



Online Li-Ion UPS - 1.5 kVA - 3 kVA

User Manual



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1. Important Safety Warning

SAVE THESE INSTRUCTIONS - This manual contains important instructions for the installation and maintenance of the UPS and batteries.

Please strictly comply with all warnings and operating instructions in this manual. Do not operate this unit before carefully reading through all safety information and operating instructions.

1.1 Transportation and Storage

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

1.2 Preparation

- Condensation may occur if the UPS system is moved directly from a cold to a warm environment. The UPS system must be absolutely dry before being installed. Please allow at least two hours for the UPS system to acclimate to 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 nearby heaters.
- Do not block ventilation holes in the UPS housing.

1.3 Installation

- Do not connect appliances or devices that 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 individual 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 100/110/115/120/125 VAC models) 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 (or UL-marked for 100/110/115/120/125 VAC models) 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.
- Temperature Rating - Units are considered acceptable for use in a maximum ambient of 40°C (104°F).
- For Pluggable Equipment - The socket-outlet shall be installed near the equipment and easily accessible.
- **CAUTION:** The unit is heavy. Lifting the unit requires a minimum of two people.
- Batteries with minimum case flame rating V-2 are intended for use in a computer room as defined in the Standard for the Protection of Information Technology Equipment, ANSI/NFAP 75. Batteries with case flame rating HB are not intended for use in a computer room. (US installations only.)

1.4 Operation

- Do not disconnect the mains cable on the UPS system or the building wiring outlet (shockproof socket outlet) during operations since this would cancel the protective grounding of the UPS system and 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.
- To fully disconnect the UPS system, first press the OFF/Enter button to turn off the unit.
- Prevent fluids or other foreign objects from inside the UPS system.
- The EPO and USB circuits are an IEC 60950-1 safety extra low voltage (SELV) circuit. This circuit must be separated from any hazardous voltage circuits by reinforced insulation.

1.5 Maintenance, service, and faults

The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.

- **CAUTION:** Risk of electric shock. Even after the unit is disconnected from the mains (building wiring outlet), components inside the UPS system are still connected to the battery and electrically live and dangerous.
- Before carrying out any 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 capacitors such as BUS capacitors.
- To avoid electrical shock, turn off the unit and unplug it from the AC power source before servicing the battery.
- Only persons 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!
- **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.
- A battery can cause a risk of electrical shock and high short-circuit current. The following precautions should be observed when working on 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 prior to connecting or disconnecting battery terminals.
 - Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance.
- When changing batteries, install the same number and same type of batteries or battery packs.

Manufacturer	Type	Rated
Enconnex	LIFE-485000	48 V dc, 5.0 Ah
	LIFE-722500	76.8 V dc, 2.5 Ah

- 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 CE model 200 208 220/230/240 VAC system)

Only for 100 110/115 120 125 VAC 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.

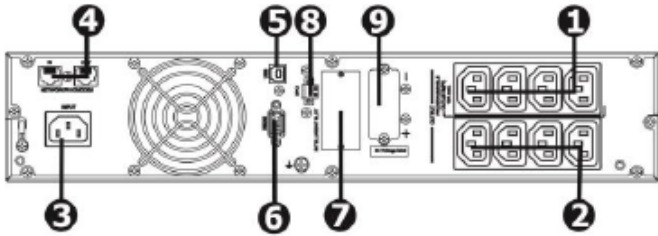
2. Installation and Setup

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

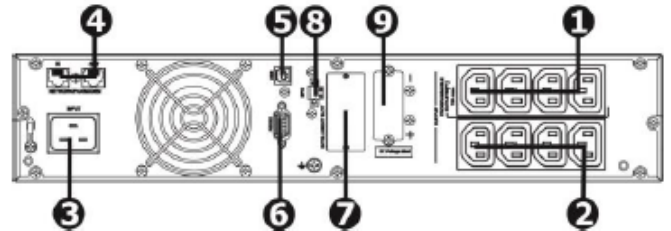
2.1 Rear Panel View

IEC Type

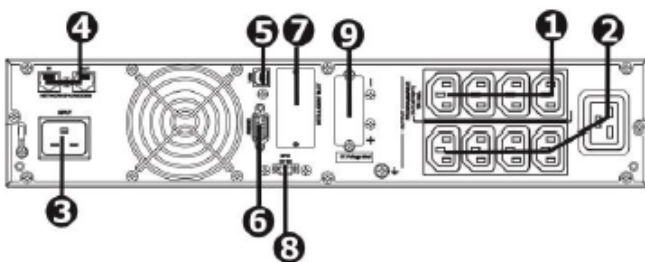
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2K

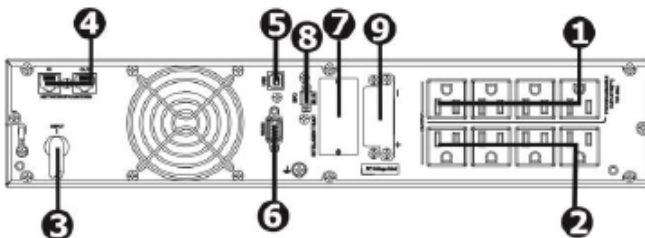


3K

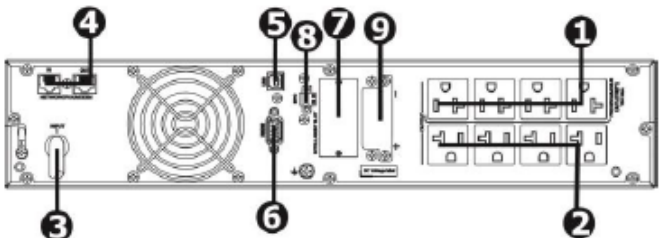


NEMA Type

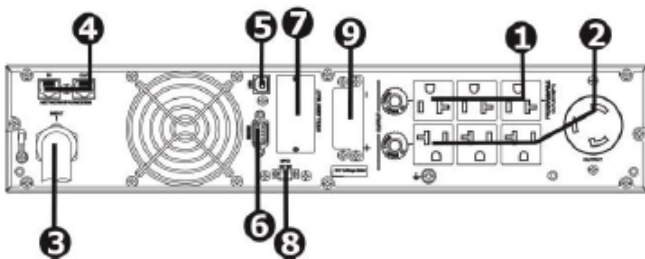
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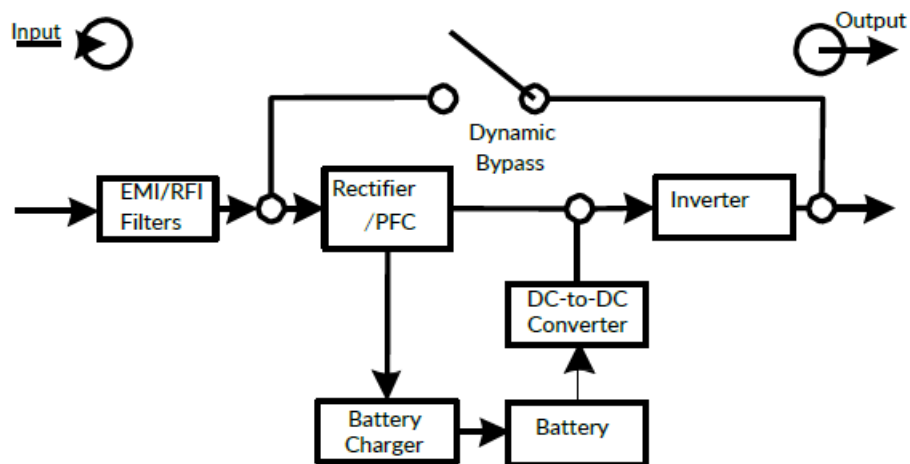
3K



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

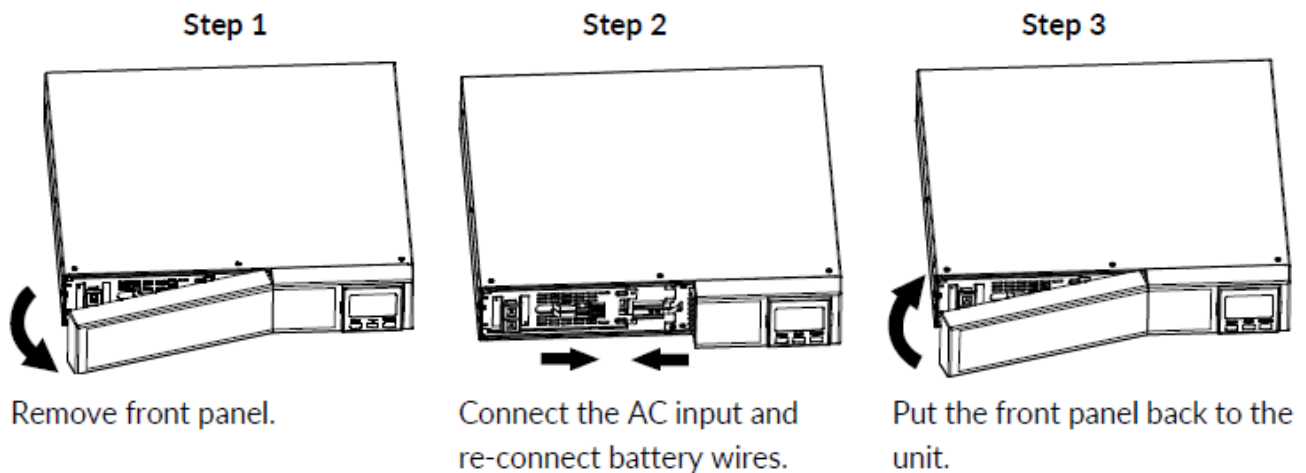
2.2 Operating Principle

The operating principle of the UPS is shown as below:



2.3 Install the UPS

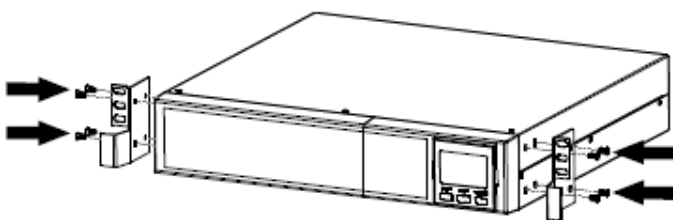
For safety consideration, the UPS is shipped out from the factory without connecting battery wires.



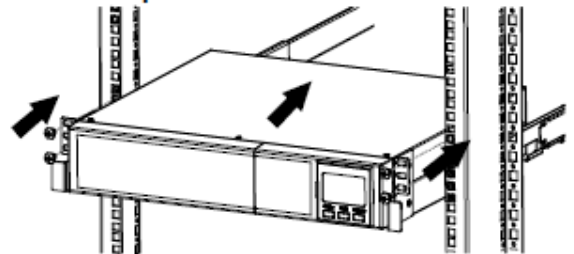
This UPS can be either displayed on the desk or mounted in the 19" rack chassis. Please choose a proper installation to position this UPS.

Rack-Mount Installation

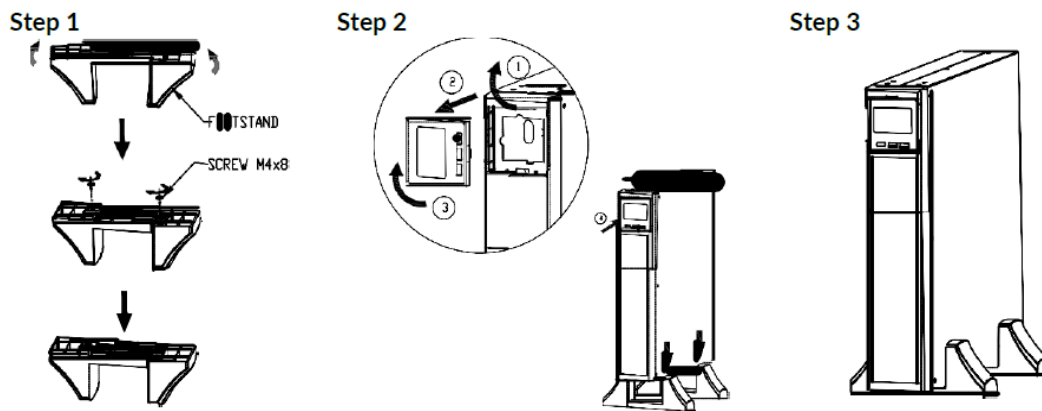
Step 1



Step 2



UPS Tower Installation



2.4 Setup the UPS

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

1. The UPS should be placed on a flat and clean surface. Place it away from vibration, dust, humidity, high temperature, flammable liquids, gas, corrosive, and conductive contaminants. Install the UPS indoors in a clean environment, away from windows and doors. Maintain a minimum clearance of 100mm in the bottom of the UPS to avoid dust and high temperature.
2. It's required to maintain a maximum altitude of 11,500ft to keep UPS normal operation at full load.
3. Place UPS:

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

Step 1: UPS input connection

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

- For 200/208/220/230/240 VAC models: The power cord is supplied in the UPS package.
- For 100/110/115/120 120/125 /127 127 VAC models: The power cord is attached to the UPS. The input plug is a NEMA 5-15P for 1.5 kVA models, NEMA 5-20P for 2 kVA models, and NEMA L5-30P for 3 kVA models.
- To reduce the risk of fire, connect only to a circuit provided with (@) A maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA70, and the Canadian Electrical Code, Part I, C22.1".

Model	(@)
DGL 1.5 kVA Li-Ion/DGM 1.5 kVA Li-Ion	20 A
DGL 2 kVA Li-Ion/DGM 2 kVA Li-Ion	20 A
DGL 3 kVA Li-Ion/DGM 3 kVA Li-Ion	40 A

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

Step 2: UPS output connection

There are 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.

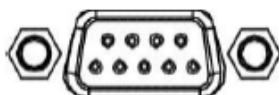
Step 3: Communication connection

Communication ports:

USB port



RS-232 port



Intelligent slot



To allow for unattended UPS shutdown/start-up and status monitoring, connect the communication cable on 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 the PC.

The UPS has an intelligent slot perfect for SNMP or AS400 cards. Installing either an SNMP or AS400 card in the UPS will provide advanced communication and monitoring options.

Step 4: Network connection

Communication ports:

Network/Fax/Phone surge ports

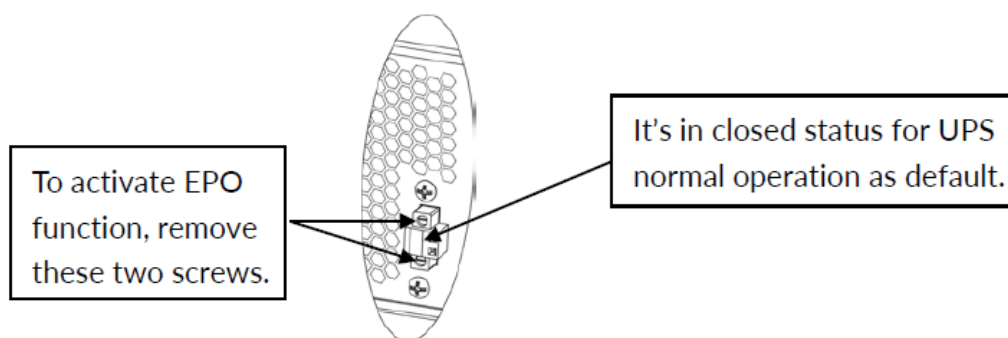


Connect a single modem/phone/fax line into a surge-protected "IN" outlet on the back panel of the UPS unit. Connect from the "OUT" outlet to the equipment with another modem/fax/phone line cable.

Step 5: Disable and enable the EPO function

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

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



Step 6: 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 7: Install the software

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

1. Insert the included installation CD into the CD-ROM drive and follow the on-screen instructions to proceed with software installation. If there is no screen showing 1 minute after inserting the CD, please execute the setup.exe file to initiate 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.

2.5 Battery Replacement

When the icons  and  are flashing in the LCD display and the alarm is sounding every 2 seconds, it's time to replace batteries. Contact your service representative to replace the batteries. Do not disconnect battery connectors under load. If you prefer to remove input power to change the batteries, press the OFF button on the front panel for two seconds to power off the UPS and switch off the utility power where the UPS is connected.

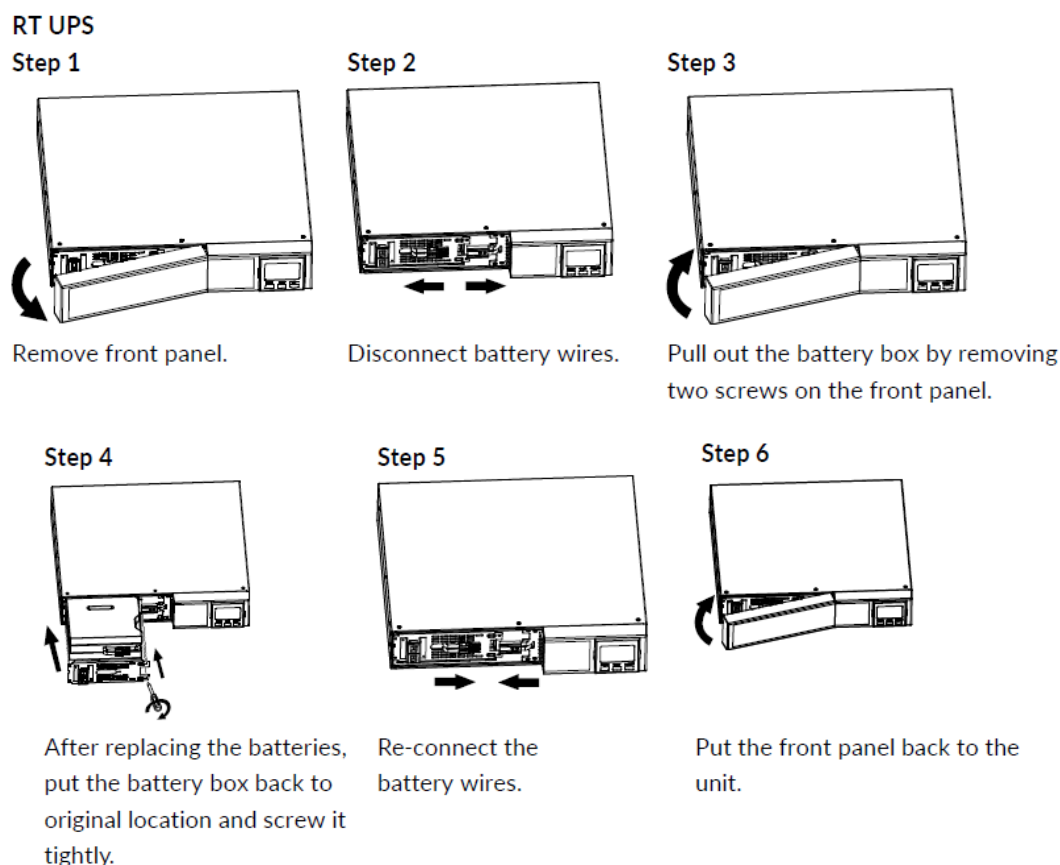
Note 1: DO NOT DISCONNECT the batteries while the UPS is in Battery mode.

Note 2: A small amount of arcing may occur when connecting the internal batteries. This is a normal condition and will cause no harm to personnel. Connect the cables quickly and firmly.

Note 3: This UPS is equipped with internal batteries and only a service person can replace the batteries.

Note 4: Upon battery disconnection, equipment is not protected from power outages.

CAUTION!! Consider all warnings, cautions, and notes before replacing batteries.

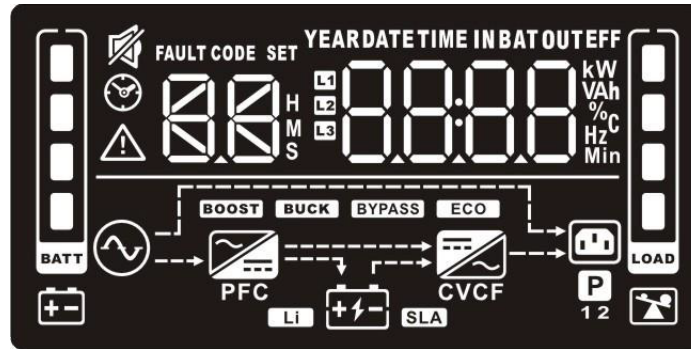


3. Operations









3.1 Button Operations

Button	Function
ON/Mute	<ul style="list-style-type: none"> • Turn on the UPS: Press and hold the 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. However, it's not applied to situations when warnings or errors occur. • Up key: Press this button to display the previous selection in UPS setting mode. • Switch to UPS self-test mode: Press the ON/Mute buttons for 3 seconds to enter UPS self-testing while in AC mode, ECO mode, or converter mode.
OFF/Enter	<ul style="list-style-type: none"> • Turn off the UPS: Press and hold this button for 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 is set by pressing this button. • Confirm selection key: Press this button to confirm selection in UPS setting mode.
Select	<ul style="list-style-type: none"> • Switch LCD message: Press this button to change the LCD message for input voltage, input frequency, input current, battery voltage, battery current, battery capacity, ambient temperature, output voltage, output frequency, load current, and load percent. • Setting mode: Press and hold this button for 3 seconds to enter UPS setting mode when Standby and Bypass mode. • Down key: Press this button to display the next selection in UPS setting mode.
ON/Mute + Select	<ul style="list-style-type: none"> • Switch to bypass mode: When the main power is normal, press the ON/Mute and Select buttons simultaneously for 3 seconds. Then UPS will enter bypass mode. This action will be ineffective when the input voltage exceeds the 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 the top menu, press these two buttons simultaneously to exit the setting mode.

3.2 LCD Panel



Display	Function
Backup Time Information	
	Indicates the estimated backup time. H: hours, M: minute, S: second.
Configuration and Fault Information	
	The configuration items and the configuration items are detailed in section 3-5.
	The warning and fault codes. The codes are detailed in sections 3-7 and 3-8.
Mute Operation	
	The UPS alarm is disabled.
Input, Battery, Temperature, Output & Load Information	
	The input voltage, input frequency, input current, battery voltage, battery current, battery capacity, ambient temperature, output voltage, output frequency, load current, and load percentage. k: kilo, W: watt, V: voltage, A: ampere, %: percent, °C: centigrade degree, Hz: frequency
Load Information	
	The load level by 0-24%, 25-49%, 50-74%, and 75-100%.
	Indicates overload.
Programmable Outlets Information	
	The programmable management outlets are working.
Mode Operation Information	

	The UPS is connected to the mains.
	The battery is working.
	In charging state.
BYPASS	The bypass circuit is working.
ECO	ECO mode is enabled.
	The AC to DC circuit is working.
PFC	The PFC circuit is working.
	The inverter circuit is working.
CVCF	The UPS is working in converter mode.
	The output is working.
Battery Information	
	The battery level by 0-24%, 25-49%, 50-74%, and 75-100%.
	Low battery.

3.3 Audible Alarm

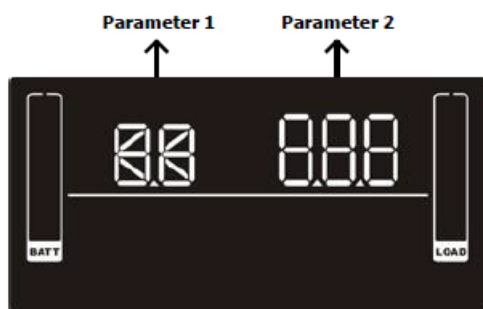
Battery Mode	Sounding every 5 seconds.
Low Battery	Sounding every 2 seconds.
Overload	Sounding every second.
Fault	Continuously sounding.
Bypass Mode	Sounding every 10 seconds.

3.4 Display Wordings Index

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

BR	BR	Battery Replace
EE	EE	EEPROM

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: is the setting options or values for each program.


01: Output Voltage Settings

Interface	Setting
	<p>Parameter 2: Output voltage For DGM models, choose the following output voltage: 200: Output voltage is 200 Vac 208: Output voltage is 208 Vac 220: Output voltage is 220 Vac 230: Output voltage is 230 Vac (Default) 240: Output voltage is 240 Vac</p> <p>For DGL models, choose the following output voltage: 100: Output voltage is 100 Vac 110: Output voltage is 110 Vac 115: Output voltage is 115 Vac 120: Output voltage is 120 Vac (Default) 125: Output voltage is 125 Vac</p>


02: Frequency Converter Enable/Disable

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


03: Output Frequency Settings

Interface	Setting
	<p>Parameter 2: Output frequency setting. You may set the initial frequency on battery mode: BAT 50: Output frequency is 50 Hz BAT 60: Output frequency is 60 Hz</p> <p>If converter mode is enabled, you may choose the following output frequency: CF 50: Output frequency is 50 Hz CF 60: Output frequency is 60 Hz</p>


04: ECO Enable/Disable

Interface	Setting
	<p>Parameter 2: Enable or disable ECO function. You may choose the following two options: ENA: ECO mode enabled DIS: ECO mode disabled (Default)</p>

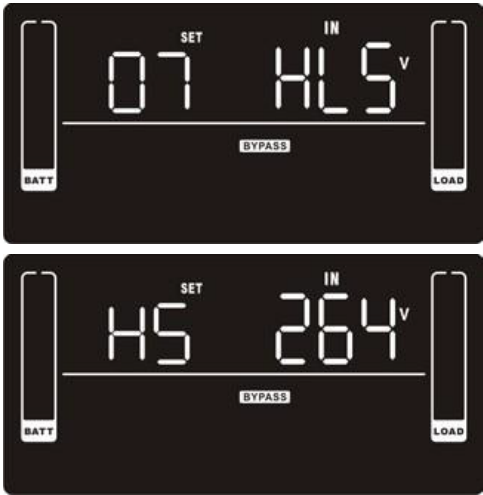
05: ECO Voltage Range Setting

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

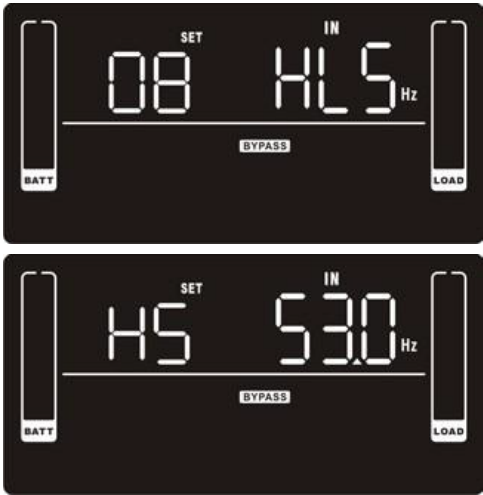
06: Bypass Enable/Disable when UPS is OFF

Interface	Setting
	<p>Parameter 2: Enable or disable the Bypass function. You may choose the following two options: ENA: Bypass enable DIS: Bypass disable (Default)</p>


07: Bypass Voltage Range Settings

Interface	Setting
	<p>Parameter 2: 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 DGM models: 230-264: setting the high voltage point from 230 Vac to 264 Vac. (Default: 264 Vac) For DGL models: 120-140: Setting the high voltage point from 120 Vac to 140 Vac. (Default: 132 Vac)</p> <p>LLS: Bypass low voltage point For DGM models: 170-220: setting the low voltage point from 170 Vac to 220 Vac. (Default: 170 Vac) For DGL models: 85-115: Setting the low voltage point from 85 Vac to 115 Vac. (Default 85 Vac)</p>


08: Bypass Frequency Range Settings

Interface	Setting
	<p>Parameter 2: 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 50 Hz output frequency models: 51-55 Hz: setting the frequency high loss point from 51 Hz to 55 HZ. (Default: 53.0 Hz) For 60 Hz output frequency models: 61-65 Hz: setting the frequency high loss point from 61 Hz to 65 Hz. (Default: 63.0 Hz)</p> <p>LLS: Bypass low Frequency point For 50 Hz output frequency models: 45-49 Hz: setting the frequency low loss point from 45 Hz to 49 HZ. (Default: 47.0 Hz) For 60 Hz output frequency models: 55-59 Hz: setting the frequency low loss point from 55 Hz to 59 Hz. (Default: 57.0 Hz)</p>


09: Programmable Outlets Enable/Disable

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


10: Programmable Outlets Settings

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


11: Autonomy Limitation Settings

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


12: Battery Total AH Settings

Interface	Setting
	<p>Parameter 2: Set up the battery total AH of the UPS.</p> <p>7-999: Set the battery total capacity from 7-999 in AH. Please set the correct battery total capacity if the external battery bank is connected.</p>


13: Maximum Charger Current Settings

Interface	Setting																								
	<p>Parameter 2: Set up the charger's maximum current.</p> <p>1/2/4/6/8: setting the charger maximum current 1/2/4/6/8 in Ampere. (Default: 4 A)</p> <p>Recharge time VS charging current listed in below table:</p> <p>Unit: hours</p> <table><tr><th></th><th>1.5 kVA</th><th>2 kVA</th><th>3 kVA</th></tr><tr><td>8 A</td><td>0.7</td><td>1.4</td><td>1.1</td></tr><tr><td>6 A</td><td>0.9</td><td>1.9</td><td>1.4</td></tr><tr><td>4 A</td><td>1.4</td><td>2.9</td><td>2.1</td></tr><tr><td>2 A</td><td>2.8</td><td>5.7</td><td>4.2</td></tr><tr><td>1 A</td><td>5.6</td><td>11.4</td><td>8.5</td></tr></table>		1.5 kVA	2 kVA	3 kVA	8 A	0.7	1.4	1.1	6 A	0.9	1.9	1.4	4 A	1.4	2.9	2.1	2 A	2.8	5.7	4.2	1 A	5.6	11.4	8.5
	1.5 kVA	2 kVA	3 kVA																						
8 A	0.7	1.4	1.1																						
6 A	0.9	1.9	1.4																						
4 A	1.4	2.9	2.1																						
2 A	2.8	5.7	4.2																						
1 A	5.6	11.4	8.5																						


14: Charger Boost Voltage Settings

Interface	Setting
	<p>Parameter 2: Set up the charger boost voltage. 2.25-2.40: Set the charger boost voltage from 2.25 V/cell to 2.40 V/cell. (Default: 2.36 V/cell)</p>


15: Charger Float Voltage Settings

Interface	Setting
	<p>Parameter 2: Set up the charger float voltage. 2.20-2.33: Set the charger float voltage from 2.20 V/cell to 2.33 V/cell. (Default: 2.28 V/cell)</p>


16: EPO Logic Settings

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


17: Site Fault Detection Enable/Disable

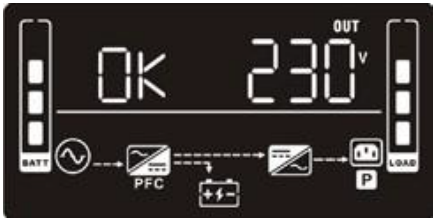
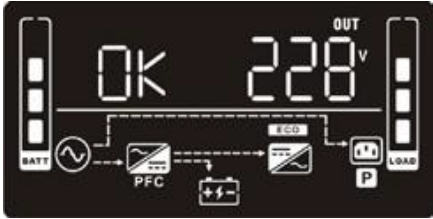


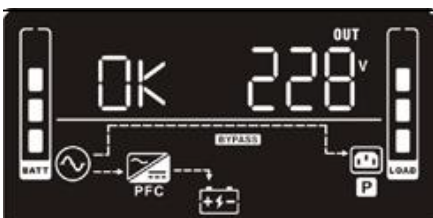


Interface	Setting
	<p>Parameter 2: Enable or disable site fault detection. You may choose the following two options:</p> <p>ENA: Site fault detection enabled (Default for DXL models)</p> <p>DIS: Site fault detection disabled (Default for DXM models)</p>

18: Display Setting for Autonomy Time


Interface	Setting
	<p>Parameter 2: Set up the display setting for autonomy time</p> <p>EAT: Displays the remaining autonomy time. (Default)</p> <p>RAT: Displays accumulated autonomy time so far.</p>

00: Exit Settings















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







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

3.7 Fault Reference Codes

Fault Event	Fault Code	Icon	Fault Event	Fault Code	Icon
Bus start failure	01	X	Battery voltage too high	21	X
Bus over	02	X	Battery voltage too low	24	X
Bus under	03	X	Charger output short	2A	X
Inverter soft start failure	11	X	Over-temperature	41	X
High Inverter voltage	12	X	Overload	43	
Low Inverter voltage	13	X	Charger failure	45	X
Inverter output short	14	X	Over input current	49	X

3.8 Warning Indicators








Warning	Icon (flashing)	Code	Alarm
Low battery	 	6L	Sounds every 2 seconds.
Overload	 	OL	Sounds every second
Over input current		OI	Sounds 2 beeps every 10 seconds
Battery is not connected	 	NC	Sounds every 2 seconds.
Over-charge	 	OC	Sounds every 2 seconds.
Site wiring fault	 	SF	Sounds every 2 seconds.
EPO enabled		EP	Sounds every 2 seconds.
Over-temperature		TP	Sounds every 2 seconds.
Charger failure		CH	Sounds every 2 seconds.


Battery fault		bF	Sounds every 2 seconds. (At this time, UPS is off to remind users something wrong with the battery)
Out of bypass voltage range	 	bV	Sounds every 2 seconds.
Bypass frequency unstable		FU	Sounds every 2 seconds.
Battery replacement		bT	Sounds every 2 seconds.
EEPROM error		EE	Sounds every 2 seconds.

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

4. Troubleshooting

If the UPS system is not functioning correctly, please reference the tables below to isolate the issue.

Symptom	Possible Cause	Remedy
No indication and alarm even though the mains is normal.	The AC input power is not properly connected.	Check if the input power cord is firmly connected to the mains.
	The AC input is connected to the UPS output.	Plug the AC input power cord into the AC input correctly.
The  icon and the warning code EP flash on the LCD display, and the alarm sounds every 2 seconds.	The EPO function is activated.	Set the circuit in the closed position to disable the EPO function.
The icons  and  , and the warning code 5F , flash on the LCD display. The alarm sounds every 2 seconds.	Line and neutral conductors of UPS input are reversed.	Rotate the mains power socket by 180°, then connect to the UPS system.
The icons of  and  , and the warning code PI flash on the LCD display. The alarm sounds every 2 seconds.	The external or internal battery is incorrectly connected.	Check if all batteries are connected properly.
The fault code is 27 on the LCD display, and the alarm is continuously sounding.	The battery voltage is too high, or the charger is faulty.	Contact your dealer.
The fault code is 28 on the LCD display, and the alarm is continuously sounding.	The battery voltage is too low, or the charger is faulty.	Contact your dealer.
The icons  and  and the warning code OL flash on the LCD display. The alarm sounds every second.	The UPS is overloaded.	Remove the excess loads from the UPS output.
	The UPS is overloaded. Devices connected to the UPS are fed directly by the electrical network via the Bypass.	Remove the excess loads from the UPS output.
	After repetitive overloads, the UPS is locked in the Bypass mode. Connected devices are fed directly by the mains.	Remove the excess loads from the UPS output. Then, shut down the UPS and restart it.

The fault code is 49 on the LCD display, and the alarm is continuously sounding.	UPS is over the input current.	Remove the excess loads from the UPS output.
The fault code is 43 and the icon  is lighting on the LCD display. The alarm is continuously sounding.	The UPS shut down automatically because of an overload at the UPS output.	Remove the excess loads from the UPS output and restart it.
The fault code is shown as 14 on LCD display, and the alarm is continuously sounding.	The UPS shuts down automatically because a short circuit occurs on the UPS output.	Check the output wiring and if connected devices are in short circuit status.
The fault code is shown as 01, 02, 03, 11, 12, 13, and 41 on LCD display and the 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.
The battery backup time is shorter than the nominal value.	The batteries are not fully charged.	Charge the batteries for at least 5 hours and then check their capacity. If the problem persists, consult your dealer.
	The batteries are defective.	Contact your dealer to replace the battery.
The fault code is shown as 2A on LCD display, and the alarm is continuously sounding.	A short circuit occurs on the charger output.	Check if the battery wiring of the connected external pack is in short circuit status.
The fault code is shown as 45 on LCD display. At the same time, the alarm is continuously sounding.	The charger does not have output and the battery voltage is less than 10 V/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 77°F (25°C) ambient temperature) has been exceeded, the batteries must be replaced. In this case, please contact your dealer.

Storage

Before storing, charge the UPS for 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
95°F ~ 113°F (35°C ~ 45°C)	Every month	1 hour @ 41°F ~ 95°F (5~35°C)
77° ~ 95°F (25°C ~ 35°C)	Every 1-3 months	1 hour @ 41°F ~ 77°F (5~25°C)
50°F ~ 77°F (10°C ~ 25°C)	Every 3-12 months	1 hour @ 41°F ~ 77°F (5~25°C)

6. Specifications

DGL Models

PHYSICAL SPECIFICATIONS - 120 VAC			
Part Number	DG1500L	DG2000L	DG30000L
Dimensions (WxDxH)	17.2" x 15.1" x 3.5" (436.88 mm x 383.54 mm x 88.9 mm)	17.2" x 19" x 3.5" (436.88 mm x 482.6 mm x 88.9 mm)	17.2" x 23.8" x 3.5" (436.88 mm x 604.52 mm x 88.9 mm)
Weight	25.6 lb (11.61 kg)	33.5 lb (15.19 kg)	45.2 lb (20.50 kg)
Power Cord	5-15P, 6 ft (1.82 m)	5-20P, 6 ft (1.82 m)	L5-30P, 6 ft (1.82 m)
UPS Receptacles	(8) NEMA 5-15R	(8) NEMA 5-15/20R	L5-30R + (6) 5-15/20R
POWER			
Power Capacity	1500 VA (1350 W)	2000 VA (1800 W)	3000 VA (2700 W)
Input (Voltage/Frequency)	55–150 VAC* / 50/60 Hz auto-sensing		
Output (Voltage)	100**/110/115/120/127 VAC selectable		
Output (Frequency)	50/60Hz ± 0.1Hz		
Overload Capacity	Online mode: 110% & ≤ 130% for 5 min; > 130% & ≤ 140% for 30 sec; > 140% for 1.5 sec		
Output (Efficiency)	Up to 98% efficiency		
BATTERY			
Cell Type	LFP26650 2600 mAh		
Cell Configuration	15S2P	15S2P x 2	24S1P x 3
Charging Voltage	52.5 VDC	52.5 VDC	84 VDC
Charging Current	2/4/6/8A (max.), adjustable through LCD		
Recharge Time	1.5 hours to 90% charge		
INCLUDED			
Communications Interface	RS-232, USB, EPO, intelligent slot for optional cards (Web/SNMP, Relay/dry contact, Modbus)		
Included in Box	ViewPower software, horizontal brackets, tower pedestals, and user manual		
OPTIONAL			
Available Options	Bypass distribution (PM series), 4-post rail kit, 2-post shelf kit, wall-mount bracket		
ENVIRONMENTAL			
Operating Temperature	32–104°F (0–40°C)		
Elevation, Above MSL	11,500 ft (3,500 m)		
COMPLIANCE/STANDARDS			
EMC Compliance	FCC Class A		

Safety Compliance	TUV certified to UL-1778 and CSA-C22.2no107.3-14
Environmental	RoHS
TAA Compliant	Yes

*Depending on load level. **Derate capacity to 80% when the output voltage is adjusted to 100 VAC. ***Rack depth is the front bracket to unit panel. Add 1" for depth including front bezel.

BATTERY RUNTIMES - 120 VAC

	Internal Batteries									
Percentage Load:	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
DG1500L	111	54	34	25	19	16	13	11	9	8
DG2000L	163	79	51	38	30	24	21	18	16	14
DG3000L	127	62	40	29	23	19	16	14	12	11

Runtimes are shown in minutes and will vary based on battery condition, age, cycles, and ambient temperature.

DGM Models

PHYSICAL SPECIFICATIONS - 230 VAC			
Part Number	DG1500M	DG2000M	DG3000M
Dimensions (WxDxH)**	17.2" x 15.1" x 3.5" (436.88 mm x 383.54 mm x 88.9 mm)	17.2" x 19" x 3.5" (436.88 mm x 482.6 mm x 88.9 mm)	17.2" x 23.8" x 3.5" (436.88 mm x 604.52 mm x 88.9 mm)
Weight	25.6 lb (11.61 kg)	33.5 lb (15.19 kg)	45.2 lb (20.50 kg)
Power Cord	C14 inlet, 8 ft (2.4 m) L6-20P to C13 line cord	C20 inlet, 8 ft (2.4 m) L6-20P to C19 line cord	
UPS Receptacles	(8) IEC C13	(8) IEC C13	IEC C19 + (8) IEC C13
POWER			
Power Capacity	1500 VA (1350 W)	2000 VA (1800 W)	3000 VA (2700 W)
Input (Voltage/Frequency)	110-300 VAC* / 50/60Hz auto-sensing		
Output (Voltage)	230 VAC nominal (200/208/220/230/240 VAC selectable)***		
Output (Frequency)	50/60 Hz ± 0.1 Hz		
Overload Capacity	110% & ≤ 130% for 5 min; > 130% & ≤140% for 30 sec; >140% for 1.5 sec		
Output (Efficiency)	Up to 98% efficiency		
BATTERY			
Cell Type	LFP26650 2600 mAh		
Cell Configuration	15S2P	15S2P x2	24S1P x 3
Charging Voltage	52.5 VDC	52.5 VDC	84 VDC
Charging Current	1/2/4/6/8A (max.), adjustable through LCD		
Recharge Time	1.5 hours to 90% charge		
INCLUDED			
Communications Interface	RS-232, USB, EPO, intelligent slot for optional cards (Web/SNMP, Relay/dry contact, Modbus)		
Included in Box	ViewPower software, horizontal brackets, tower pedestals, and user manual		
OPTIONAL			
Available Options	Bypass distribution (PM series), 4-post rail kit, 2-post shelf kit, wall-mount bracket		
ENVIRONMENTAL			
Operating Temperature	32–104°F (0–40°C)		
Elevation, Above MSL	11,500 ft (3,500 m)		
COMPLIANCE/STANDARDS			
EMC Compliance	FCC Class A		

Safety Compliance	TUV certified to UL-1778 and CSA-C22.2no107.3-14
Environmental	RoHS
TAA Compliant	Yes

*Depending on load level. **Derate capacity to 80% when the output voltage is adjusted to 200 VAC/208 VAC. ***Rack depth is the front bracket to unit panel. Add 1" for depth including front bezel.

BATTERY RUNTIMES - 230 VAC

	Internal Batteries									
Percentage Load:	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
DG1500M	111	54	34	25	19	16	13	11	9	8
DX2000M	163	79	51	38	30	24	21	18	16	14
DG3000M	127	62	40	29	23	19	16	14	12	11

Runtimes are shown in minutes and will vary based on battery condition, age, cycles, and ambient temperature.

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

Model Name	Input Rating	Output Rating
DG1500L	100-125 Vac, 50/60Hz, 12 A, 1Ø	100/110/115/120/125Vac, 50/60Hz, 1Ø 1500 VA/1350 W 12 A (@125 Vac input); 1500 VA/1300 W 12.5 A (@120 Vac input); 1500 VA/1270 W 13 A (@115 Vac input); 1500 VA/1200 W 13.6 A (@110 Vac input); 1350 VA/1040 W 13.5 A (@100 Vac input)
DG2000L	100-125 Vac, 50/60 Hz, 16 A, 1Ø	100/110/115/120/125 Vac, 50/60 Hz, 1Ø 2000 VA/1800 W 16 A (@125 Vac input); 2000 VA/1800 W 16.7 A (@120 Vac input); 2000 VA/1740 W 17.4 A (@115 Vac input); 2000 VA/1640 W 18.2 A (@110 Vac input); 1800 VA/1500 W 18 A (@100 Vac input)
DG3000L	100-125 Vac, 50/60 Hz, 24 A, 1Ø	100/110/115/120/125Vac, 50/60Hz, 1Ø 3000 VA/2700 W 24 A (@125 Vac input); 3000 VA/2700 W 25 A (@120Vac input) 3000 VA/2650 W 26.1 A (@115 Vac input); 3000 VA/2500 W 27.3 A (@110 Vac input); 2700 VA/2300 W 27 A (@100 Vac input)

7. Obtaining Service

If the UPS requires Service:

1. Use the TROUBLESHOOTING section in this manual to eliminate obvious causes.
2. Verify there are no circuit breakers tripped.
3. Call your dealer for assistance. If you cannot reach your dealer, or if they cannot resolve the problem, call Enconnex Technical Support at +1 (775) 562-2138 or toll-free at +1 (833) 825-5329. Technical support inquiries can also be made at info@enconnex.com. Please have the following information available BEFORE calling the Technical Support Department:
 - Your name and address.
 - The serial number of the unit.
 - Where and when the unit was purchased.
 - All of the model information about your UPS.
 - Any information on the failure, including LEDs that may or may not be illuminated.
 - A description of the protected equipment, including model numbers, if possible.
 - A technician will ask you for the above information and, if possible, help solve your problem over the phone. If the unit requires factory service, the technician will issue you a Return Material Authorization number (RMA).

If you are returning the UPS to Enconnex for service, please follow these procedures:

1. Pack the UPS in its original packaging. If the original packaging is no longer available, ask the Technical Support Technician about obtaining a replacement set of packaging materials. It is important to pack the UPS properly to avoid damage in transit. Never use Styrofoam beads for a packing material.
2. Include a letter with your name, address, daytime phone number, RMA number, a copy of your original sales receipt, and a brief description of the problem.
3. Mark the RMA number on the outside of all packages. Enconnex cannot accept any package without the RMA number marked on the outside of the boxes.
4. Return the UPS by an insured, prepaid carrier to the address provided by the Technician.
5. Refer to the Warranty statements in this manual for additional details on what is covered.

Customer Service: sales.usa@enconnex.com or +1 (833) 825-5329

Technical Support: info@enconnex.com or +1 (775) 562-2138

8. Enconnex Limited Warranty

Enconnex warrants Enconnex equipment, when properly applied and operated within specified conditions, against faulty materials or workmanship for a period of six years for DGL or DGM series products from the date of purchase. Enconnex warrants internal batteries for a period of six years from the date of purchase. For equipment sites within the United States and Canada, this warranty covers repair or replacement at the sole discretion of Enconnex. The customer is responsible for the costs of shipping the defective product to Enconnex. Enconnex will pay for ground shipment of the repaired or replacement product. This warranty applies only to the original purchaser.

If equipment provided by Enconnex is found to be Dead-on-Arrival (DOA), Enconnex will be responsible for the costs of shipping product to and returning equipment from the customer in a timely manner as agreed to with the customer once the customer has requested and received a Return Material Authorization (RMA) number. DOA equipment is defined as equipment that does not properly function according to user documentation when initially received and connected in conjunction with proper procedures as shown in the user documentation or via support provided by Enconnex personnel or authorized agents.

This warranty shall be void if (a) the equipment is repaired or modified by anyone other than Enconnex or an Enconnex approved third party; (b) the equipment is damaged by the customer, is improperly used or stored, is subjected to an adverse operating environment, or is operated outside the limits of its electrical specifications; or (c) the equipment has been used or stored in a manner contrary to the equipment's operating manual, intended use or other written instructions. Any technical advice furnished by Enconnex or an Enconnex authorized representative before or after delivery with regard to the use or application of Enconnex equipment is furnished on the basis that it represents Enconnex's best judgment under the situation and circumstances, but it is used at the recipient's sole risk.

EXCEPT AS STATED ABOVE, Enconnex DISCLAIMS ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

EXCEPT AS STATED ABOVE, IN NO EVENT WILL Enconnex BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF Enconnex EQUIPMENT, including but not limited to, any costs, lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, cost of substitutes, or claims by third parties. Purchaser's sole and exclusive remedy for breach of any warranty, expressed or implied, concerning Enconnex equipment, and the only obligation of Enconnex under this warranty, shall be the repair or replacement of defective equipment, components, or parts; or, at Enconnex's sole discretion, refund of the purchase price or substitution of an equivalent replacement product.