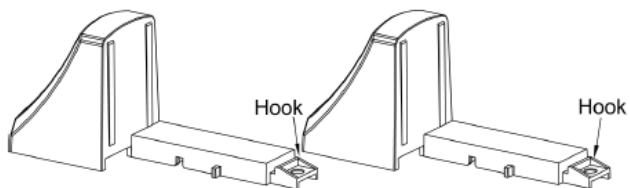
7. Fit the UPS onto the rack rails and stabilize the mounting kit (M6 screws) onto the rack as shown below



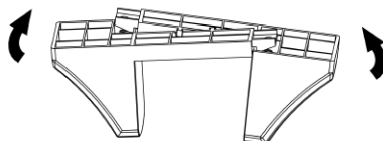
## Tower Stand

Two mounting feet are available to vertically mount the unit on a desktop

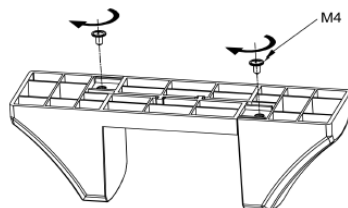
Mounting Feet



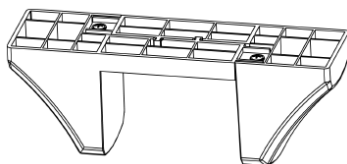
1. Position the mounting feet as shown below. Level and connect the hooks of the mounting feet



2. Stabilize the mounting feet by screwing M4 screw from the hooks to the mounting feet

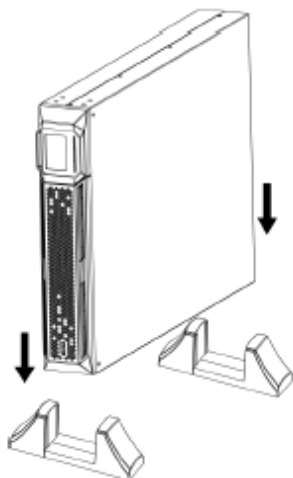


Completed mounting feet →

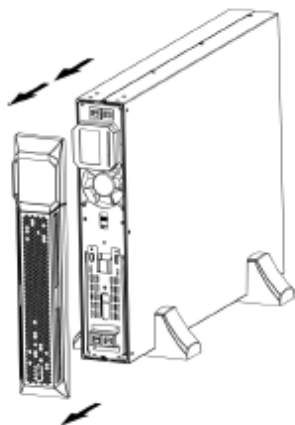




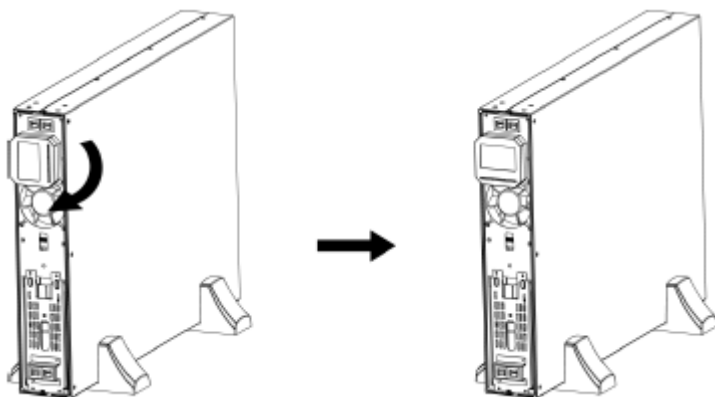
3. Place the unit on the mounting feet



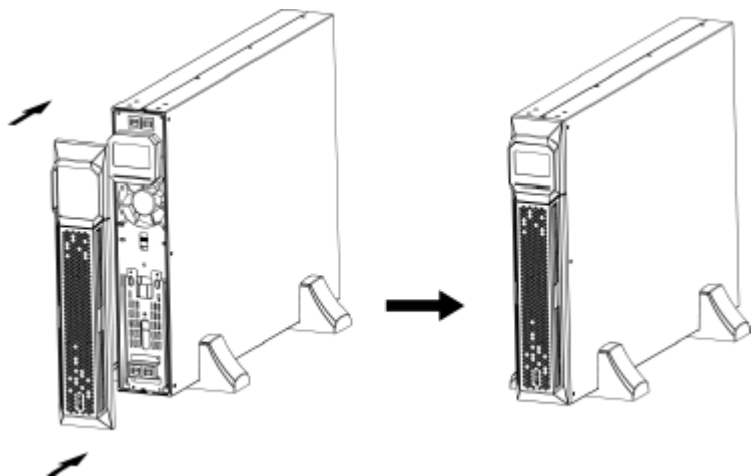
4. Remove the front panel. Pull to loosen the hooks and withdraw the panel



5. Turn the LCD panel so that the buttons are below the LCD screen

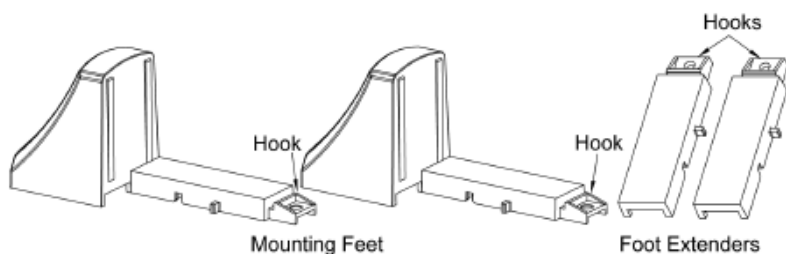


6. Replace the front panel back to the unit

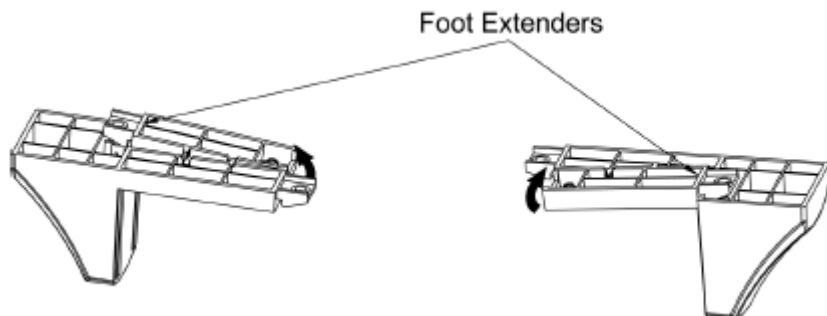


## Mounting UPS with Battery Box

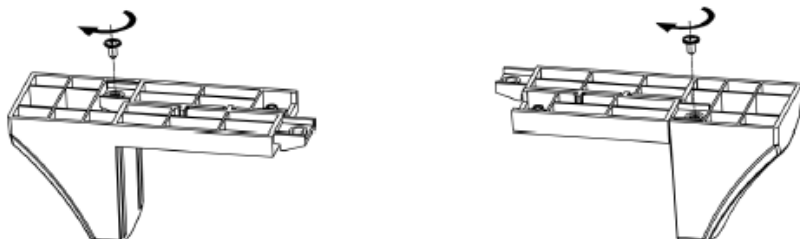
You may vertically mount your UPS and a battery box in a single configuration if you use the extended mounting feet. Two mounting feet and two foot extenders are shown below



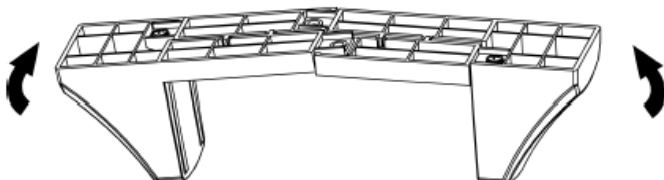
1. Position the foot extenders as shown below. Level and connect the extenders to the bottom of the mounting feet as indicated by the arrow. Make sure the hooks are properly secured into the mounting feet.



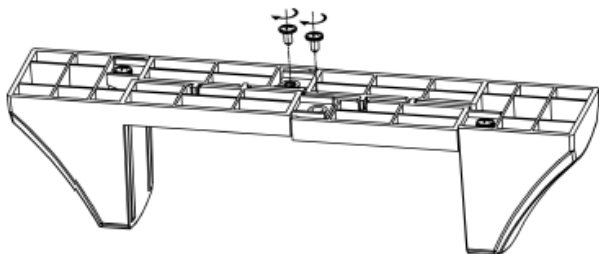
2. Stabilize the foot extenders by screwing M4 screws from the hooks to the mounting feet



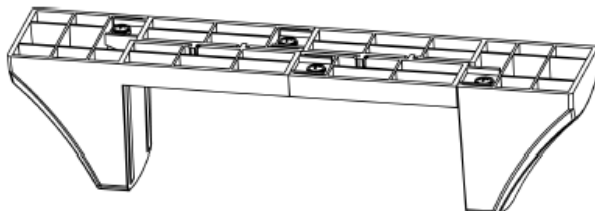
3. Position the mounting feet as shown below. Level and connect the hooks of the mounting feet



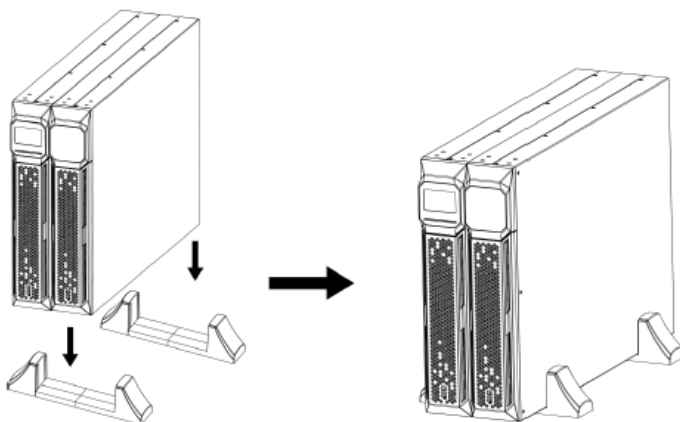
4. Stabilize the mounting feet by screwing M4 screws from the hooks to the mounting feet



Completed mounting feet will look like below



5. You can now place the UPS and the battery box onto the mounting feet

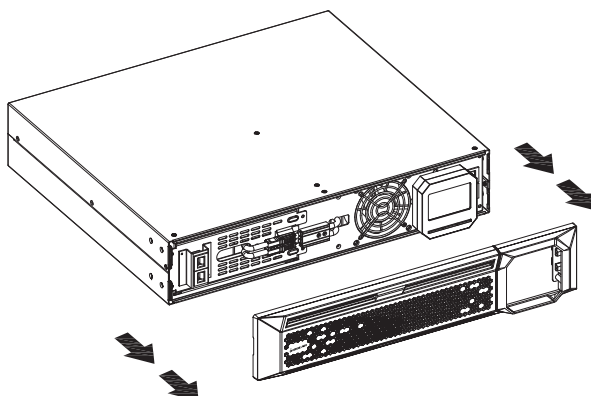


### Connecting Internal Battery

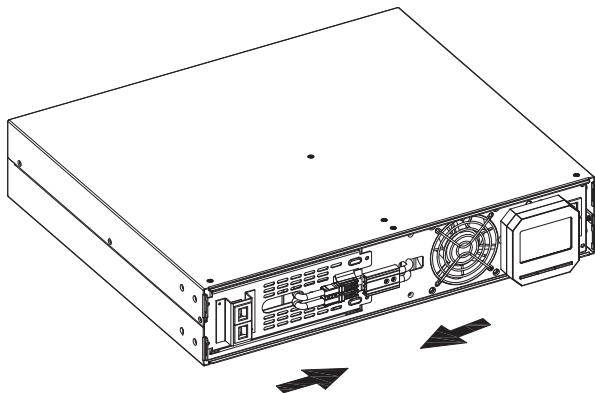
For safety, the internal battery of the unit is disconnected by default. Please follow steps below to reconnect the battery wires

Note: It is recommended that no power is connected during this time to prevent electric shock

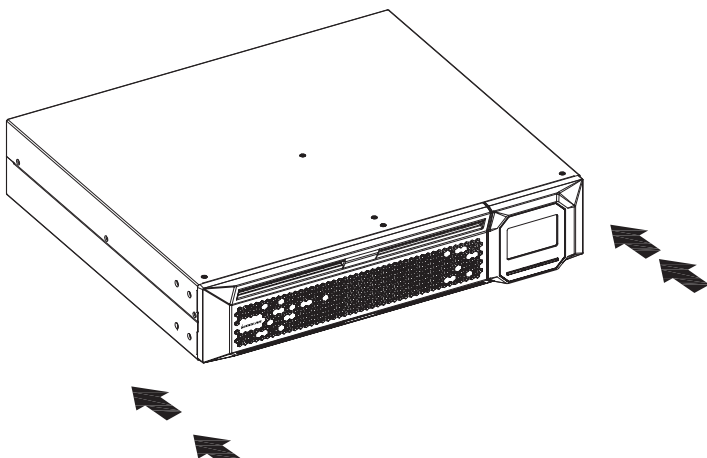
1. Remove the front panel. Pull to loosen the hooks and withdraw the panel



2. Connect the power connectors of the battery and the unit together



3. Replace the front panel back to the unit



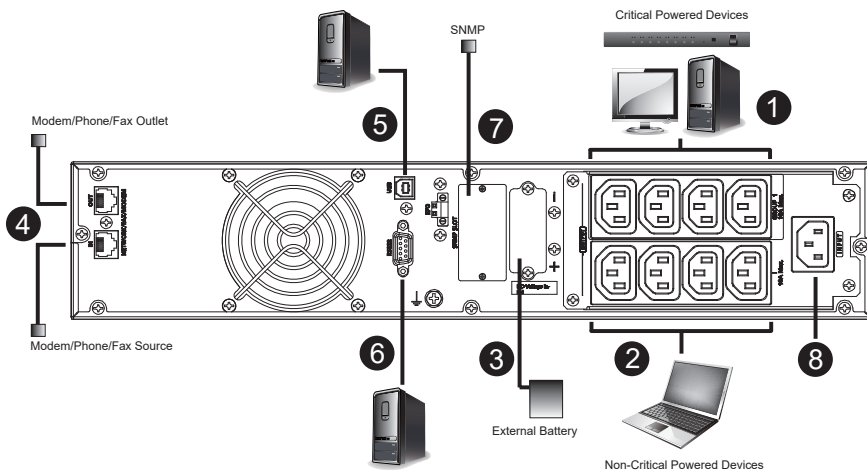
## Installation

For safety, the internal battery of the unit is disconnected by default. Please follow steps below to reconnect the battery wires

Refer to the diagram following the steps below to connect the UPS

Note: GBB1000N is used in this case

1. Connect electrical appliances to the non-critical power outlets
2. Connect electrical appliances (that you do not wish to have power cut off) to the critical power outlets
3. (Optional) Connect the external battery to the External Battery Connection Port. Please refer to External Battery Connection
4. (Optional) Connect a modem/phone/fax source (using a corresponding cable) into the surge-protected “IN” outlet Connect an equipment (you wish to have surge protection for) to the “OUT” outlet using another modem/fax/phone cable
5. (Optional) Connect the USB Type-B end of the included USB cable to the unit and the USB Type-A end to a USB port on your PC
6. (Optional) Connect the included RS-232 cable between the RS-232 port of the unit and a communication port of your PC
7. (Optional) Connect GICBP100 card for advanced communication and monitoring options
8. Connect the power cable to an AC power socket.



## External Battery

External Battery may be purchased separately.

When connecting the external battery packs, please connect based on polarity. Connect the positive pole of the external battery pack to the positive pole of the external battery connector on the UPS. Connect the negative pole of the battery pack to the negative pole of the external battery connector on the UPS. We highly recommend adding a breaker between the positive pole of the battery pack and the positive pole of the external battery connector to the UPS to prevent damage.

The required specification of breaker:

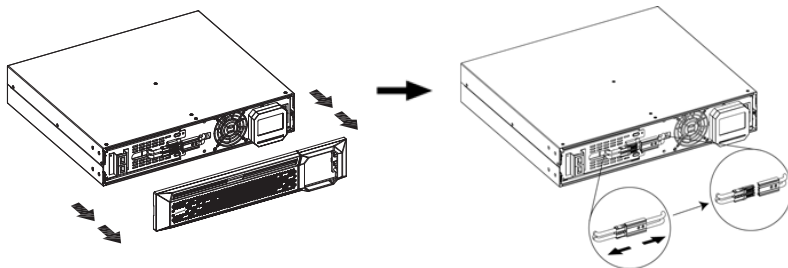
Voltage  $\geq 1.25$  battery voltage/set

Current  $\geq 50A$

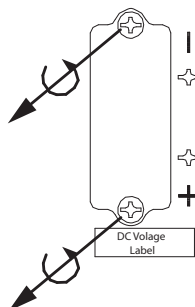
Please choose battery size and connected numbers according to backup time requirement and UPS specifications. To extend battery lifecycle, we highly recommend using them in temperature range of 15°C to 25°C (59°F to 77°F)

Please follow below steps to connect the external battery:

1. Turn off the unit by removing the power plug from the mains.
2. Remove the front panel and disconnect the internal battery connector.



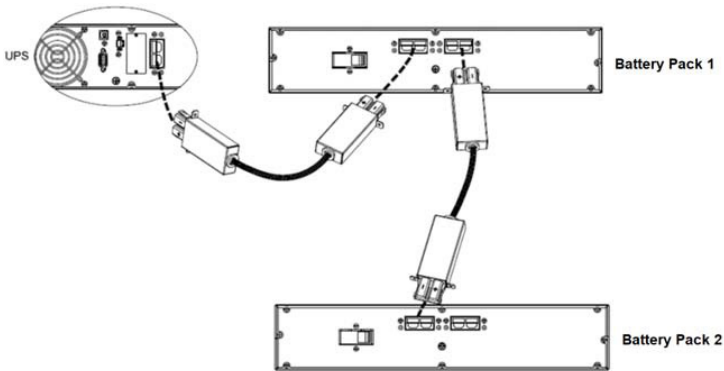
3. Remove the cover of the External Battery Connection Port using a screwdriver.



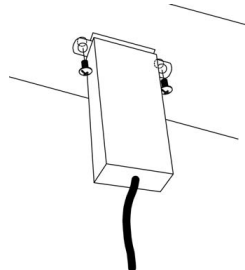


4. Plug the cable connector into the External Battery Connection Port of the unit and the battery pack(s).

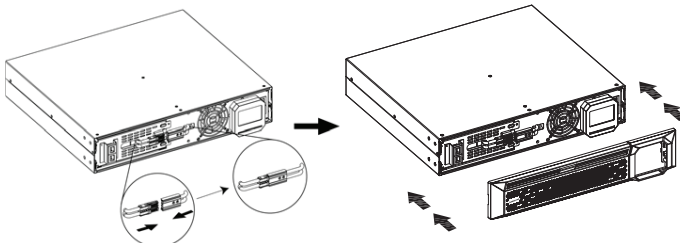
Note: If you have multiple battery packs available, connect them serially. An example is shown in the diagram below (connecting the second battery connection port of the first battery pack to the first battery connection port of the second battery pack).



5. Stabilize the connectors to the unit and the battery pack(s) using screws. An example is shown below:



6. On the front side of the unit, reconnect the battery connector and reattach the front cover.



## General Operations

### Turning On the UPS

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

Note: The battery charges fully during the first 5 hours of normal operation. Do not expect full battery run capability during this initial charge period

### EPO Function

IOGEAR 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 Pin 2) for UPS normal operation. To activate EPO function, remove two screws from EPO port and remove the metal plate.

Note: The EPO function logic can be set up via LCD setting. Please refer to EPO Logic Setting for details.

### Initial Software

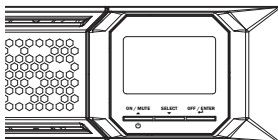
For optimal computer system protection, install the UPS monitoring software to fully configure UPS shutdown. Use the included RS-232 or USB communication cable to connect the RS-232/USB port of the UPS and RS-232/USB port of the PC. Then, please follow below steps to install monitoring software

1. Insert the included installation CD into CD-ROM drive then follow the on-screen instructions to proceed software installation. If there no screen shows one minute after inserting the CD, please execute setup.exe for initiating software installation.
2. Follow the on-screen instructions to install the software

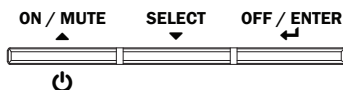
When your computer restarts, the monitoring software will appear as an orange plug icon located in system tray, near the clock.

## LCD/Button Operations

IOGEAR UPS includes an LCD display with a 3-button configuration interface



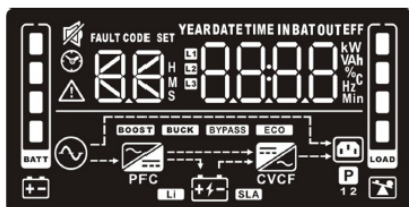
### Button Operation

















Button	Function
On / Mute Button	<ul style="list-style-type: none"> <li>Turning the UPS On: Press and hold ON/Mute button for at least 2 seconds</li> <li>Mute the Alarm: After the UPS is ON in battery mode, press and hold this button for at least 3 seconds to disable or enable the alarm system. However, this is not applied to situations when warnings or errors occur</li> <li>Up Key: Press this button to display previous selection in UPS setting mode</li> <li>Switch to UPS self-test mode: Press ON/Mute button for 2 seconds to enter UPS self-testing while in AC mode, ECO mode or Converter Mode</li> </ul>
Off / Enter Button	<ul style="list-style-type: none"> <li>Turning the UPS Off: Press and hold Off / Enter button for at least 2 seconds. UPS will be in standby mode under normal power or transfer to Bypass Mode if the Bypass setting is enabled</li> <li>Confirm Selection Key: Press this button to confirm selection in UPS setting mode</li> </ul>
Select Button	<ul style="list-style-type: none"> <li>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</li> <li>Setting Mode: Press and hold this button for 3 seconds to enter UPS setting mode when on Standby and Bypass mode</li> <li>Down Key: Press this button to display next selection in UPS Setting Mode</li> </ul>



Button	Function
ON / Mute Button + Select Button	<ul style="list-style-type: none"> <li>Switch to Bypass Mode: When the main power is normal, press ON / Mute and Select buttons simultaneously for 3 seconds. Then the UPS will enter Bypass Mode. This action will be ineffective when the input voltage is out of acceptable range</li> <li>Exit Setting Mode or Return to 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 is already on top of the menu, press these two buttons at the same time to exit the Setting Mode</li> </ul>

## LCD Panel



Button	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 details under UPS Setting on page 32
	Indicates the warning and fault codes. The Codes are listed in details in Faults Reference Code on page xxx and Warning Indicator on page 44
Mute Operation	
	Indicates that the UPS Alarm is disabled

Button	Function
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 the programmable management outlets are working
Mode Operation Information	
	Indicates the UPS connects to the mains
	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 Circuit is working
	Indicates the PFC circuit is working
	Indicates the inverter circuit is working
	Indicates the UPS is working in converter mode
	Indicates the output is working

Button	Function
Battery Information	
	Indicates the battery level by 0-24%, 25-49%, 50-74%, and 75-100%
	Indicates low battery

## Audible Alarm

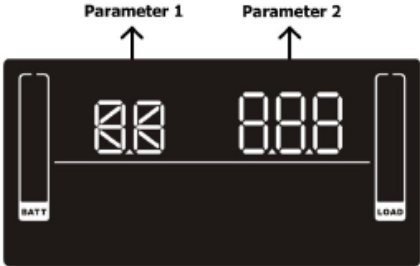
Mode	Alarm Pattern
Battery Mode	Beep once every 5 seconds
Low Battery	Beep once every 2 seconds
Overload	Beep once every second
Fault	Beeps continuously
Bypass Mode	Beep every 10 seconds

## LCD Display Wording Index

English	Display	Definition
ENA	(page 29-30)	Enable
DIS		Disable
ESC		Escape
HLS		High Loss
LLS		Low Loss
AO		Active Open
AC		Active Close
EAT		Estimated Autonomy Time
RAT		Running Autonomy Time
SD		Shutdown
OK		OK
ON		ON
BL		Battery Low
OL		Overload
OI		Over Input Current
NC		Battery No Connect
OC		Overcharge
SF		Site Wiring Fault
EP		EPO
TP		Temperature
CH		Charger
BF		Battery Fault
BV		Bypass Out Range
FU		Bypass Frequency Unstable
BR		Battery Replace
EE	(page 29-30)	EEPROM error

UPS Setting


There are two parameters for the UPS as displayed in the picture below:






**Parameter 1:** The number shown here determines the settings you can adjust. Please refer to the table below for the settings




**Parameter 2:** The number shown here is the option or value for the settings determined in parameter 1

Parameter Settings

Parameter 1 & Interface Display	Parameter 2 Description
<p><b>Output Voltage Setting</b> Display: 01</p> 	<p><b>Parameter 2: Output Voltage</b> 100: 100vac output voltage 110: 110vac output voltage 115: 115vac output voltage 120: 120vac output voltage (Default) 125: 125vac output voltage 127: 127vac output voltage (127 is not applicable to US voltage)</p>



Parameter 1 & Interface Display	Parameter 2 Description
<p><b>Enable/Disable Frequency Converter Mode</b> Display: 02</p> 	<p><b>Parameter 2: Enable or Disable Converter Mode</b> You may choose between below 2 options: <b>ENA:</b> Enable Converter Mode <b>DIS:</b> Disable Converter Mode (Default)</p>
<p><b>Output Frequency Setting</b> Display: 03</p> 	<p><b>Parameter 2: Output Frequency</b> You may set the initial frequency on Battery Mode: <b>BAT 50:</b> 50Hz output frequency <b>BAT 60:</b> 60Hz output frequency If converter mode is enabled, you may choose the following output frequencies: <b>CF 50:</b> 50Hz output frequency <b>CF 60:</b> 60Hz output frequency</p>
<p><b>Enable / Disable ECO</b> Display: 04</p> 	<p><b>Parameter 2: Enable or Disable ECO Function</b> You may choose between below 2 options: <b>ENA:</b> Enable ECO mode <b>DIS:</b> Disable ECO Mode (Default)</p>

Parameter 1 & Interface Display	Parameter 2 Description
<p><b>ECO Voltage Range Setting</b> Display: 05</p>  <p>Display: HS</p> 	<p><b>Parameter 2: Acceptable high voltage point and low voltage point for ECO Mode.</b> Press the Up or Down key to adjust the values</p> <p><b>HLS:</b> High Loss Voltage in ECO Mode in Parameter2 For 100/110/115/120/127 VAC models (127 is not applicable to US voltage), the setting range is from +3V to +12V of the nominal voltage (Default +6V)</p> <p><b>LLS:</b> Low Loss Voltage in ECO Mode in Parameter2 (Default -12V) For 100/110/115/120/127 VAC models (127 is not applicable to US voltage), the setting voltage is from -3V to -12V of the nominal voltage (Default -6V)</p>
<p><b>Enable / Disable Bypass when UPS is off</b> Display: 06</p> 	<p><b>Parameter 2: Enable or Disable Bypass Function</b> You may choose between below 2 options:</p> <p><b>ENA:</b> Enable Bypass</p> <p><b>DIS:</b> Disable Bypass (Default)</p>

### Parameter 1 & Interface Display

#### Bypass Voltage Range Setting

Display: 7



Display: HS



### Parameter 2 Description

Parameter 2: Acceptable high voltage point and acceptable low voltage point for **Bypass Mode**. Press the Up or Down key to adjust the values

**HLS:** Bypass High Voltage Point




For 100/110/115/120/125/127 VAC models (127 is not applicable to US voltage):

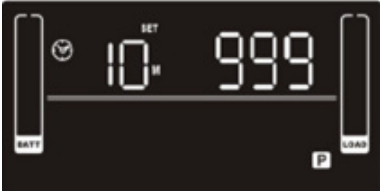


**120-140:** Setting the high voltage point from 120Vac to 140Vac (Default: 132Vac)


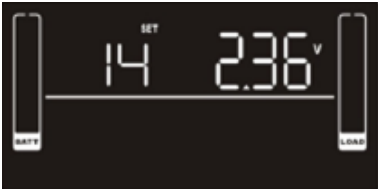
**LLS:** Bypass low voltage Point




For 100/110/115/120/125/127 VAC models (127 is not applicable to US voltage):




**85-115:** Setting the low voltage point from 85Vac to 115Vac (Default: 85Vac)

Parameter 1 & Interface Display	Parameter 2 Description
<p><b>Bypass Frequency Range Setting</b> Display: 8</p>  <p>Display: HS</p> 	<p><b>Parameter 2: Acceptable high frequency point and acceptable low frequency point for Bypass mode.</b> Press the Up or Down key to adjust the values</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)</p> <p>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)</p> <p>For 60Hz output frequency models: <b>55-59Hz:</b> Setting the frequency low loss point from 55Hz to 59Hz (Default: 57.0Hz)</p>
<p><b>Enable / Disable Programmable Outlets</b> Display: 9</p> 	<p>Parameter 2: Enable or Disable programmable outlets <b>ENA:</b> Enable Programmable outlets <b>DIS:</b> Disable Programmable Outlets (Default)</p>

Parameter 1 & Interface Display	Parameter 2 Description
<p><b>Programmable Outlet Backup Time Setting</b> Display: 10</p> 	<p><b>Parameter 2: Backup time limits for programmable outlets</b> <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>
<p><b>Autonomy Limitation Setting</b> Display: 11</p> 	<p><b>Parameter 2: Backup time on battery mode for general outlets</b> 0-999: Set 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 only be 10 seconds</p>
<p><b>Battery Total AH Setting</b> Display: 12</p> 	<p><b>Parameter 2: Battery Total AH of the UPS</b> 7-000: Set the battery total capacity from 7-999 in AH. Please set the correct battery total capacity if external battery pack is connected</p>

Parameter 1 & Interface Display	Parameter 2 Description
<p><b>Maximum Charger Current Setting</b> Display: 13</p> 	<p><b>Parameter 2: Charger Maximum Current.</b> For low voltage model with 24/36/48VDC</p> <p>1/2/4/6/8: Set maximum charger current to 1/2/4/6/8 Ampere (Default: 2A)</p> <p>For low voltage and high voltage model with 72/96VDC <b>1/2/4/6/8:</b> Set maximum charger current to 1/2/3/6/8 Ampere (Default: 2A)</p> <p><b>Note:</b> Please set the appropriate charger current based on battery capacity used. The recommended charging current is 0.1C – 0.3C of battery capacity as following table for reference</p> <p><b>Warning:</b> Setting the current too high may cause damage to the device. For the recommended charger current, please refer to <b>Suggested Battery Charger Current</b></p>
<p><b>Charger Boost Voltage Setting</b> Display: 14</p> 	<p><b>Parameter 2: Charger Boost Voltage</b> <b>2.25 – 2.40:</b> Setting the charger boost voltage from 2.25V/cell to 2.4V/cell (Default: 2.36V/cell)</p>

Parameter 1 & Interface Display	Parameter 2 Description
<b>Charger Float Voltage Setting</b> Display: 15 	<b>Parameter 2: Charger Float Voltage</b> <b>2.20 – 2.33:</b> Set the charger float voltage from 2.20 V/cell to 2.33 V/cell (Default: 2.28V/cell)
<b>EPO Logic Setting</b> Display: 16 	<b>Parameter 2: EPO Function Control Logic</b> <b>AO:</b> Active Open (Default). When this is selected, it will activate EPO function with Pin 1 and Pin 2 in open status <b>AC:</b> Active Close. When this is selected, it will activate EPO function with Pin 1 and Pin 2 in close status
<b>Site Fault Detection Enable/ Disable</b> Display: 17 	<b>Parameter 2: Enable / Disable Site Fault Detection You May Choose the Following Two Options</b> <b>ENA:</b> Site fault detection enable (Default) <b>DIS:</b> Site fault detection disable

Parameter 1 & Interface Display	Parameter 2 Description
<p><b>Display Setting for Autonomy Time</b> Display: 18</p> 	<p><b>Parameter 2: Display Setting for Autonomy Time</b>  <b>EAT:</b> when selected, the remaining autonomy time will be displayed (Default)  <b>RAT:</b> when selected, the accumulated autonomy time so far will be displayed</p>
<p><b>Acceptable Input Voltage Range Setting</b> Display: 19</p>  <p>Display: HS</p> 	<p><b>Parameter 2: Acceptable High voltage point and acceptable low voltage point for input voltage range.</b>  Press the Up or Down key to adjust the values  <b>HLS:</b> Input High Voltage Point</p> <p>For 100/110/115/120/125/127 VAC models (127 is not applicable to US voltage):  <b>140/145/150:</b> Setting the high voltage point in Parameter 2 (Default: 150Vac)</p> <p>LLS: Bypass low voltage point</p> <p>For 100/110/115/120/125/127 VAC models (127 is not applicable to US voltage):  <b>55/60/70/75/80:</b> Setting the low voltage point in Parameter 2 (Default: 55Vac)</p>
<p><b>Exit</b> Display: 00</p>	<p><b>Exit UPS Setting</b></p>



## Suggested Battery Charger Current






	AH	Suggested Charging Current
1000VA (2B)	9	2
+1 GBP24V18AH	27	4
+2 GBP24V18AH	45	6
+3 GBP24V18AH	63	8
+4 GBP24V18AH	81	10
+5 GBP24V18AH	99	10
+6 GBP24V18AH	117	12
+7 GBP24V18AH	135	12
+8 GBP24V18AH	153	12
+9 GBP24V18AH	171	12
+10 GBP24V18AH	189	12



	AH	Suggested Charging Current
1500VA (3B)	9	2
+1 GBP36V18AH	27	4
+2 GBP36V18AH	45	6
+3 GBP36V18AH	63	8
+4 GBP36V18AH	81	10
+5 GBP36V18AH	99	10
+6 GBP36V18AH	117	12
+7 GBP36V18AH	135	12
+8 GBP36V18AH	153	12
+9 GBP36V18AH	171	12
+10 GBP36V18AH	189	12

	AH	Suggested Charging Current
2000VA (4B)	9	2
+1 GBP48V18AH	27	4
+2 GBP48V18AH	45	6
+3 GBP48V18AH	63	8
+4 GBP48V18AH	81	10
+5 GBP48V18AH	99	10
+6 GBP48V18AH	117	12
+7 GBP48V18AH	135	12
+8 GBP48V18AH	153	12
+9 GBP48V18AH	171	12
+10 GBP48V18AH	189	12


	AH	Suggested Charging Current
3000VA (6B)	9	2
+1 GBP72V18AH	27	4
+2 GBP72V18AH	45	6
+3 GBP72V18AH	63	8
+4 GBP72V18AH	81	10
+5 GBP72V18AH	99	10
+6 GBP72V18AH	117	12
+7 GBP72V18AH	135	12
+8 GBP72V18AH	153	12
+9 GBP72V18AH	171	12
+10 GBP72V18AH	189	12

## Operating Mode Description

Operating Mode	LCD Display	Description
Online Mode		When the input voltage is within the acceptable range, the UPS will provide pure and stable AC power for output. The UPS will also charge the battery.
ECO Mode		<b>The Energy Saving Mode:</b> When the input voltage is within the voltage regulation range, the UPS will bypass voltage for output to save energy. The UPS will also charge the battery.
Frequency Converter Mode		When the input frequency is within 40Hz and 70Hz, the UPS can be set at a constant output frequency of 50Hz or 60Hz. The UPS will also charge the battery.
Battery Mode		When the input voltage is beyond the acceptable range or power failure, the UPS will provide backup power from the battery. Alarm will beep every 5 seconds.
Bypass Mode		When the input voltage is within acceptable range but the UPS is overloaded, the UPS will enter Bypass Mode. Alternatively, the UPS can be set to Bypass Mode using the front panel. Alarm will beep every 10 seconds.

Operating Mode	LCD Display	Description
Standby Mode		The UPS is powered off and will not output power. The UPS will charge the battery
Fault Mode		When a fault has occurred, the ERROR icon and the fault code will be displayed

## 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

## Warning Indicator

Warning	Icon (Flash-ing)	Code	Alarm
Low Battery		bL	Beeps every 2 seconds
Overload		OL	Beeps every second
Over Input Current		OI	Beep twice every 10 seconds
Battery is not Connected		nC	Beeps every 2 seconds
Over Charge		OC	Beeps every 2 seconds
Site Wiring Fault		SF	Beeps every 2 seconds
EPO Enable		EP	Beeps every 2 seconds
Over Temperature		tP	Beeps every 2 seconds
Charger Failure		CH	Beeps every 2 seconds
Battery Fault		bF	Beeps every 2 seconds (UPS will be off to remind users something is wrong with the battery)
Out of Bypass Voltage Range		b <sup>v</sup>	Beeps every 2 seconds
Bypass Frequency Unstable		FU	Beeps every 2 seconds
Battery Replacement		b <sup>t</sup>	Beeps every 2 seconds
EEPROM Error		EE	Beeps every 2 seconds

Note: “Site Wiring Fault” function can be enabled / disabled via software.  
Please check software manual for details.






## Specifications





Model Name	GBB1000N	GBB1500N	GBB2000N	GBB3000N
<b>General</b>				
UPS Topology	Double-Conversion			
Energy Saving (max)	>96% (ECO) >89% (AC) >88% (Batt)	>96% (ECO) >89% (AC) >88% (Batt)	>96% (ECO) >90% (AC) >90% (Batt)	>96% (ECO) >91% (AC) >90% (Batt)
<b>Input</b>				
Voltage	100/110/115/120/125/127 (127 is not applicable to US voltage)			
Input Voltage Range	80-150 VAC $\pm$ 5% @ 100% load 55-150 VAC $\pm$ 5% @ 50% load Derate capacity to 90% when the output voltage is adjusted to 100VAC			
Input Frequency Range	40Hz – 70Hz			
Rated input current	9.3A	13.2A	17.6A	26.4A
Input Power Factor	$\geq$ 0.99 @ nominal voltage (100% load)			
Cold Start	Yes			
Plug Type	NEMA 5-15P	NEMA 5-15P	NEMA 5-20P	NEMA L5-30P
Power Cords	6ft			
<b>Output</b>				
VA	1000	1500	2000	3000
Watts	1000	1430	1930	2850
On Battery Waveform	Sine Wave			
On Battery Voltage	100/110/115/120/125/127 VAC models (127 is not applicable to US voltage)			
On Battery Frequency	50/60Hz $\pm$ 3Hz			
Total Outlets	8			7
Outlet Type	(8) NEMA 5-15R		(8) NEMA 5-20R	(6) NEMA 5-20R + (1) NEMA L5-30R
Outlets – Battery & Surge Protected	Except GBB3000N is 7, other models are 8			
Rated Power Factor	>0.96	0.97	0.97	0.96
Crest Factor	3:1			

Model Name	GBB1000N	GBB1500N	GBB2000N	GBB3000N
Harmonic Distortion	≤ 2 % THDv (Linear Load) ≤ 4 % THDv (Non-linear Load)			
Voltage Regulation	± 1% (Batt)			
Transfer Time (AC to Batt.)	0ms			
Transfer Time (Inverter to Bypass)	4ms (ECO)			
Battery				
Runtime at Half Load (min)	Half load 10.1	Half load 10.3	Half load 10.0	Half load 10.1
Runtime at Full Load (min)	Full load 2.95	Full load 2.96	Full load 2.95	Full load 2.96
Battery Type	Sealed Lead-Acid			
Battery Pack Voltage	24V	36V	48V	72V
Battery Size	12V/9AH	12V/9AH	12V/9AH	12V/9AH
Battery Quantity	2	3	4	6
Hot-Swappable	Yes			
Typical Recharge Time	3 hours recover to 95% capacity @2A charging current. Max charger current 8A			
Extender Battery Module	GBP24V18AH	GBP36V18AH	GBP48V18AH	GBP72V18AH
Physical Properties				
Rack Size	2U			
Form Factor	Rack/Tower			
Dimensions (WxHxD) (mm3)	438 x 88 x 410	438 x 88 x 410	438 x 88 x 510	438 x 88 x 630
Weight (kg.)	11.6/14.1	15.5	19.5	27.5
Environmental				
Temperature (Operating/Storage)	0~40°C (non-condensing) / -20 ~ 50°C 32F~104F (non-condensing), -4F~122°F			
Humidity (Operating/Storage)	20-90% RH / 10% to 95% (no condensing)			
Audible noise at 1.5M from surface of unit	Less than 50dB			
Certifications	UL FCC			

## Troubleshooting

Operation problems can be due to a variety of causes. The first step in solving them is to make sure that all cables are securely attached and seated completely in their sockets.

Symptom	Possible Cause	Action
No indication and no alarm, even though the mains is normal	The AC input power is not connected well	Check if input power cord is firmly connected to the mains
	The AC input is connected to the UPS output	Connect AC input power cord to AC input correctly
Icon  and warning code <b>EP</b> flash on LCD display Alarm beeps every 2 seconds	EPO function is activated	Set the circuit in closed position to disable EPO function
Icon  and  and warning code <b>SF</b> flash on LCD display Alarm beeps every 2 seconds	Line and neutral conductors of UPS input are reversed	Rotate mains power socket by 180degree and then connect to UPS system
Icon  and  and Warning code <b>PC</b> Flash on LCD display Alarm beeps 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 Alarm continuously beeps	Battery voltage is too high or the charger is fault	Please contact your dealer
Fault code is shown as 28 on LCD display Alarm continuously beeps	Battery voltage is too low or the charger is fault	Please contact your dealer

Symptom	Possible Cause	Action
Icon  and  and Warning code  Flash on LCD display Alarm beeps every second	UPS is overload	Remove excess loads from UPS output
	UPS is overloaded. Device connected to the UPS are fed directly by the electrical network via <b>Bypass</b>	Remove excess loads from UPS output
	After repetitive overloads, the UPS is locked in the <b>Bypass Mode</b> . 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 Alarm continuously beeps	UPS is over input current	Remove excess loads from UPS output
Fault code is shown as 43 and icon  shown on the LCD display Alarm continuously beeps	The UPS shutdown automatically because of the overload at the UPS output	Remove excess loads from UPS output and restart it
Fault code is shown as 01, 02, 03, 11, 12, 13 and 41 on LCD display Alarm continuously beeps	A UPS internal fault has occurred. 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	Please contact your dealer



Symptom	Possible Cause	Action
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 with your dealer
	Batteries defect	Contact your dealer to replace the battery
Fault code is shown as 2A on LCD display Alarm continuously beeps	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 Alarm continuously beeps	The charger does not have output and battery voltage is less than 10V/PC	Please contact your dealer

## EMC Information

### **FEDERAL COMMUNICATIONS COMMISSION STATEMENT:**

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.

**FCC Caution:** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

**Warning:** Operation of this equipment in a residential environment could cause radio interference.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

**⚠WARNING:** This product may expose you to chemicals including Cadmium which is known to the State of California to cause cancer, birth defects or other reproductive harm. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## Limited Warranty

### **WE'RE HERE TO HELP YOU! NEED ASSISTANCE SETTING UP THIS PRODUCT?**

Make sure you:

1. Visit [www.iogear.com](http://www.iogear.com) for more product information
2. Visit [www.iogear.com/support](http://www.iogear.com/support) for live help and product support

#### Warranty Information

This product carries a 1 Year Limited Warranty. For the terms and conditions of this warranty, please go to <http://www.iogear.com/support/warranty>

Register online at <http://www.iogear.com/register>

#### Important Product Information

Product Model \_\_\_\_\_

Serial Number \_\_\_\_\_

## Contact

### **WE'RE HERE TO HELP YOU! NEED ASSISTANCE SETTING UP THIS PRODUCT?**

Make sure you:

1. Visit [www.iogear.com](http://www.iogear.com) for more product information
2. Visit [www.iogear.com/support](http://www.iogear.com/support) for live help and product support

#### **IOGEAR**

[www.iogear.com/support](http://www.iogear.com/support)  
[support@iogear.com](mailto:support@iogear.com)

[www.iogear.com](http://www.iogear.com)

© 2021 IOGEAR® Part No. M1630/M1631/M1632/M1633

IOGEAR, the IOGEAR logo, are trademarks or registered trademarks of IOGEAR. Microsoft and Windows are registered trademarks of Microsoft Corporation. All other brand and product names are trademarks or registered trademarks of their respective holders. IOGEAR makes no warranty of any kind with regards to the information presented in this document. All information furnished here is for informational purposes only and is subject to change without notice. IOGEAR assumes no responsibility for any inaccuracies or errors that may appear in this document.

