ENCONNEX®

Online Lead-Acid UPS - 1000 VA - 3000 VA

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

- 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 (for DXM models or UL-marked for DXL 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 (for DXM models or UL-marked for DXL 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 104°F (40°C).
- 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, press the OFF/Enter button.
- 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 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 the charging source before connecting or disconnecting battery terminals.
    - Determine if the battery is inadvertently grounded. If inadvertently grounded, remove the source from the 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 type of batteries or battery packs.
- 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 models)
- **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.
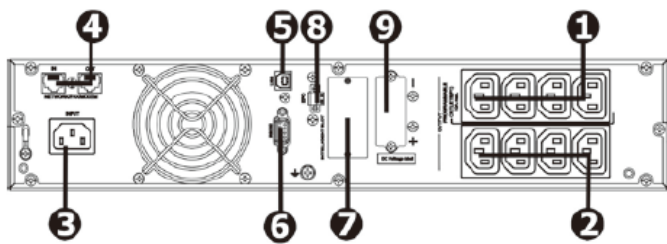
2. Installation and Setup

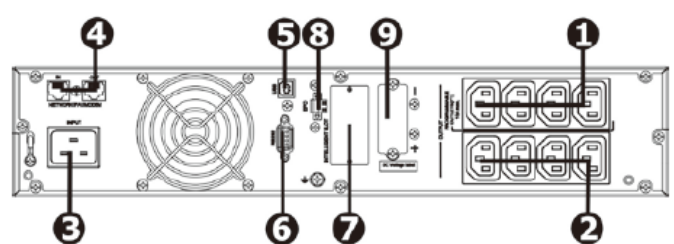**NOTE:** Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. Please keep the original package in a safe place for future use.

2.1 Rear Panel View

DXM Models
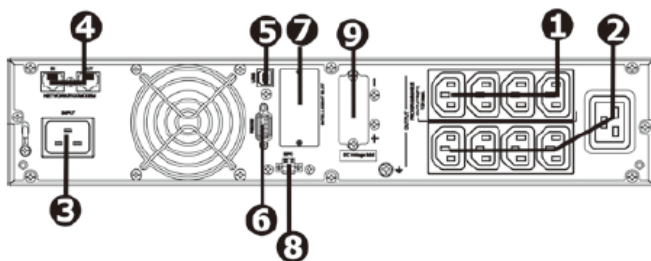
DXL Models
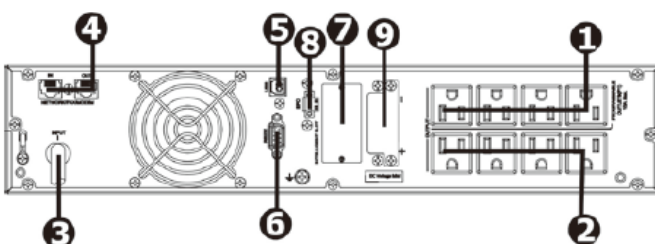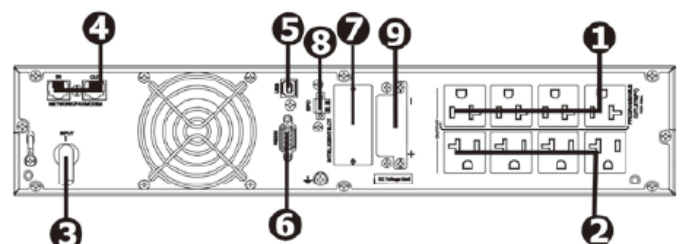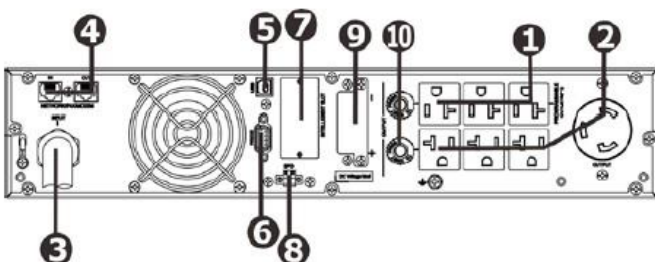
1. Programmable outlets: connect to non-critical loads.
2. Output receptacles: connect to mission-critical loads.
3. AC input
4. Network/Fax/Modem surge protection

5. USB communication port
6. RS-232 communication port
7. SNMP intelligent slot
8. Emergency power off function connector (EPO)
9. External battery connection
10. Output circuit breaker

2.2 Operating Principle
The operating principle of the UPS is shown as below:
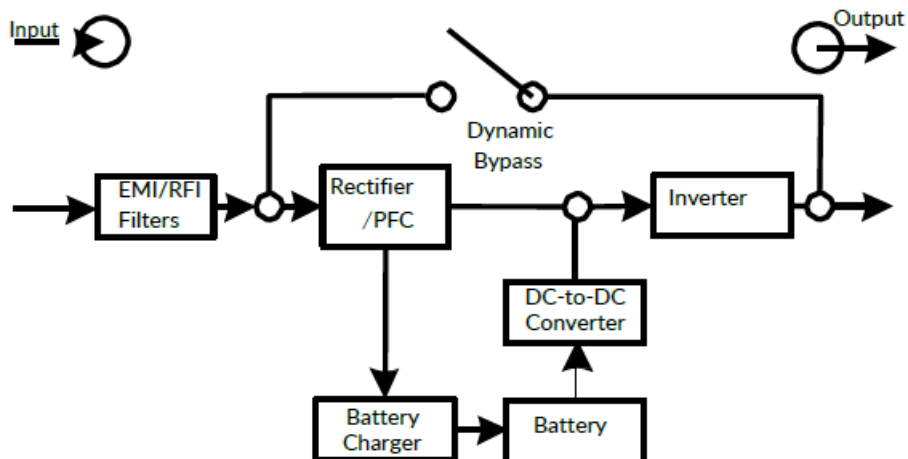
The UPS is composed of mains input, EMI/RFI filters, rectifier/PFC, inverter, battery charger, DC-to-DC converter, battery, dynamic bypass, and UPS output.
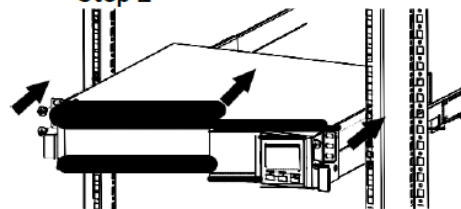
2.3 Install the UPS
This UPS can be displayed on the desk or mounted in the 19" rack chassis. Please choose the proper position for UPS installation.
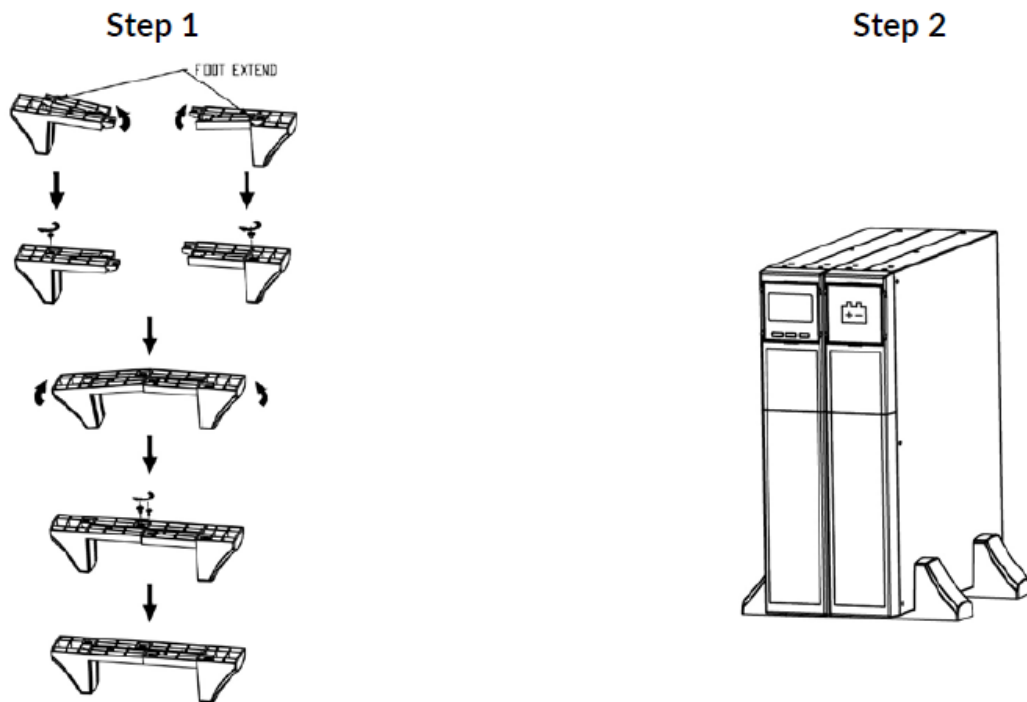
Rack-Mount Installation
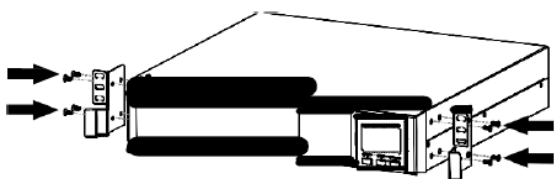
UPS Tower Installation
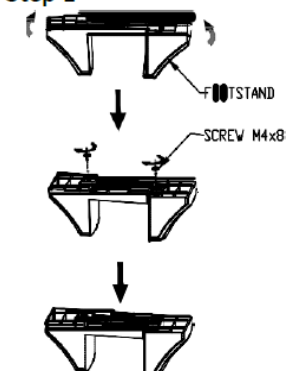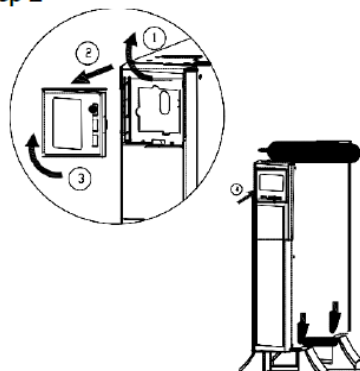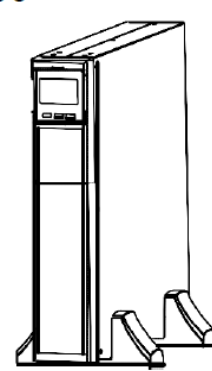
Tower Installation with Battery Pack

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. 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: External battery connection

For safety considerations, the UPS is shipped out from the factory without connecting battery wires. Before connecting to external batteries, it's required to have the internal battery wire disconnected.

Follow the below steps to make an external battery connection.

1. Turn off the UPS and remove the power plug from the mains.
2. Remove the front panel and disconnect the internal battery wire.
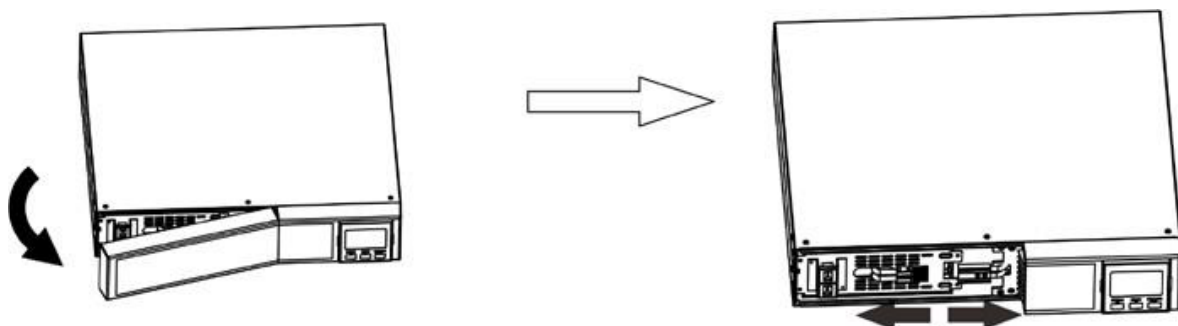
3. Remove the cover of the external battery connector by using a screwdriver.

4. Plug the battery cable into the external battery connector of the UPS 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 connector of the first battery pack to the first battery connector of the second battery pack).
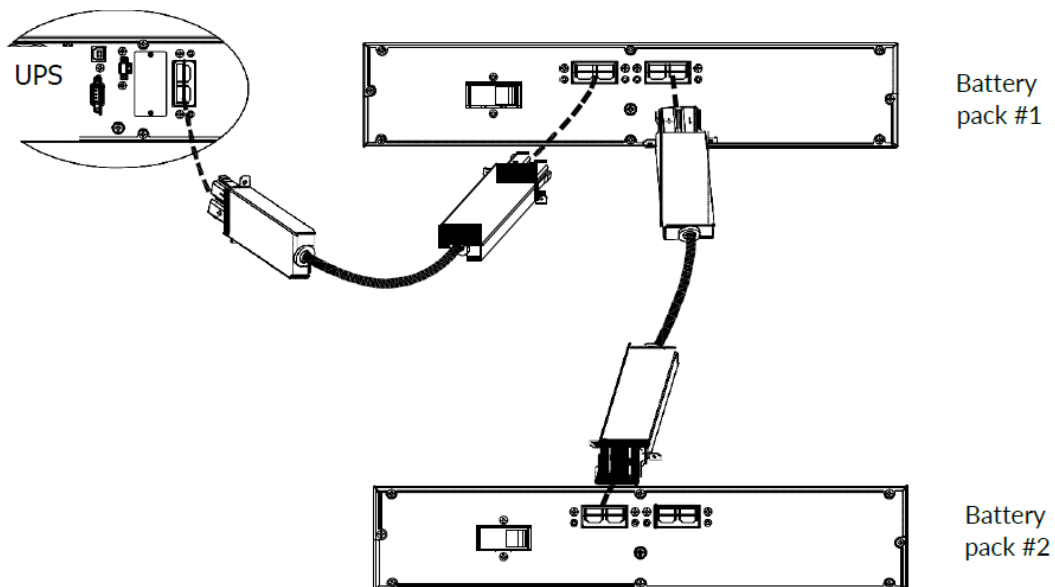
5. Stabilize the connector to the UPS and the battery pack(s) by fixing screws as shown below diagram.
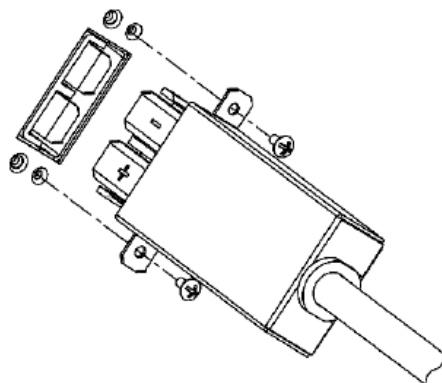
6. Connect the internal battery connector and reattach the front panel..
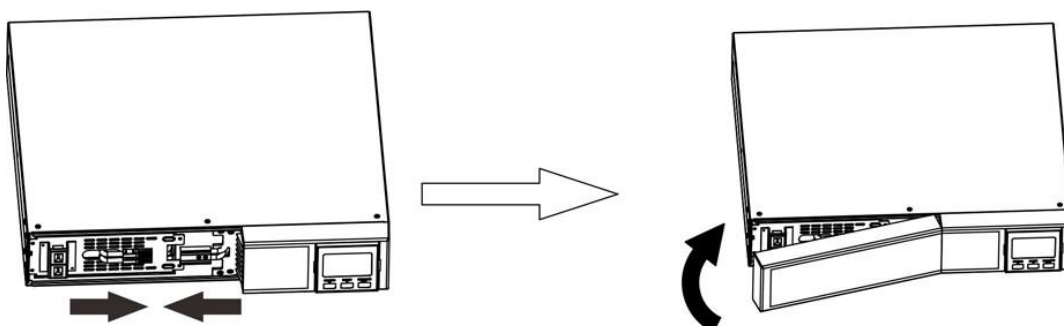
Step 2: UPS input connection

Plug the UPS into a two-pole, three-wire, grounded receptacle only. Avoid using extension cords.
- For DXM models: The power cord is supplied in the UPS package.
- For DXL models: The power cord is attached to the UPS. The input plug is a NEMA 5-15P for 1000 and 1500 models, NEMA 5-20P for 2000 model, and NEMA L5-30P for 3000 model.

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/NFPA 70, and the Canadian Electrical Code, Part I, C22.1.

Model	Amperage
DX1000L	20A
DX1500L	20A
DX2000L	20A
DX3000L	40A

Step 3: 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.
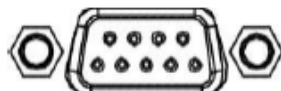
Step 4: Communication connection

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 an SNMP or AS400 card in the UPS will provide advanced communication and monitoring options.

Step 5: 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 6: 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.

To activate EPO function, remove these two screws.

It's in closed status for UPS normal operation as default.
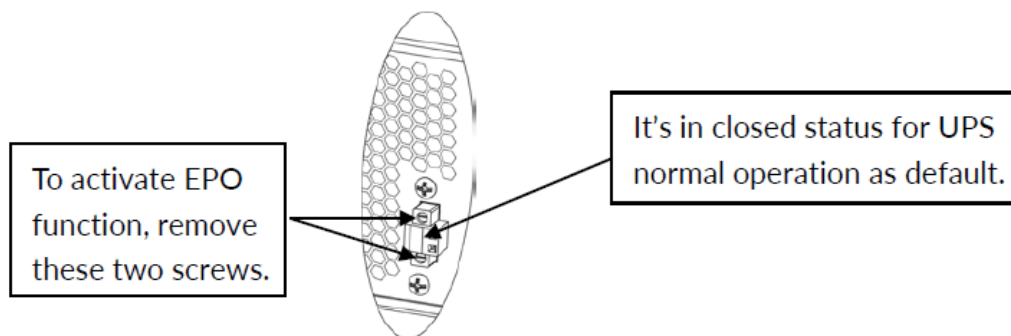
Step 7: Turn on the UPS
Press the ON/Mute button on the front panel for two seconds to power on the UPS.
Note: The battery charges fully during the first five hours of normal operation. Do not expect full battery run capability during this initial charge period.

Step 8: Install 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 no screen shows 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 ⌐Я 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.

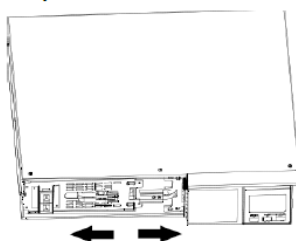**Note 4:** Upon battery disconnection, equipment is not protected from power outages.

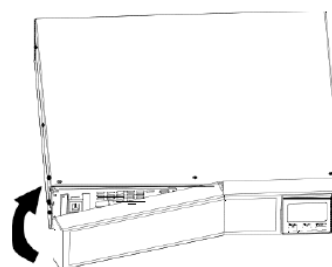**CAUTION!!** Consider all warnings, cautions, and notes before replacing batteries.
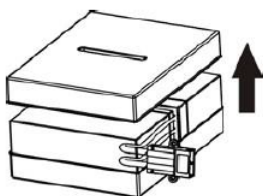
Step 1
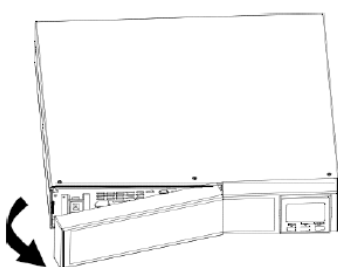
Remove front panel.

Step 2

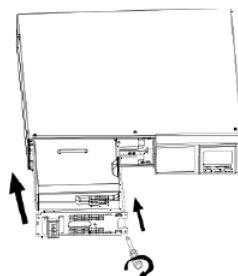Disconnect battery wires.

Step 3

Pull out the battery box by removing two screws on the front panel.
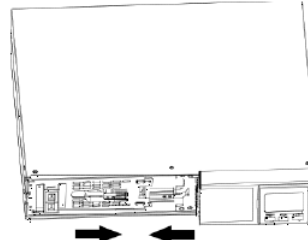
Step 4

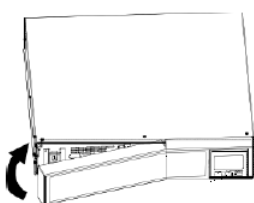Remove the top cover of battery box and replace the inside batteries.

Step 5

After replacing the batteries, put the battery box back to original location and screw it tightly.
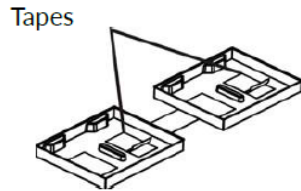
Step 6

Re-connect the battery wires.

Step 7

Put the front panel back to the unit.
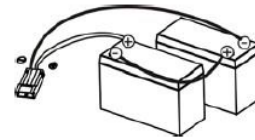
2.6 Battery Kit Assembly

NOTICE: Please assemble the battery kit first before installing it inside UPS. Please select the correct battery kit procedure below to assemble it.
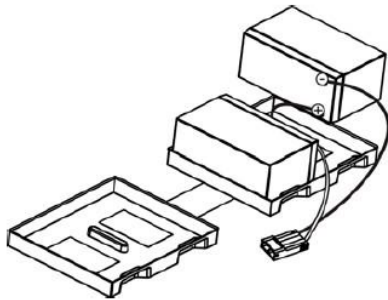
2-Battery Kit
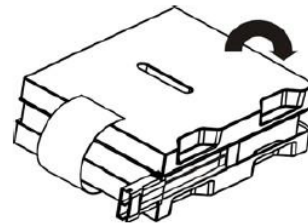
Step 1: Remove adhesive tapes.

Tapes

Step 2: Connect all battery terminals by following below chart.

Step 3: Put assembled battery packs on one side of plastic shells.
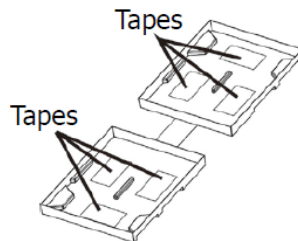
Step 4: Cover the other side of plastic shell as below chart. Then, battery kit is assembly well.

3-Battery Kit

Step 1: Remove adhesive tapes.

Tapes

Tapes

Step 2: Connect all battery terminals by following below chart.

Step 3: Put assembled battery packs on one side of plastic shells as below chart.

Step 4: Cover the other side of plastic shell as below chart. Then, battery kit is assembly well.

4-Battery Kit

Step 1: Remove adhesive tapes.

Tapes

Tapes

Step 2: Connect all battery terminals by following below chart.

Step 3: Put assembled battery packs on one side of plastic shells.

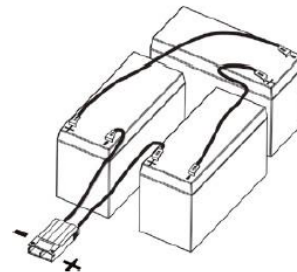**Step 4:** Cover the other side of plastic shell as below chart. Then, battery kit is assembly well.
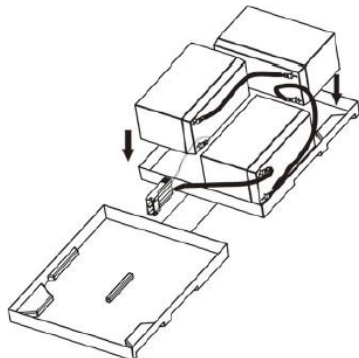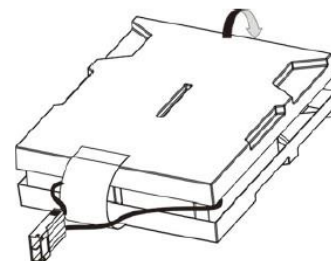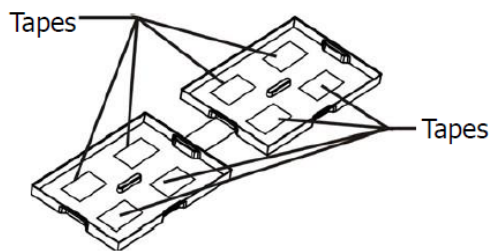
6-Battery Kit

Step 1: Remove adhesive tapes.

Tapes

Tapes

Step 2: Connect all battery terminals by following below chart.

Step 3: Put assembled battery packs on one side of plastic shells.

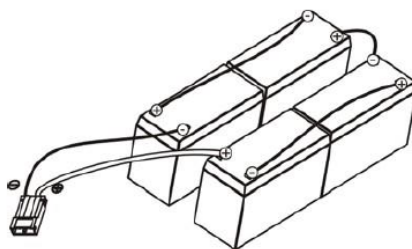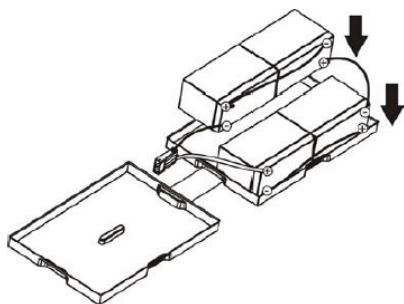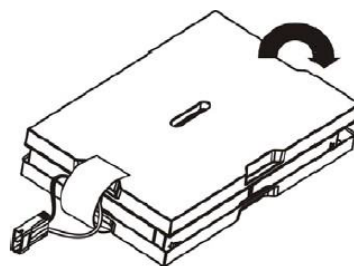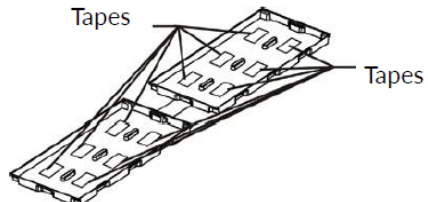**Step 4:** Cover the other side of plastic shell as below chart. Then, battery kit is assembly well.
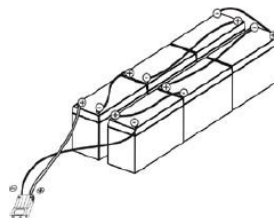
3. Operations
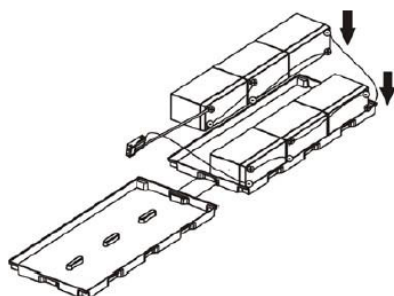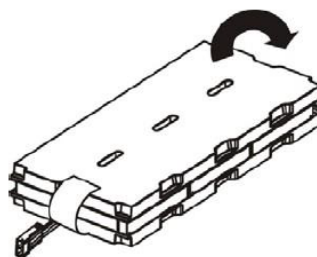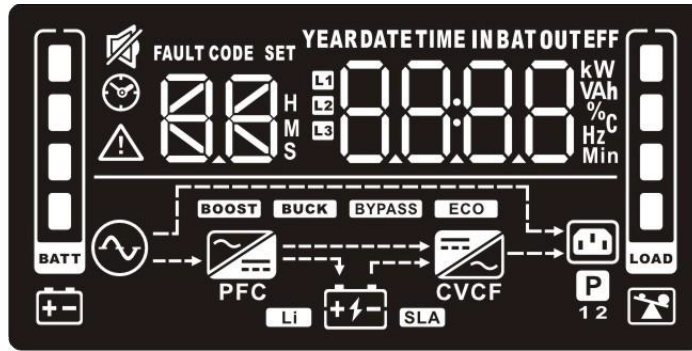## 3.1 Button Operations

Button	Function
ON/Mute	**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	**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	**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	**Switch to bypass mode:** When the main power is normal, press the 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 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. These are detailed in section 3.5.
	The warning and fault codes. These 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 is measured in 0-24%, 25-49%, 50-74%, and 75-100% blocks.
	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 measured in 0-24%, 25-49%, 50-74%, and 75-100% blocks.
	Low battery.

3.3 Audible Alarm

Battery Mode	Beeps every 5 seconds.
Low Battery	Beeps every 2 seconds.
Overload	Beeps every second.
Fault	Continuously beeping.
Bypass Mode	Beeps every 10 seconds.

3.4 Display Wordings Index

Abbreviation	Display Content	Meaning
ENA	ENA	Enable
DIS	diS	Disable
ESC	ESC	Escape
HLS	HLS	High loss
LLS	LLS	Low loss
AO	AO	Active open
AC	AC	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
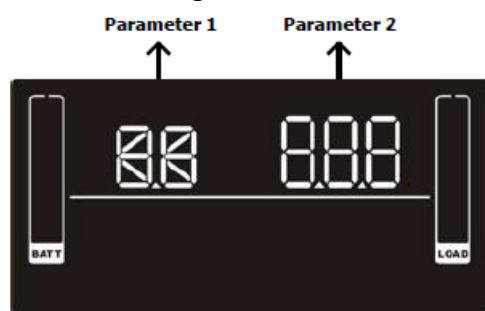
There are three parameters to set up the UPS.
Parameter 1: It's for program alternatives. Refer to below table.
Parameter 2: is the setting options or values for each program.

01: Output Voltage Settings

Interface	Setting
	Parameter 2: Output voltage For DXM 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 For DXL 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

02: Frequency Converter Enable/Disable

Interface	Setting
	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)

03: Output Frequency Settings

Interface	Setting
	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 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

04: ECO Enable/Disable

Interface	Setting
	Parameter 2: Enable or disable ECO function. You may choose the following two options: **ENA:** ECO mode enabled **DIS:** ECO mode disabled (Default)
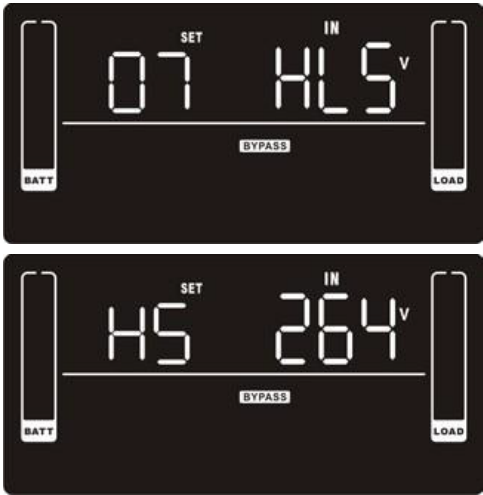
05: ECO Voltage Range Setting

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

06: Bypass Enable/Disable when UPS is OFF

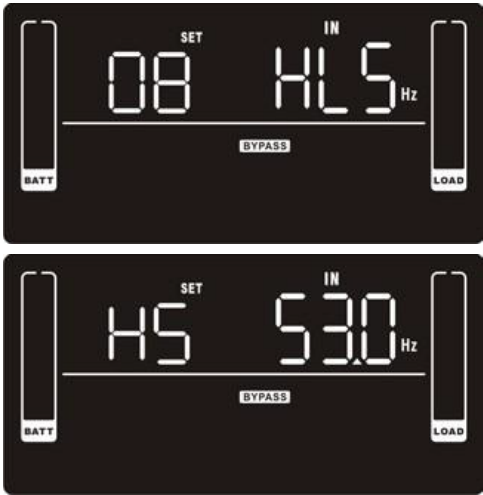| Interface	Setting
	Parameter 2: Enable or disable the Bypass function. You may choose the following two options: **ENA:** Bypass enable **DIS:** Bypass disable (Default)

07: Bypass Voltage Range Settings

Interface	Setting
  SET IN **07 HLS** v BYPASS BATT LOAD SET IN **HS 264** v BYPASS BATT LOAD	**Parameter 2:** Set the acceptable high voltage point and acceptable low voltage point for Bypass mode by pressing the Down key or Up key. **HLS:** Bypass high voltage point **For DXM models:** 230-264: setting the high voltage point from 230 Vac to 264 Vac. (Default: 264 Vac) **For DXL models:** 120-140: Setting the high voltage point from 120 Vac to 140 Vac. (Default: 132 Vac) **LLS:** Bypass low voltage point **For DXM models:** 170-220: setting the low voltage point from 170 Vac to 220 Vac. (Default: 170 Vac) **For DXL models:** 85-115: Setting the low voltage point from 85 Vac to 115 Vac.

08: Bypass Frequency Range Settings

Interface	Setting
  SET IN **08 HLS** Hz BYPASS BATT LOAD SET IN **HS 53.0** Hz BYPASS BATT LOAD	**Parameter 2:** Set the acceptable high-frequency point and acceptable low-frequency point for Bypass mode by pressing the Down key or Up key. **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) **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)

09: Programmable Outlets Enable/Disable

Interface	Setting
SET **09 dIS** BATT LOAD P	**Parameter 2:** Enable or disable programmable outlets. **ENA:** Programmable outlets enabled **DIS:** Programmable outlets disabled (Default)

10: Programmable Outlets Settings

Interface	Setting
SET **10_M 999** BATT LOAD P	**Parameter 2:** Set up backup time limits for programmable outlets. **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)

11: Autonomy Limitation Settings

Interface	Setting
SET **11_M 999** BATT LOAD	**Parameter 2:** Set up backup time on battery mode for general outlets. **0-999:** Set the backup time in minutes from 0-999 for general outlets on battery mode. **DIS:** Disable the autonomy limitation; the backup time will depend on battery capacity. (Default) **Note:** When setting as "0", the backup time will be only 10 seconds.

12: Battery Total AH Settings

Interface	Setting
SET **12 7_{Ah}** BATT LOAD	**Parameter 2:** Set up the battery total AH of the UPS. **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.

13: Maximum Charger Current Settings

Interface	Setting
	Parameter 2: Set up the charger's maximum current. **1/2/4/6/8:** setting the charger maximum current 1/2/4/6/8 in Ampere. (Default: 2 A) **Note:** Please set the appropriate charger current based on the battery capacity. The recommended charging current is 0.1 C ~ 0.3 C of battery capacity as follows:

Battery Capacity (AH)	Total Charging Current (A)
7~20	2
20~40	4
40~60	6
60~	8

14: Charger Boost Voltage Settings

Interface	Setting
	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)

15: Charger Float Voltage Settings

Interface	Setting
	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)

16: EPO Logic Settings

Interface	Setting
	Parameter 2: Set up the EPO function control logic. **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. **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.

17: Site Fault Detection Enable/Disable

Interface	Setting
	Parameter 2: Enable or disable site fault detection. You may choose the following two options: **ENA:** Site fault detection enabled (Default for DXL models) **DIS:** Site fault detection disabled (Default for DXM models)
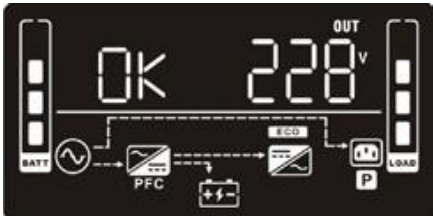
18: Display Setting for Autonomy Time

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

00: Exit Settings

Interface	Setting
	Exit the setting mode.

3.6 Operating Mode Descriptions

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 exceeds the acceptable range or power fails, the UPS will back the power from the battery, and the alarm beeps every 5 seconds.	
Bypass	When the input voltage is within an acceptable range, but the UPS is overloaded, UPS will enter bypass mode, or bypass mode can be set by the front panel. The alarm beeps 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	31	X
High Inverter voltage	12	X	Overload	36	🖳
Low Inverter voltage	13	X	Charger failure	41	X
Inverter output short	14	X	Over input current	42	X

3.8 Warning Indicators

Warning	Icon (flashing)	Code	Alarm
Low battery	⚠ 🔋	bL	Beeps every 2 seconds.
Overload	⚠ 🖳	OL	Beeps every second
Over input current	⚠	OI	Beeps 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 enabled	⚠	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. (At this time, UPS is off to remind users something wrong with the battery)
Out of bypass voltage range	⚠ BYPASS	bˇ	Beeps every 2 seconds.
Bypass frequency unstable	⚠	FU	Beeps every 2 seconds.
Battery replacement	⚠	bʰ	Beeps every 2 seconds.
EEPROM error	⚠	EE	Beeps 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 beeps 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 SF, flash on the LCD display. The alarm beeps 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 NC flash on the LCD display. The alarm beeps 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 beeping.	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 beeping.	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 beeps 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 beeping.	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 beeping.	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 beeping.	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 beeping.	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 beeping.	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 beeping.	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 25°C ambient temperature) has been exceeded, the batteries must be replaced. In this case, please contact your dealer.

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

Storage

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

Storage Temperature	Recharge Frequency	Charging Duration
-13°F - 104°F (-25°C - 40°C)	Every 3 months	1-2 hours
-13°F - 104°F (-25°C - 40°C)	Every 2 months	1-2 hours

6. Specifications

DXL Models

PHYSICAL SPECIFICATIONS - 120 VAC				
Part Number	DX1000L	DX1500L	DX2000L	DX3000L
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	25.5 lb (11.56 kg)	34.2 lb (15.51 kg)	43 lb (19.50 kg)	60.6 lb (27.48 kg)
Power Cord	6 ft (1.82 m), 5–15P		6 ft (1.82 m), 5–20P	6 ft (1.82 m), L5–30P
UPS Receptacles	(8) NEMA 5-15R		(8) NEMA 5–15/20R	(6) 5-15/20R + L5-30R
POWER				
Power Capacity	1000 VA (1000 W)	1500 VA (1450 W)	2000 VA (1930 W)	3000 VA (2880 W)
Input (Voltage/Frequency)	55–150VAC* / 50/60Hz auto-sensing			
Output (Voltage)	120 VAC nominal (100/110/115/127 selectable)***			
Output (Frequency)	50/60Hz ± 0.1Hz			
Overload Capacity	> 110% & ≤ 130% for 5 min; > 130% & ≤140% for 30 sec; >140% for 1.5 sec			
Output (Efficiency)	Up to 98% efficiency			
BATTERY				
Type	Sealed, maintenance-free lead-acid			
Charging Voltage	27.4 VDC	41.1 VDC	54.8 VDC	82.1 VDC
Charging Current	2A default, max 8A adjustable			
Typical Recharge/Charger	< 3 hours to 95% with 2A charger current			
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			
Optional Battery Packs PN	N/A	BX36D & BX36DA	BX48D	BX72D
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, FCC Class B (as applicable)
Safety Compliance	TUV certified to UL-1778 and CSA-C22.2no107.3-14
Environmental	RoHS
TAA Compliant	Yes (UPS only)

BATTERY PACK DATA & RUNTIMES

	Internal Batteries		External Battery Packs													
			1		2		3		4		5		6		7	
Percentage Load:	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%
DX1000L	6	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DX1500L (BX36D)	10	3	42	17	84	33	120	51	157	72	199	93	244	112	289	128
DX1500L (BX36DA)	10	3	84	33	157	72	244	112	339	146	6	N/A	N/A	N/A	N/A	N/A
DX2000L (BX48D)	10	3	42	17	84	33	121	51	157	72	200	93	144	112	290	128
DX3000L (BX72D)	10	3	42	17	84	33	121	52	158	73	201	94	246	112	292	129

Maximum of seven battery packs per DX1500L, DX2000L, or DX3000L (excluding BX36DA). Runtimes are shown in minutes and vary based on battery condition, age, cycles, and ambient temperature.

DXM Models

PHYSICAL SPECIFICATIONS - 230 VAC			
Part Number	DX1500M	DX2000M	DX3000M
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	25.5 lb (11.56 kg)	43 lb (19.50 kg)	60.6 lb (27.48 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 (1450 W)	2000 VA (1930 W)	3000 VA (2880 W)
Input (Voltage/Frequency)	208/220/230/240 VAC* / 50/60Hz auto-sensing		
Output (Voltage)	230 VAC nominal (200/208/220/230/240 VAC selectable)***		
Waveform	<=2% THD (linear load), <=4 THD (non-linear load)		
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			
Type	Sealed, maintenance-free lead-acid		
Charging Voltage	41.1 VDC	54.8 VDC	82.1 VDC
Charging Current	2A default, adjustable Max 12A (1.5 & 2k)/8A (3k)		
Typical Recharge/Charger	< 3 hours to 95% with 2A charger current		
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		
Optional Battery Packs PN	BX36D & BX36DA	BX48D	BX72D
ENVIRONMENTAL			
Operating Temperature	32–104°F (0–40°C)		
Elevation, Above MSL	11,500 ft (3,500 m)		

COMPLIANCE/STANDARDS	
EMC Compliance	CE, EN62040-2:2006+AC:2006 & EN61000 (as applicable)
Safety Compliance	CE, EN62040-1:2008+A1:2013
Environmental	RoHS
TAA Compliant	Yes (UPS only)

*Depending on the load level. **Rack depth is the front bracket to unit panel. Add 1" for depth, including the front bezel. ***Capacities are based on the highest selectable voltage. Some models derate at lower voltages

BATTERY PACK DATA & RUNTIMES

	Internal Batteries		External Battery Packs															
			1		2		3		4		5		6		7		8	
Percentage Load:	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%
DX1500M (BX36D)	10	3	42	17	84	33	120	51	157	72	199	93	244	112	289	128	339	146
DX1500M (BX36DA)	10	3	84	33	157	72	244	112	339	146	449	189	523	233	N/A	N/A	N/A	N/A
DX2000M (BX48D)	10	3	42	17	84	33	121	51	157	72	200	93	244	112	290	128	340	147
DX3000M (BX72D)	10	3	42	17	84	33	121	52	158	73	201	94	246	112	292	129	343	148

Maximum of eight battery packs per DX1500M, DX2000M, or DX3000M (excluding BX36DA). Runtimes are shown in minutes and vary based on battery condition, age, cycles, and ambient temperature.

Output Power Rating Table (DXM Models)

Model Name	Input Rating	Output Rating
DX1000L	100-125 Vac, 50/60 Hz, 12 A, 1Ø	100/110/115/120/125 Vac, 50/60 Hz, 1000 VA/1000 W, 1Ø, 10/9.1/8.7/8.3/8 A
DX1500L	100-125 Vac, 50/60 Hz, 12 A, 1Ø	100/110/115/120/125 Vac, 50/60 Hz, 1Ø 1500 VA/1430 W, 1 2A (@125 Vac input); 1500 VA/1300 W, 12.5 A (@120 Vac Input); 1500 VA/1270 W, 13 A (@115 Vac input); 1500 VA/1200W, 13.6 A @110 Vac input); 1350 VA/1040 W, 13.5 A @100 Vac input)
DX2000L	100-125 Vac, 50/60 Hz, 16 A, 1Ø	100/110/115/120/125 Vac, 50/60 Hz, 1Ø 2000 VA/1930 W, 16 A (@125 Vac input); 2000 VA/1850 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)
DX3000L	100-125 Vac, 50/60 Hz, 24 A, 1Ø	100/110/115/120/125 Vac, 50/60 Hz, 1Ø 3000 VA/2850 W,24 A (@125 Vac input); 3000 VA/2740 W, 25 A (@120 Vac 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)

Battery Pack Specification

Model	BX36D	BX36DA	BX48D	BX72D
UPS Models	DX1500L/DX1500M		DX2000L/DX2000M	DX3000L/DX3000M
Battery Type	12V 9Ah	12V 9Ah	12V 9Ah	12V 9Ah
Battery Numbers	6	12	8	12
Dimensions (WxDxH)	17.2" x 18.9" x 3.5" (436.88 mm x 480.06 mm x 88.9 mm)	17.2" x 23.6" x 3.5" (436.88 mm x 599.44 mm x 88.9 mm)	17.2" x 18.9" x 3.5" (436.88 mm x 480.06 mm x 88.9 mm)	17.2" x 23.6" x 3.5" (436.88 mm x 599.44 mm x 88.9 mm)
Net Weight	58.1 lb (26.35 kg)	104.4 lb (47.35 kg)	74.6 lb (33.83 kg)	104.4 lb (47.35 kg)

Note: Battery pack should be used with corresponding UPS.

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 three years for DXL or DXM series products from the date of purchase. Enconnex warrants internal batteries for a period of three 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.