

The power behind competitiveness

# Delta UPS - Amplon Family

MX Series, Single Phase  
1.1/ 2/ 3 kVA

User Manual

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



**DELTA**  
Smarter. Greener. Together.

## Save This Manual

This manual contains important instructions and warnings that you should follow during the installation, operation, storage and maintenance of this product. Failure to heed these instructions and warnings will void the warranty.

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## Table of Contents

|                                              |           |
|----------------------------------------------|-----------|
| <b>Chapter 1 : Important Safety Warnings</b> | <b>1</b>  |
| 1.1 Transportation                           | 1         |
| 1.2 Preparation                              | 1         |
| 1.3 Installation                             | 1         |
| 1.4 Operation                                | 2         |
| 1.5 Maintenance, Service and Faults          | 2         |
| 1.6 Packing List                             | 4         |
| <b>Chapter 2 : Installation and Setup</b>    | <b>6</b>  |
| 2.1 Rear Panel View                          | 6         |
| 2.2 Operating principle                      | 8         |
| 2.3 Install The UPS                          | 8         |
| 2.4 Setup the UPS                            | 10        |
| 2.5 Battery Replacement                      | 13        |
| 2.6 Battery Kit Assembly (option)            | 15        |
| <b>Chapter 3 : Operation</b>                 | <b>17</b> |
| 3.1 Button Operation                         | 17        |
| 3.2 LCD Panel                                | 18        |
| 3.3 Audible Alarm                            | 20        |
| 3.4 LCD Display Wordings Index               | 20        |
| 3.5 UPS Setting                              | 22        |
| 3.6 Operating Mode Description               | 27        |
| 3.7 Faults Reference Code                    | 29        |
| 3.8 Warning Indicator                        | 29        |
| <b>Chapter 4 : Troubleshooting</b>           | <b>31</b> |
| <b>Chapter 5 : Storage and Maintenance</b>   | <b>33</b> |
| <b>Chapter 6 : Technical Specifications</b>  | <b>34</b> |
| <b>Chapter 7 : Warranty</b>                  | <b>36</b> |

# Chapter 1 : Important Safety Warnings

Please comply with all warnings and operating instructions in this manual strictly. Save this manual properly and read carefully the following instructions before installing the unit. Do not operate this unit before reading through all safety information and operating instructions carefully

## 1.1 Transportation

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

## 1.2 Preparation

- Condensation may occur if the UPS system is moved directly from cold to warm environment. The UPS system must be absolutely dry before being installed. Please allow at least two hours for the UPS system to acclimate the environment.
- Do not install the UPS system near water or in moist environments.
- Do not install the UPS system where it would be exposed to direct sunlight or near heater.
- Do not block ventilation holes in the UPS housing.

## 1.3 Installation

- Do not connect appliances or devices which would overload the UPS system (e.g. laser printers) to the UPS output sockets.
- Place cables in such a way that no one can step on or trip over them.
- Do not connect domestic appliances such as hair dryers to the UPS output sockets.
- The UPS can be operated by any individuals with no previous experience.
- Connect the UPS system only to an earthed shockproof outlet which must be easily accessible and close to the UPS system.
- Please use only VDE-tested, CE-marked mains cable (e.g. the mains cable of your computer) to connect the UPS system to the building wiring outlet (shock-proof outlet).

- Please use only VDE-tested, CE-marked power cables to connect the loads to the UPS system.
- When installing the equipment, it should ensure that the sum of the leakage current of the UPS and the connected devices does not exceed 3.5mA.
- 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 shall be easily accessible.
- **Caution:**The unit is heavy. Lifting the unit requires a minimum of two people.

### 1.4 Operation

- Do not disconnect the mains cable on the UPS system or the building wiring outlet (shockproof socket outlet) during operations since this would cancel the protective earthing of the UPS system and of all connected loads.
- The UPS system features its own, internal current source (batteries). The UPS output sockets or output terminals block may be electrically live even if the UPS system is not connected to the building wiring outlet.
- In order to fully disconnect the UPS system, first press the OFF/ ENTER button to disconnect the mains.
- Prevent no fluids or other foreign objects from inside of the UPS system.
- The REPO 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.

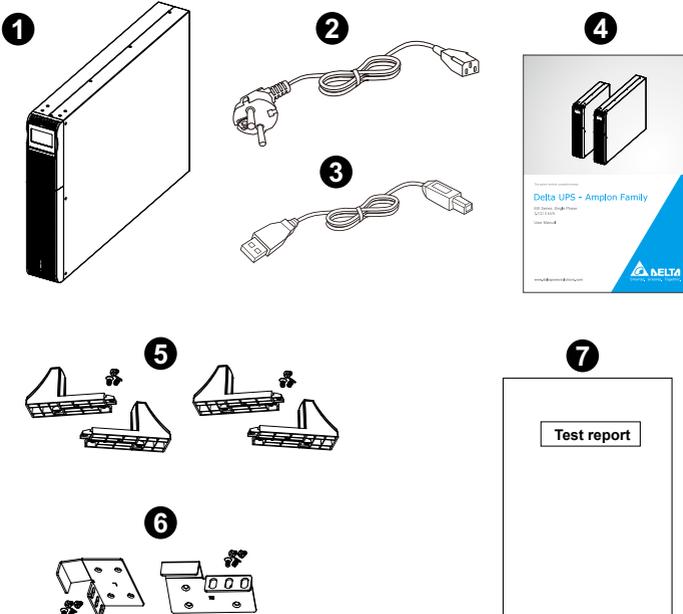
### 1.5 Maintenance, Service and Faults

- 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 kind of service and/ or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exists in the terminals of high capability capacitor such as BUS-capacitors.

- 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!
- Batteries may cause electric shock and have a high short-circuit current. Please take the precautionary measures specified below and any other measures necessary when working with batteries:
  - remove wristwatches, rings and other metal objects
  - use only tools with insulated grips and handles.
- When changing batteries, install the same number and same type of batteries.
- Do not attempt to dispose of batteries by burning them. This could cause battery explosion.
- Do not open or destroy batteries. Escaping electrolyte can cause injury to the skin and eyes. It may be toxic.
- A battery can may cause a risk of electrical shock and high short-circuit current. The following precautions should be observed when working on batteries:
  - a) Remove watches, rings, or other metal objects.
  - b) Use tools with insulated handles.
  - c) Wear rubber gloves and boots.
  - d) Do not lay tools or metal parts on top of batteries.
  - e) Disconnect charging source prior to connecting or disconnecting battery terminals.
  - f) 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 replacing batteries, use the same type and number of batteries or battery packs.
- Do not dismantle the UPS system.
- This is a category C1 UPS product.

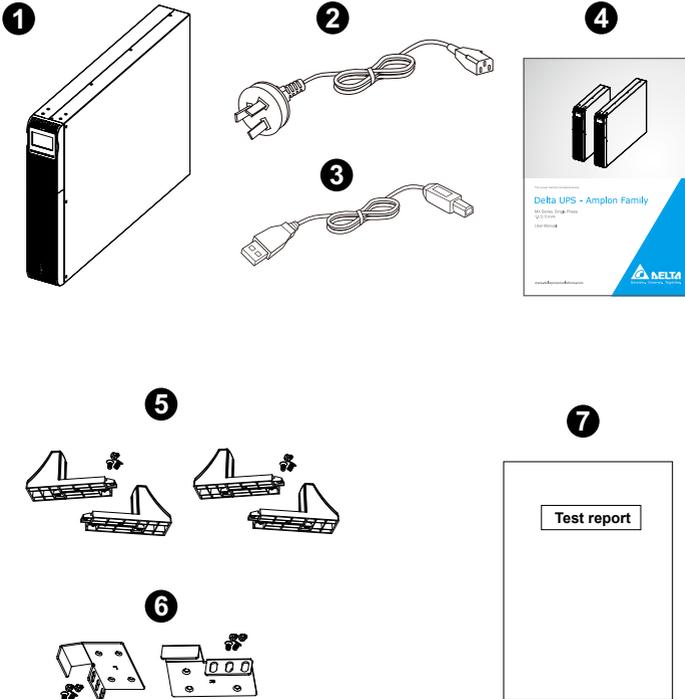
## 1.6 Packing List

For models UPA112M2MX0B035(1.1 kVA), UPA202M2MX0B035(2kVA),  
UPA302M2MX0B035(3kVA)



| No.      | Item                    | Q'ty  |
|----------|-------------------------|-------|
| <b>1</b> | UPS                     | 1 PC  |
| <b>2</b> | Input cable (Schuko)    | 1 PC  |
| <b>3</b> | USB cable               | 1 PC  |
| <b>4</b> | User manual             | 1 PC  |
| <b>5</b> | Tower stand with screws | 4 PCS |
| <b>6</b> | Ear kit with screws     | 2 PCS |
| <b>7</b> | Test report             | 1 PC  |

For models UPA112M2MX0B0BB(1.1 kVA), UPA202M2MX0B0BB(2kVA) ,  
 UPA302M2MX0B0BB(3kVA)

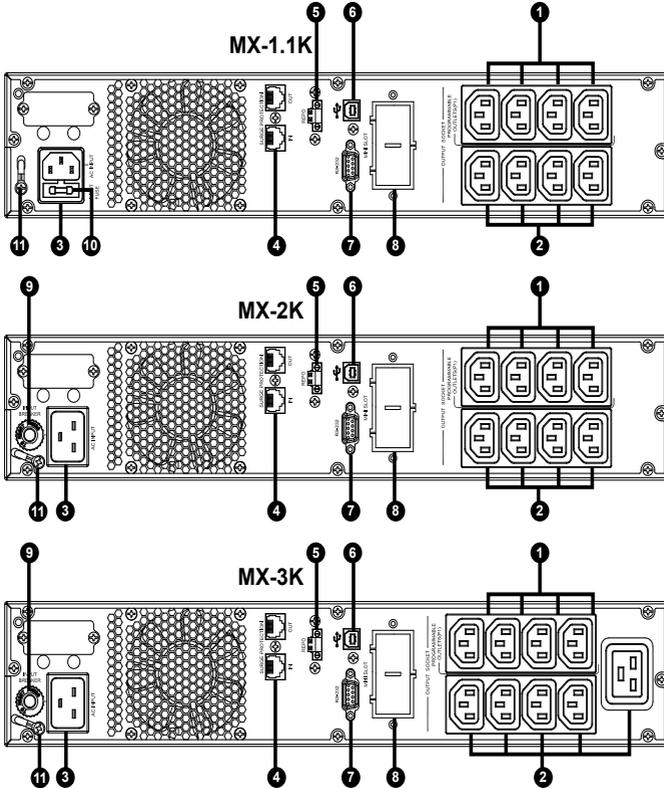


| No. | Item                    | Q'ty  |
|-----|-------------------------|-------|
| 1   | UPS                     | 1 PC  |
| 2   | Input cable (AU)        | 1 PC  |
| 3   | USB cable               | 1 PC  |
| 4   | User manual             | 1 PC  |
| 5   | Tower stand with screws | 4 PCS |
| 6   | Ear kit with screws     | 2 PCS |
| 7   | Test report             | 1 PC  |

# Chapter 2 : Installation and Setup

## 2.1 Rear Panel View

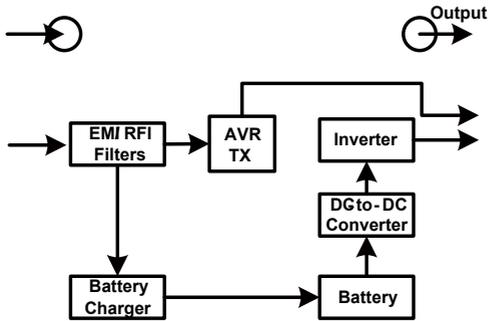
- Standard Runtime Model



| No. | Item                                                   |
|-----|--------------------------------------------------------|
| 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   | Emergency power off function connector (REPO)          |
| ⑥   | USB communication port                                 |
| ⑦   | RS-232 communication port                              |
| ⑧   | Mini Slot                                              |
| ⑨   | Input circuit breaker                                  |
| ⑩   | Fuse                                                   |
| ⑪   | Ground screw                                           |

## 2.2 Operating principle

The operating principle of the UPS is shown as below

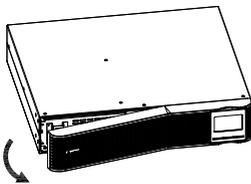


The UPS is composed of mains input, EMI/RFI Filters, Inverter, Battery charger, DC-to-DC converter, battery, AVR TX and UPS output

## 2.3 Install The UPS

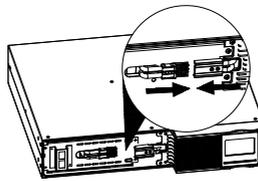
For safety consideration, the UPS is shipped out from factory without connecting battery wires. Before install the UPS, please follow below steps to re-connect battery wires first.

Step 1



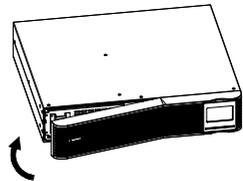
Remove front panel.

Step 2



Disconnect battery wires.

Step 3



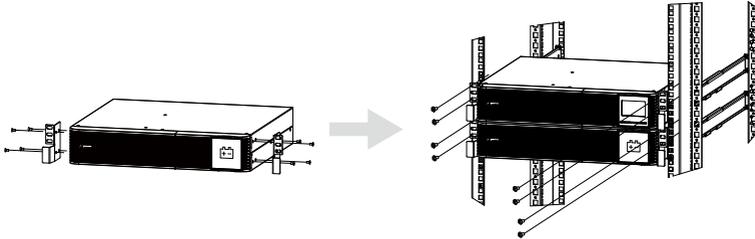
Pull out the battery box by removing two screws on the front panel.

## Rack-mount Installation



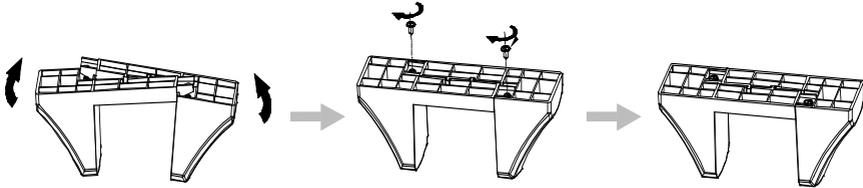
### CAUTION:

Do NOT use the mounting brackets to lift the unit. The mounting brackets are only for securing the unit to the rack.



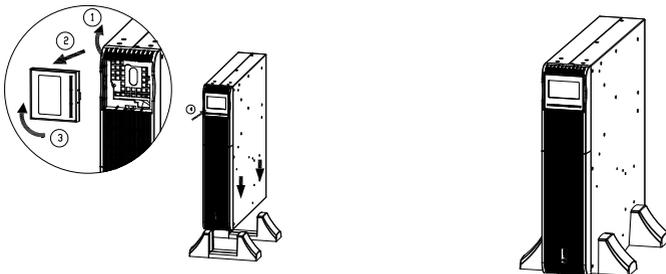
## Tower Installation

### Step 1



### Step 2

### Step 3



## 2.4 Setup the UPS

### Step 1: UPS input connection

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

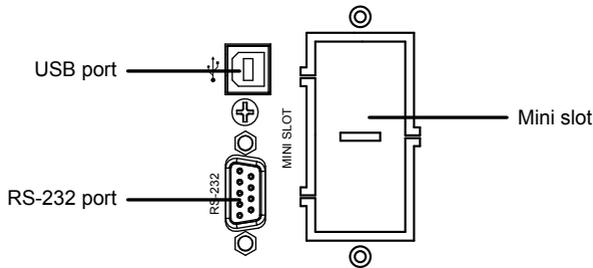
- The power cord is attached to the UPS. For the type of power cord, please refer to the table below.

| UPS    | Type of Power Cord    |
|--------|-----------------------|
| 1.1kVA | Plug 10A Schuko or AU |
| 2kVA   | Plug 16A Schuko or AU |
| 3kVA   | Plug 16A Schuko or AU |

### Step 2: UPS output connection

There two kinds of outputs: programmable outlets and general outlets. Please connect non-critical devices to the programmable outlets and critical devices to the general outlets. During power failure, you may extend the backup time to critical devices by setting shorter backup time for non-critical devices.

### Step 3: Communication connection



To allow for unattended UPS shutdown/start-up and status monitoring, connect one end of communication cable to the USB/RS-232 port and the other to the communication port of your PC. With the monitoring software installed, you can schedule UPS shutdown/start-up and monitor UPS status through PC.

The UPS is equipped with mini slot perfect for either mini SNMP, mini relay I/O card and mini modbus card. When installing either mini SNMP, mini relay I/O card or mini modbus card in the UPS, it will provide advanced communication and monitoring options.

#### Step 4: Network connection

Network/Fax/Phone surge Protection port



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

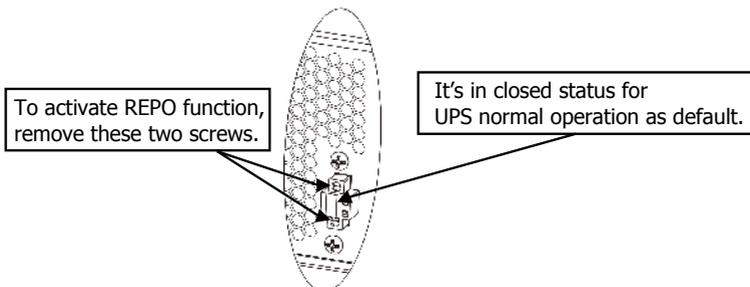
#### Step 5: Disable and enable REPO function

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



#### NOTE:

The REPO function logic can be set up via LCD setting. Please refer to program 7 in 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.

### Step7: Install software

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

1. Please visit below website to download the software :

<http://www.deltapowersolutions.com/en/mcis/software-center.php>

UPSentry: RS232/ USB

InfraSuite Device Master: SNMP/Modbus card

2. Follow the on-screen instructions to install the software.

## 2.5 Battery Replacement

When the icons of  and  are flashing in LCD display and alarm is sounding every 2 seconds, it's time to replace batteries. Contact your service representative to replace batteries.

Batteries can be replaced easily without turning the UPS off or disconnecting the 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 utility power where the UPS is connected.



**NOTE1:** DO NOT DISCONNECT the batteries while the UPS is in Battery mode.

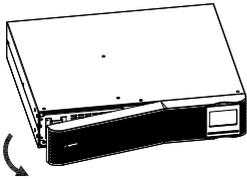
**NOTE2:** A small amount of arcing may occur when connecting the internal batteries. This is normal condition and no harm for personnel. Connect the cables quickly and firmly.

**NOTE3:** This UPS is equipped with internal batteries and only service person can replace the batteries.

**NOTE4:** Upon battery disconnection, equipment is not protected from power outages.

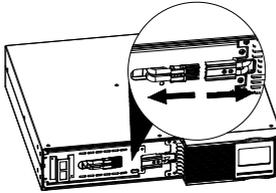
**CAUTION!!** Consider all warnings, cautions, and notes before replacing batteries.

Step 1



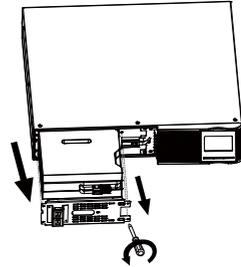
Remove front panel.

Step 2



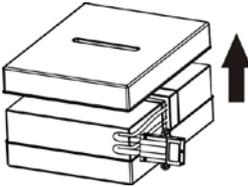
Disconnect battery wires.

Step 3



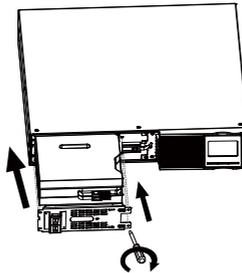
Pull out the battery box by removing two screws on the front panel.

Step 4



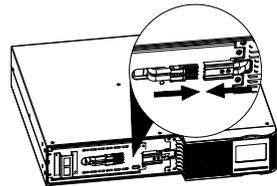
Remove the top cover of battery box and replace the inside batteries.

Step 5



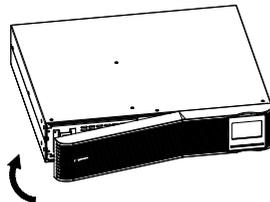
After replacing the batteries, put the battery box back to original location and screw it tightly.

Step 6



Re-connect the battery wires.

Step 7



Put the front panel back to the unit.

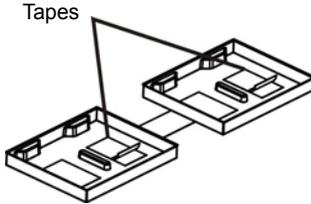
## 2.6 Battery Kit Assembly (option)



**NOTE:** Please assemble battery kit first before installing it inside of UPS.  
Please select correct battery kit procedure below to assemble it.

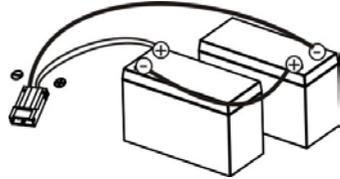
### 2-battery kit

#### Step 1



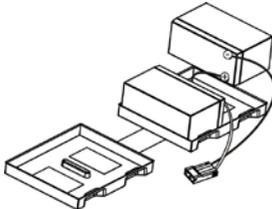
Remove adhesive tapes.

#### Step 2



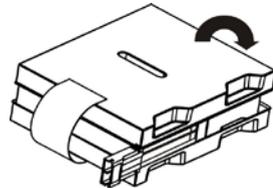
Connect all battery terminals by following below chart. .

#### Step 3



Put assembled battery packs on one side of plastic shells and insert one more defect battery on the space.

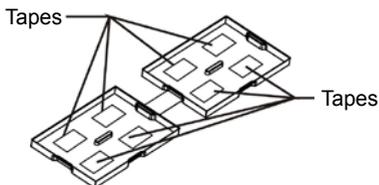
#### Step 4



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

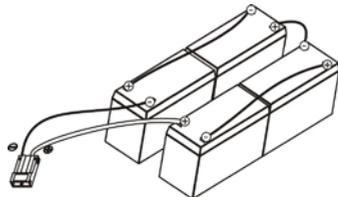
### 4-battery kit

#### Step 1



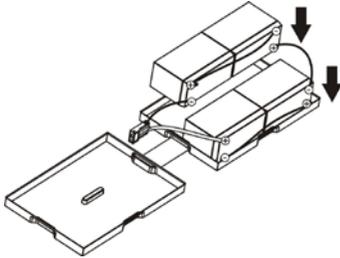
Remove adhesive tapes

#### Step 2



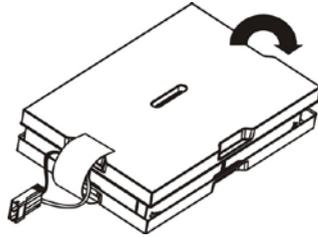
Connect all battery terminals by following below chart.

Step 3



Put assembled battery packs on one side of plastic shells.

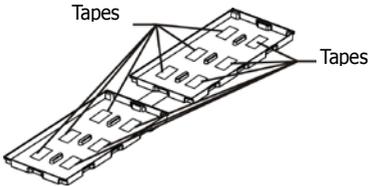
Step 4



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

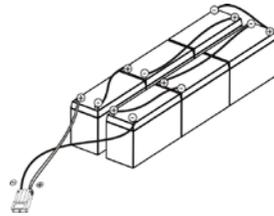
6-battery kit

Step 1



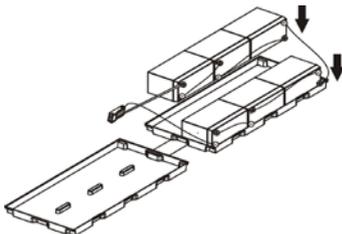
Remove adhesive tapes.

Step 2



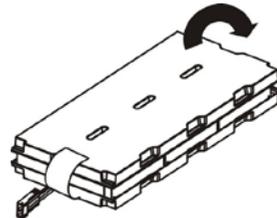
Connect all battery terminals by following below chart.

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.

# Chapter 3 : Operation

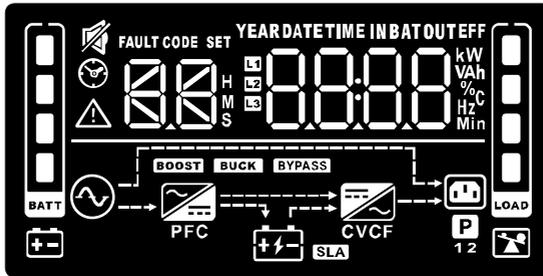
## 3.1 Button Operation



| Button                   | Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ON/ MUTE Button</b>   | <ul style="list-style-type: none"> <li>• Turn on the UPS: Press and hold ON/Mute button for at least 2 seconds to turn on the UPS.</li> <li>• Mute the alarm: After the UPS is turned on in battery mode, press and hold this button for at least 3 seconds to disable or enable the alarm system. But it's not applied to the situations when warnings or errors occur.</li> <li>• Up key: Press this button to display previous selection in UPS setting mode.</li> <li>• Switch to UPS self-test mode: Press and hold ON/Mute button for 3 seconds to enter UPS self-testing while in AC mode</li> </ul> |
| <b>OFF/ ENTER Button</b> | <ul style="list-style-type: none"> <li>• Turn off the UPS: Press and hold this button at least 2 seconds to turn off the UPS</li> <li>• Confirm selection key: Press this button to confirm selection in UPS setting mode.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                       |
| <b>SELECT Button</b>     | <ul style="list-style-type: none"> <li>• Switch LCD message: Press this button to change the LCD message for input voltage, input frequency, battery voltage, battery capacity, ambient temperature, output voltage, output frequency, load current and load percent.</li> <li>• Setting mode: Press and hold this button for 3 seconds to enter UPS setting mode when UPS is off.</li> <li>• Down key: Press this button to display next selection in UPS setting mode.</li> </ul>                                                                                                                         |

| Button                           | Function                                                                                                                                                                                                                                                                                                                    |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ON/ MUTE + SELECT Buttons</b> | <ul style="list-style-type: none"> <li>Exit setting mode or return to the upper menu: When working in setting mode, press ON/Mute and Select buttons simultaneously for 0.2 seconds to return to the upper menu. If it's already in top menu, press these two buttons at the same time to exit the setting mode.</li> </ul> |

### 3.2 LCD Panel



| Display                                    | Function                                                                                             |
|--------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>Backup time information</b>             |                                                                                                      |
|                                            | Indicates the estimated backup time.<br>H: hours, M: minute, S: second.                              |
| <b>Configuration and fault information</b> |                                                                                                      |
|                                            | Indicates the configuration items, and the configuration items are listed in details in section 3-5. |
|                                            | Indicates the warning and fault codes, and the codes are listed in details in section 3-7 and 3-8.   |
| <b>Mute operation</b>                      |                                                                                                      |
|                                            | Indicates that the UPS alarm is disabled.                                                            |

| Display                                                                             | Function                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Input, Battery, Temperature, Output &amp; Load information</b>                   |                                                                                                                                                                                                                                                                                 |
|    | <p>Indicate the input voltage, input frequency, battery voltage, battery capacity, ambient temperature, output voltage, output frequency, load current and load percentage.</p> <p>k: kilo, W: watt, V: voltage, A: ampere, %: percent, °: centigrade degree, Hz: frequency</p> |
| <b>Load information</b>                                                             |                                                                                                                                                                                                                                                                                 |
|    | <p>Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.</p>                                                                                                                                                                                                           |
|    | <p>Indicates overload.</p>                                                                                                                                                                                                                                                      |
| <b>Programmable outlets information</b>                                             |                                                                                                                                                                                                                                                                                 |
|    | <p>Indicates that programmable management outlets are working.</p>                                                                                                                                                                                                              |
| <b>Mode operation information</b>                                                   |                                                                                                                                                                                                                                                                                 |
|    | <p>Indicates the UPS connects to the mains.</p>                                                                                                                                                                                                                                 |
|    | <p>Indicates the battery is working.</p>                                                                                                                                                                                                                                        |
|  | <p>Indicates the bypass circuit is working.</p>                                                                                                                                                                                                                                 |
|  | <p>Indicates the inverter circuit is working.</p>                                                                                                                                                                                                                               |
|  | <p>Indicates the output is working.</p>                                                                                                                                                                                                                                         |
|  | <p>Indicates the AC to DC circuit is working.</p>                                                                                                                                                                                                                               |
|  | <p>Indicates the inverter circuit is working.</p>                                                                                                                                                                                                                               |
|  | <p>Indicates the output is working.</p>                                                                                                                                                                                                                                         |

| Display                                                                           | Function                                                           |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------|
| <b>Battery information</b>                                                        |                                                                    |
|  | Indicates the battery level by 0-24%, 25-49%, 50-74%, and 75-100%. |
|  | Indicates low battery.                                             |

### 3.3 Audible Alarm

| Condition    | Alarm                     |
|--------------|---------------------------|
| Battery Mode | Sounding every 10 seconds |
| Low Battery  | Sounding every 2 second   |
| Overload     | Sounding every second     |
| Fault        | Continuously sounding     |

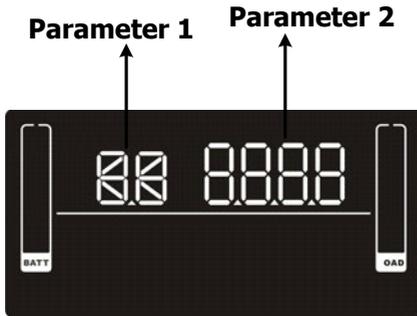
### 3.4 LCD Display Wordings Index

| Abbreviation | Display Content  | Meaning                          |
|--------------|------------------|----------------------------------|
| ENA          | ENA              | Enable                           |
| DIS          | di S             | Disable                          |
| ESC          | ESC              | Escape                           |
| AO / AC      | AO / AC          | Active Open / Close              |
| ST1/2/3      | St 1 / St2 / St3 | Input Waveform Sensitivity 1/2/3 |
| AUT / AON    | AUT / AON        | Automatic / Always on            |

| Abbreviation | Display Content | Meaning               |
|--------------|-----------------|-----------------------|
| OK           | AUT / AON       | Automatic / Always on |
| ON           | ON              | ON                    |
| BL           | BL              | Battery Low           |
| OL           | OL              | Over Load             |
| NC           | NC              | Battery No Connect    |
| OC           | OC              | Over Charge           |
| SF           | SF              | Site Fault            |
| EP           | EP              | REPO                  |
| TP           | TP              | Temperature           |
| CH           | CH              | Charger               |
| BF           | BF              | Battery Fault         |
| BR           | BR              | Battery Replacement   |
| EE           | EE              | EEPROM error          |

### 3.5 UPS Setting

There are three parameters to set up the UPS.



There are two 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 setting



**Parameter 2:** Output voltage

You could choose the following output voltage:

- 200:** presents output voltage is 200Vac
- 208:** presents output voltage is 208Vac
- 220:** presents output voltage is 220Vac
- 230:** presents output voltage is 230Vac (Default)
- 240:** presents output voltage is 240Vac

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



**Parameter 2:** Enable or disable programmable outlets.

**ENA:** Programmable outlets enable

**DIS:** Programmable outlets disable (Default)

- **03: Programmable outlets setting**



**Parameter 2:** Set up backup time limits for programmable outlets.

**0-999:** setting the backup time limits in minutes from 0-999 for programmable outlets which connect to non-critical devices on battery mode. (Default: 999)

- **04: Site fault detection enable/disable**



**Parameter 2:** Enable or disable site fault detection. You may choose the following two options:

**ENA:** Site fault detection enable

**DIS:** Site fault detection disable(Default)

- **05: Autonomy limitation setting**



**Parameter 2:** Set up backup time on battery mode for general outlets.

**0-999:** setting the backup time in minutes from 0-999 for general outlets on battery mode.

**DIS:** Disable the autonomy limitation and the backup time will depend on battery capacity. (Default)

**Note:** When setting as "0", the backup time will be only 10 seconds.

- **06: Battery total AH setting**



**Parameter 2:** Set up the battery total AH of the UPS.

**7-999:** setting the battery total capacity from 7-999 in AH.

- **07: REPO logic setting**



**Parameter 2:** Set up the REPO function control logic.

**AO:** Active Open (Default). When AO is selected as REPO logic, it will activate REPO function with Pin 1 and Pin 2 in open status.

**AC:** Active Close. When AC is selected as REPO logic, it will activate REPO function with Pin 1 and Pin 2 in close status.

- **08: Input Waveform Sensitivity setting**



**Parameter 2:** Set Input Waveform Sensitivity.

**St1:** Input voltage waveform detection is highly sensitive. (Default)

**St2:** Input voltage waveform detection is middle sensitive.

**St3:** Input voltage waveform detection is low sensitive. (use with generators or Step wave input)

### • 09: LCD display backlight setting



**Parameter 2:** Set up the working mode for the LCD display backlight.

**Aon:** LCD display backlight is on all the time.

**Aut:** LCD display backlight will be off after pressing the buttons 60 seconds.  
UPS mode switch will wake up LCD backlight for 20 seconds. (Default)

### • 00: Exit Setting



Exit the setting mode.

## Steps for setting programmable outlet

### Step 1:

Before entering setting mode, the UPS should be in Stand-by mode (off-charging) and make sure the battery is connected. The LCD display is shown as right.

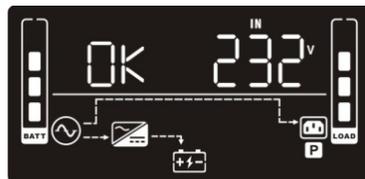


|                                                                                                                                                                                                                                                                                                                         |                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <p><b>Step 2:</b></p> <p>Press and hold the “Selection” button for 3 seconds to enter Setting mode.</p>                                                                                                                                                                                                                 |  |
| <p><b>Step 3:</b></p> <p>Press the “Up” button (ON/MUTE) to switch to “02” of program list. Then press “Enter” button to enter value setting of parameter 2. Press the “Up” button to change the value to “ENA” to enable the programmable outlet function. Then press “Enter” button again to confirm the setting.</p> |  |
| <p><b>Step 4:</b></p> <p>Press the “Up” button (ON/MUTE) again to switch to “03” of program list. Then press “Enter” button for setting programmable outlet time. Push “Up” button to change the value of backup time according your demand. Then press “Enter” to confirm the setting.</p>                             |  |
| <p><b>Step 5:</b></p> <p>Press “Up” button (ON/MUTE) to switch to “00” of program list. Then press “Enter” button to exit setting menu.</p>                                                                                                                                                                             |  |
| <p><b>Step 6:</b></p> <p>Disconnect AC input and wait until the LCD display is off. The new setting will be activated when turning on the UPS again.</p>                                                                                                                                                                |                                                                                   |

### 3.6 Operating Mode Description

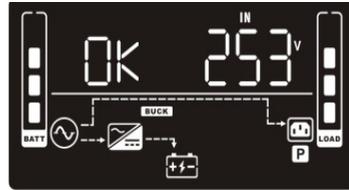
- **Normal mode**

When the input voltage is within voltage regulated range, UPS will power the output directly from the mains. In this mode, when battery is fully charged, the fan will stop working for energy saving.



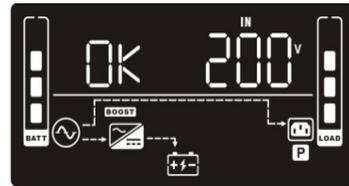
- **Buck mode when AC is normal.**

When the input voltage is higher than the voltage regulation range but lower than high loss point, the buck AVR will be activated.



- **Boost mode when AC is normal.**

When the input voltage is lower than the voltage regulation range but higher than low loss point, the boost AVR will be activated.



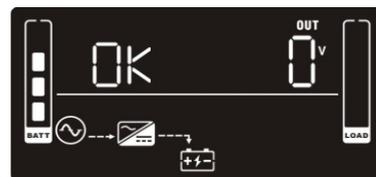
- **Battery Mode**

When the input voltage is beyond the acceptable range or power failure and alarm is sounding every 10 seconds, UPS will backup power from battery.



- **Standby mode**

UPS is powered off and no output supply power, but still can charge batteries.



- **Fault mode**

The UPS is powered off and there is no output, but the batteries can still be charged.



### 3.7 Faults Reference Code

| Fault Event                 | Fault Code | Icon                                                                              |
|-----------------------------|------------|-----------------------------------------------------------------------------------|
| Bus start fail              | 01         | x                                                                                 |
| Bus over                    | 02         | x                                                                                 |
| Bus under                   | 03         | x                                                                                 |
| Inverter soft start failure | 11         | x                                                                                 |
| Inverter voltage high       | 12         | x                                                                                 |
| Inverter voltage Low        | 13         | x                                                                                 |
| Inverter output short       | 14         | x                                                                                 |
| Battery voltage too high    | 27         | x                                                                                 |
| Battery voltage too low     | 28         | x                                                                                 |
| Over temperature            | 41         | x                                                                                 |
| Overload                    | 43         |  |
| Charger failure             | 45         | x                                                                                 |

### 3.8 Warning Indicator

| Warning                  | Icon (flashing)                                                                                                                                                         | Code | Alarm                    |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------------|
| Low battery              |       | bL   | Sounding every 2 seconds |
| Overload                 |   | OL   | Sounding every second    |
| Battery is not connected |   | nC   | Sounding every 2 seconds |
| Over charge              |   | OC   | Sounding every 2 seconds |
| Site wiring fault        |   | SF   | Sounding every 2 seconds |

| Warning             | Icon (flashing)                                                                   | Code | Alarm                                                                   |
|---------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------|
| REPO enable         |  | EP   | Sounding every 2 seconds                                                |
| Over temperature    |  | EP   | Sounding every 2 seconds                                                |
| Charger failure     |  | CH   | Sounding every 2 seconds                                                |
| Battery fault       |  | bF   | Sounding every 2 seconds                                                |
| Battery replacement |  | bR   | (At this time, UPS is off to remind users something wrong with battery) |
| EEPROM error        |  | EE   | Sounding every 2 seconds                                                |

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

## Chapter 4 : Troubleshooting

If the UPS system does not operate correctly, please solve the problem by using the table below.

| Symptom                                                                                                                                                                                                                                                                                                                                                    | Possible Cause                                             | Remedy                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------------|
| No indication and alarm even though the mains is normal.                                                                                                                                                                                                                                                                                                   | The AC input power is not connected well.                  | Check if the input power cord firmly connected to the mains.      |
|                                                                                                                                                                                                                                                                                                                                                            | The AC input is connected to the UPS output.               | Plug AC input power cord to AC input correctly.                   |
| The icon  and the warning code  flashing on LCD display and alarm is sounding every 2 seconds.                                                                                           | REPO function is activated.                                | Set the circuit in close position to disable REPO function.       |
| The icon  ,  and the warning code  flashing on LCD display and alarm is sounding every 2 seconds.       | Line and neutral conductors of UPS input are reversed.     | Rotate mains power socket by 180° and then connect to UPS system. |
| The icon  ,  and the warning code  flashing on LCD display and alarm is sounding every 2 seconds. | The external or internal battery is incorrectly connected. | Check if all batteries are connected well.                        |
| Fault code is shown as 27 on LCD display and alarm is continuously sounding.                                                                                                                                                                                                                                                                               | Battery voltage is too high or the charger is fault.       | Contact your dealer.                                              |
| Fault code is shown as 28 on LCD display and alarm is continuously sounding.                                                                                                                                                                                                                                                                               | Battery voltage is too low or the charger is fault.        | Contact your dealer.                                              |

| Symptom                                                                                                                                                                                                                                                                                                                                           | Possible Cause                                                                  | Remedy                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| The icon  ,  and the warning code  flashing on LCD display and alarm is sounding every second. | UPS is overload                                                                 | Remove excess loads from UPS output.                                                                                   |
| Fault code is shown as 43 and the icon  is lighting on LCD display. Alarm is continuously sounding.                                                                                                                                                              | The UPS shut down automatically because of overload at the UPS output.          | Remove excess loads from UPS output and restart it.                                                                    |
| Fault code is shown as 14 and alarm is continuously sounding.                                                                                                                                                                                                                                                                                     | The UPS shut down automatically because short circuit occurs on the UPS output. | Check output wiring and if connected devices are in short circuit status.                                              |
| Fault code is shown as 01, 02, 03, 11, 12, 13 and 41 on LCD display and alarm is continuously sounding.                                                                                                                                                                                                                                           | A UPS internal fault has occurred.                                              | Contact your dealer                                                                                                    |
| Battery backup time is shorter than nominal value                                                                                                                                                                                                                                                                                                 | Batteries are not fully charged                                                 | Charge the batteries for at least 5 hours and then check capacity. If the problem still persists, consult your dealer. |
|                                                                                                                                                                                                                                                                                                                                                   | Batteries defect                                                                | Contact your dealer to replace the battery.                                                                            |
| Fault code is shown as 45 on LCD display. At the same time, alarm is continuously sounding.                                                                                                                                                                                                                                                       | The charger does not have output and battery voltage is less than 10V/PC.       | Contact your dealer.                                                                                                   |

# Chapter 5 : Storage and Maintenance

- **Operation**

The UPS system contains no user-serviceable parts. If the battery service life (3~5 years at 25°C ambient temperature) has been exceeded, the batteries must be replaced. In this case, please contact your dealer.



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

- **Storage**

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

| Storage Temperature | Recharge Frequency | Charging Duration |
|---------------------|--------------------|-------------------|
| -25°C ~ 40°C        | Every 3 months     | 1 ~ 2 hours       |
| 40°C ~ 45°C         | Every 2 months     | 1 ~ 2 hours       |

## Chapter 6 : Technical Specifications

| Model                                   | MX-1.1K                                                                                                          | MX-2K            | MX-3K                        |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------|------------------------------|
| <b>Capacity</b>                         | 1100VA / 990W                                                                                                    | 2000 VA / 1800 W | 3000VA / 2700W               |
| <b>Input</b>                            |                                                                                                                  |                  |                              |
| <b>Voltage Range</b>                    | 200V: 150-234V / 208V: 156-243V / 220V: 162-268V<br>/ 230V: 170-280V / 240V: 177-290V                            |                  |                              |
| <b>Frequency Range</b>                  | 50/60 Hz (auto sensing)                                                                                          |                  |                              |
| <b>Connection</b>                       | IEC C14                                                                                                          | IEC C20          |                              |
| <b>Phase</b>                            | Single phase with ground                                                                                         |                  |                              |
| <b>Output</b>                           |                                                                                                                  |                  |                              |
| <b>Nominal voltage</b>                  | 200V / 208V / 220V / 230V / 240V                                                                                 |                  |                              |
| <b>Voltage Regulation</b>               | ±1.5% (Batt. Mode)                                                                                               |                  |                              |
| <b>Frequency Range<br/>(Batt. Mode)</b> | 50 Hz or 60 Hz ± 1 Hz                                                                                            |                  |                              |
| <b>Connection</b>                       | IEC C13 (4+4)                                                                                                    |                  | IEC C13 (4+4)<br>IEC C19 (1) |
| <b>Overload</b>                         | 103% ~ 120%: 5 minutes (1 minutes @battery mode),<br>120% ~ 150%: 10 seconds,<br>>150%: UPS shutdown immediately |                  |                              |
| <b>Current Crest Ratio</b>              | 3:1                                                                                                              |                  |                              |
| <b>Harmonic Distortion</b>              | ≤ 2%(linear load), ≤ 5% (non-linear load)                                                                        |                  |                              |
| <b>Waveform<br/>(Batt. Mode)</b>        | Pure Sinewave                                                                                                    |                  |                              |
| <b>Efficiency</b>                       |                                                                                                                  |                  |                              |
| <b>Normal Mode</b>                      | 98%                                                                                                              |                  | 98.5%                        |
| <b>Buck &amp; Boost Mode</b>            | 95.5%                                                                                                            | 96.5%            |                              |

| Model                                | MX-1.1K                                                                 | MX-2K                                              | MX-3K          |
|--------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------|----------------|
| <b>Battery</b>                       |                                                                         |                                                    |                |
| <b>Battery Type</b>                  | 12V/9Ah<br>Sealed lead-acid battery                                     |                                                    |                |
| <b>Numbers</b>                       | 2                                                                       | 4                                                  | 6              |
| <b>Recharge Time</b>                 | 4 hours recover to 90% capacity                                         |                                                    |                |
| <b>Physical</b>                      |                                                                         |                                                    |                |
| <b>Dimension<br/>(W x D x H)(mm)</b> | 438 x 410x 88                                                           | 438 x 510 x 88                                     | 438 x 630 x 88 |
| <b>Net Weight (kg)</b>               | 14.1                                                                    | 21.3                                               | 32.1           |
| <b>Environment</b>                   |                                                                         |                                                    |                |
| <b>Operation<br/>Temperature</b>     | 0- 40°C                                                                 |                                                    |                |
| <b>Relative Humidity</b>             | 20-90 % RH (non-condensing)                                             |                                                    |                |
| <b>Noise Level</b>                   | < 45 dBA                                                                | < 45 dBA @ Normal Mode,<br>< 55 dBA @ Battery mode |                |
| <b>Communication</b>                 |                                                                         |                                                    |                |
| <b>Interface</b>                     | RS-232 Port x 1, USB Port x 1, MINI Slot x 1,<br>Surge Protection, REPO |                                                    |                |



**NOTE:**

1. \*Derate to 85% of capacity when the output voltage is adjusted to 200/208VAC.
2. Product specifications are subject to change without further notice.

## Chapter 7 : Warranty

Seller warrants this product, if used in accordance with all applicable instructions, to be free from original defects in material and workmanship within the warranty period. If the product has any failure problem within the warranty period, Seller will repair or replace the product at its sole discretion according to the failure situation.

This warranty does not apply to normal wear or to damage resulting from improper installation, operation, usage, maintenance or irresistible force (i.e. war, fire, natural disaster, etc.), and this warranty also expressly excludes all incidental and consequential damages.

Maintenance service for a fee is provided for any damage out of the warranty period. If any maintenance is required, please directly contact the supplier or Seller.

**WARNING:**

The individual user should take care to determine prior to use whether the environment and the load characteristic are suitable, adequate or safe for the installation and the usage of this product. The User Manual must be carefully followed. Seller makes no representation or warranty as to the suitability or fitness of this product for any specific application.

