

The power behind competitiveness

Delta UPS Amplon Family

RT Pro Series, Single-Phase, 220/ 230/ 240 Vac
1/ 2/ 3 kVA

User Manual

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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Chapter 1: Important Safety Instructions

1.1 Installation Warnings

- Before installation and usage, please read this ***User Manual*** thoroughly. This helps you to use the product correctly and safely.
- Install the UPS in a well-ventilated indoor area, away from excess moisture, heat, dust, flammable gas or explosives. To avoid fire accidents and electric shock, the indoor area must be free of conductive contaminants. For the temperature and humidity specifications, please refer to ***Appendix 1: Technical Specifications***.
- Leave adequate space (at 1000 mm (39.37”)) at the front of the UPS for maintenance and ventilation.
- Leave adequate space (at least 500 mm (19.69”)) at the back of the UPS for maintenance and ventilation.

1.2 Connection Warnings

- The UPS must be well grounded due to a possible risk of current leakage.
- The installation of upstream and downstream protection devices is highly recommended when the UPS is connected to the mains and the loads.
- The protection devices connected to the UPS must be installed near the UPS and must be easily accessible for operation.
- If you need to move the UPS or perform re-wiring, please turn off the AC input power and disconnect the battery input to ensure that the UPS has been safely shut down. Otherwise, the output end might still be energized, which might cause electric shock.

1.3 Usage Warnings

- This is a class-A product. In a domestic environment, this product may cause radio interference, in which case, the user is required to take adequate measures.
- The UPS can be used to power computers and associated peripheral devices, such as monitors, modems, cartridge tape drives, external hard drives, etc.
- It is not recommended to connect the UPS with the following types of loads. For the load suitability, please contact Delta customer service before purchasing.
    1. regenerative loads (e.g. CNC machines and lifts)
    2. asymmetrical loads (e.g. fans with half-bridge drivers and laser printers)
- To ensure reliable operation of the UPS and to protect the UPS from overheating, the slits and openings in the UPS must not be blocked or covered.

- Before usage, you must allow the UPS to adjust to room temperature for at least one hour to avoid moisture condensing inside the UPS.
- Do not pour and splash any liquid on the UPS. Do not insert any object into the UPS's slits and openings. Do not put beverages on or around the UPS.
- When an emergency occurs, (1) press and hold the ON/ OFF button ( ) for 3 seconds, (2) release it after you hear the beep sound, (3) use the Scrolling UP or Down button (/) to select 'Yes', and (4) press the Enter button ( ) to confirm your selection to turn off the UPS. After that, cut off the input power to shut down the UPS completely.
- Do not use any cleaning liquid or cleaning spray to clean the UPS. Before cleaning, please make sure that the UPS has been shut down completely, the UPS's input power cords have been unplugged, and the batteries have been disconnected.
- All maintenance services must be performed by qualified service personnel.
- Forbid opening or removing the cover of the UPS by yourself to avoid high voltage electric shock.
- You must contact qualified service personnel if either of the following events occurs:

  1. Liquid is poured or splashed on the UPS.
  2. The UPS does not run normally after this *User Manual* is carefully observed.

  NOTE:

  If you use the UPS in an area that generates or incurs dust, you should install a dust filter (optional) in the UPS to ensure normal product life and functions.

1.4 Battery Precautions

- Keep the batteries away from heat. Do not open or mutilate the batteries.
- Do not dispose of batteries in a fire. The batteries may explode.
- The released electrolyte is harmful to skin and eyes and may be toxic.
- A battery can present a risk of electric shock and high short-circuit current.
- Servicing of the batteries and battery packs must be performed or supervised by qualified service personnel knowledgeable in the batteries, battery packs and required precautions. Keep unauthorized personnel away from the batteries and battery packs.
- The risk of electric shock and short-circuit current is possible when the batteries are connected to the UPS. Before maintenance, disconnect all batteries to cut off the battery power.
- For battery replacement, only use the same number and type of batteries.

- Observe the following before replacing the batteries:
    1. Remove watches, rings, or other metal objects.
    2. Use tools with insulated handles.
    3. Wear rubber gloves and boots.
    4. Do not lay tools or metal parts on top of the batteries.
    5. Disconnect charging source and loads prior to installing or maintaining the batteries.
    6. Remove battery grounds during installation and maintenance to reduce likelihood of shock. Remove the connection from ground if any part of the battery is determined to be grounded. Please note that the battery grounds mean any battery pole (+/ -) connecting to the ground.
- Do not connect the batteries in reverse; otherwise, a risk of electric shock or fire accidents might occur.
- The batteries might lose their power during shipment or storage. Please connect the external battery pack(s) to the UPS to charge the batteries until the battery percentage shown on the UPS's LCD is 100% (

). If the batteries are stored for an extended period of time, please recharge the batteries every three months and ensure that every time after charging, the battery percentage shown on the UPS's LCD is 100% (

).



WARNING:

The risk of electric shock and short-circuit current is possible when the batteries are still connected to the UPS even if the UPS has been disconnected from the mains. Make sure to cut off the battery source before maintenance.

When the UPS is connected to the external battery pack(s), the installation of the appropriate protection device(s), such as a DC fuse or a DC non-fuse breaker, is (are) required.

1.5 Storage Warnings

- Prior to installation

If the UPS needs to be stored prior to installation, it should be placed in a dry and well-ventilated area. The allowable storage temperature is between -20°C ~ 55°C (-4°F ~ 131°F) and the allowable relative humidity (non-condensing) is 5% ~ 95%.

- After usage

(1) Press and hold the ON/ OFF button ( ) for 3 seconds, (2) release it after you hear the beep sound, (3) use the Scrolling UP or Down button (/) to select 'Yes', and (4) press the Enter button ( ) to confirm your selection to turn off the UPS. Make sure the UPS is shut down, disconnect the UPS from the utility AC power, remove all loads/ equipment from the UPS, and store the UPS in a dry and well-ventilated area at a temperature between -20°C ~ 55°C (-4°F ~ 131°F) and at a relative humidity (non-condensing) between 5% ~ 95%.

If the batteries are stored for an extended period of time, please connect the external battery pack(s) to the UPS to recharge the batteries every three months and ensure that every time after charging, the battery percentage shown on the UPS's LCD is 100% ( ).

NOTE:

Before applying electrical power to the UPS, you must allow the UPS to adjust to room temperature 20°C ~ 25°C (68°F ~ 77°F) for at least one hour and ensure that there is no moisture condensing inside the unit.

1.6 Standard Compliance

- CE
- UL, cUL
- EN 62040-1
- EN 62040-2 Category C2

Chapter 2: Introduction

2.1 Product Description

The RT series UPS, available in 1kVA, 2kVA, 3kVA, is an advanced on-line and double-conversion UPS providing reliable and consistent sine-wave quality power to your equipment. It supports personal computers, networks, servers, telecommunication equipment and a variety of other facilities.

Each model has internal batteries and can connect to the Delta external battery pack (optional). The unit provides output power factor up to unity, produces greater electric power efficiency at less coat, and keeps your applications safe and running smoothly at all times.

2.2 Exterior & Dimensions

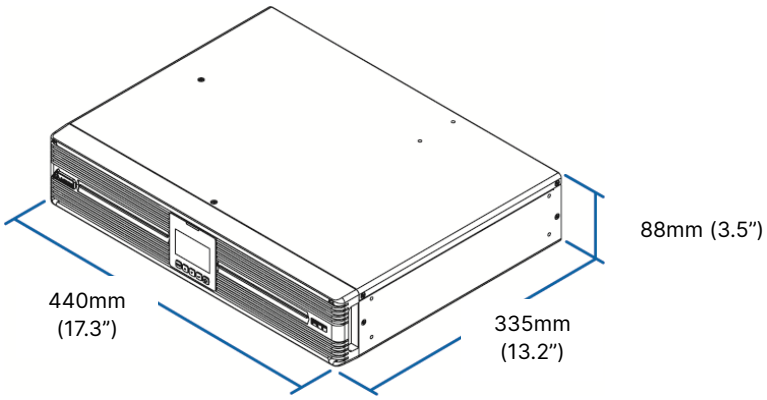


Figure 2-1: RT PRO-1K Exterior & Dimensions

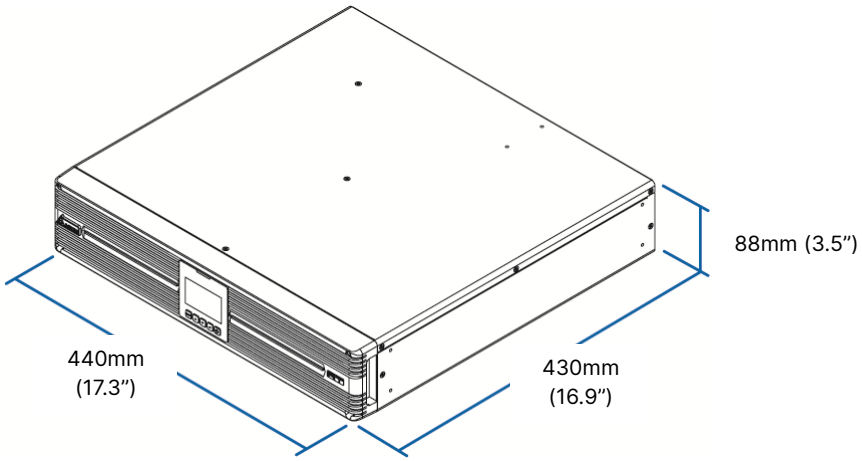


Figure 2-2: RT PRO-2K Exterior & Dimensions

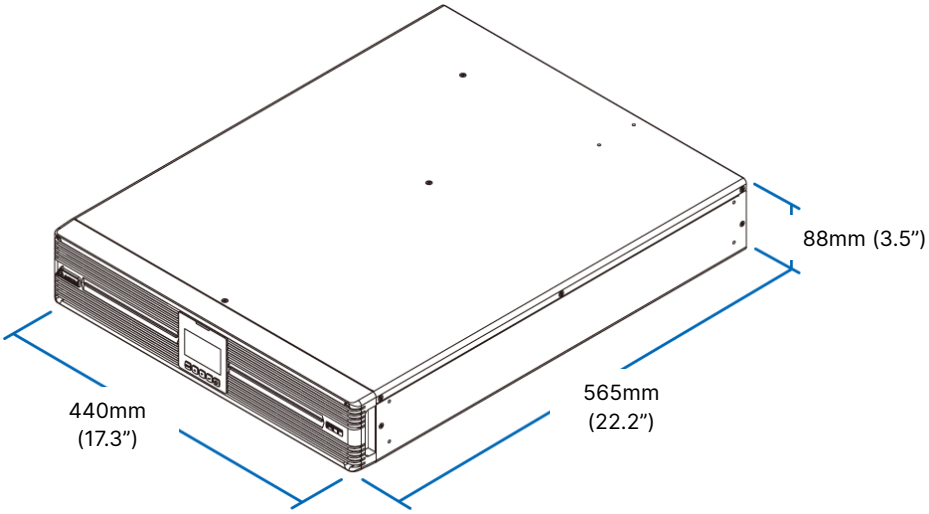
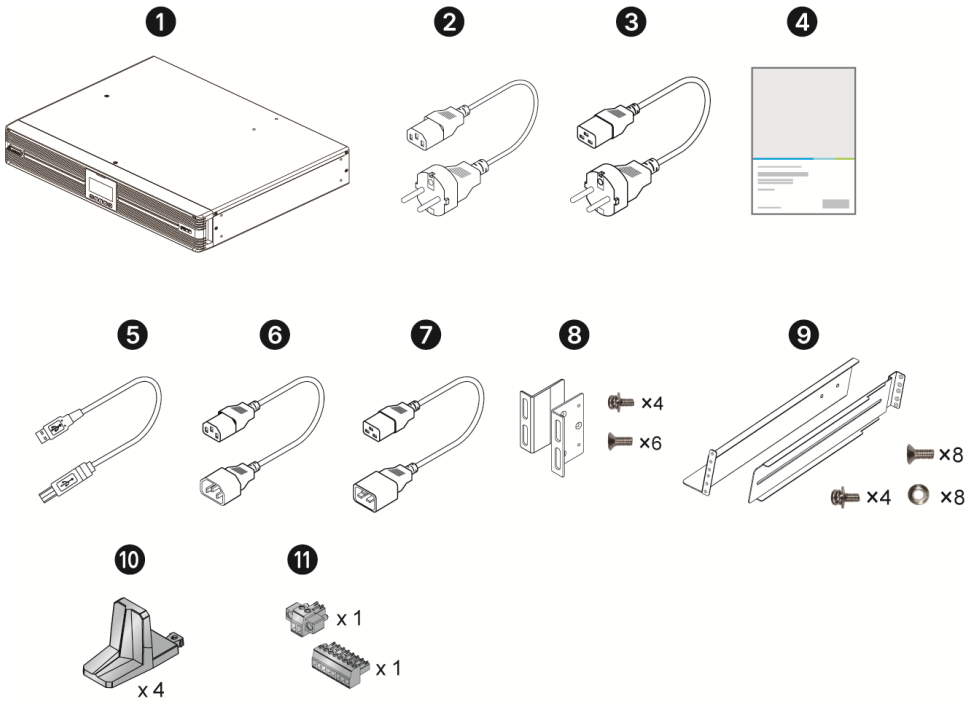


Figure 2-3: RT PRO-3K Exterior & Dimensions

2.3 Package List

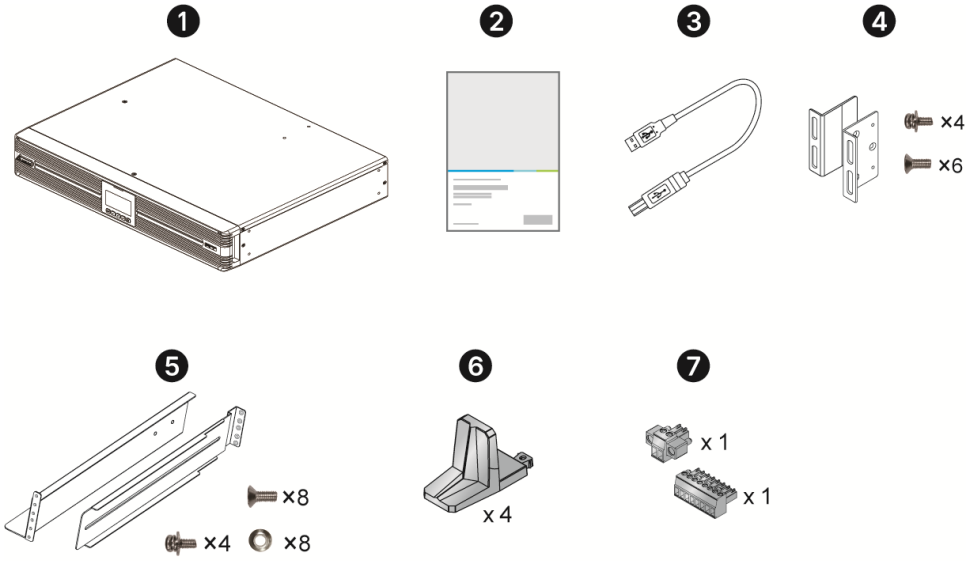
The package contains the following items. Please check if any item is missing. If there is anything missing, please contact the dealer immediately.

***For Models:**
1kVA: UPS102R2RT1B035
2kVA: UPS202R2RT1B035
3kVA: UPS302R2RT1B035



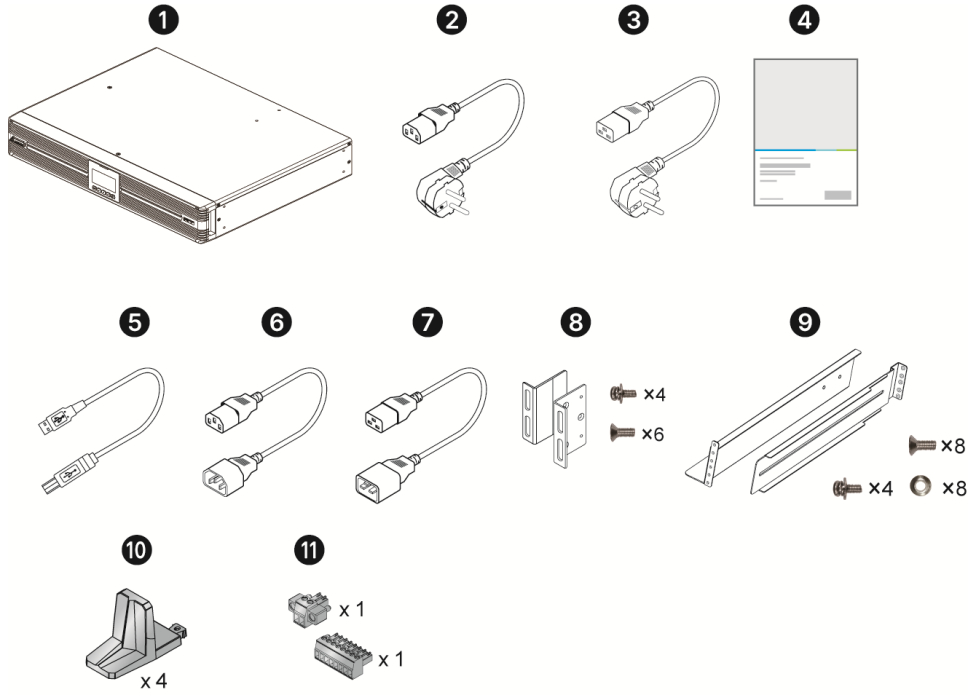
No.	Item	Q'ty	1kVA	2/3 kVA
❶	UPS	1 PC	V	V
❷	Input Cable 10A	1 PC	V	X
❸	Input Cable 16A	1 PC	X	V
❹	User's Manual	1 PC	V	V
❺	USB Cable	1 PC	V	V
❻	Output Cable 10A	1 PC	V	V
❼	Output Cable 16A	1 PC	X	V
❽	Bracket Ear	1 PC	V	V
❾	Rail Kit	1 PC	V	V
❿	Tower Stand	4 PCS	V	V
⓫	Pluggable Terminal	2 PCS	V	V

*For Models:
1kVA: UPS102R2RT1B135
2kVA: UPS202R2RT1B135
3kVA: UPS302R2RT1B135



No.	Item	Q'ty	1kVA	2/3 kVA
❶	UPS	1 PC	V	V
❷	User's Manual	1 PC	V	V
❸	USB Cable	1 PC	V	V
❹	Bracket Ear	1 PC	V	V
❺	Rail Kit	1 PC	V	V
❻	Tower Stand	4 PCS	V	V
❼	Pluggable Terminal	2 PCS	V	V

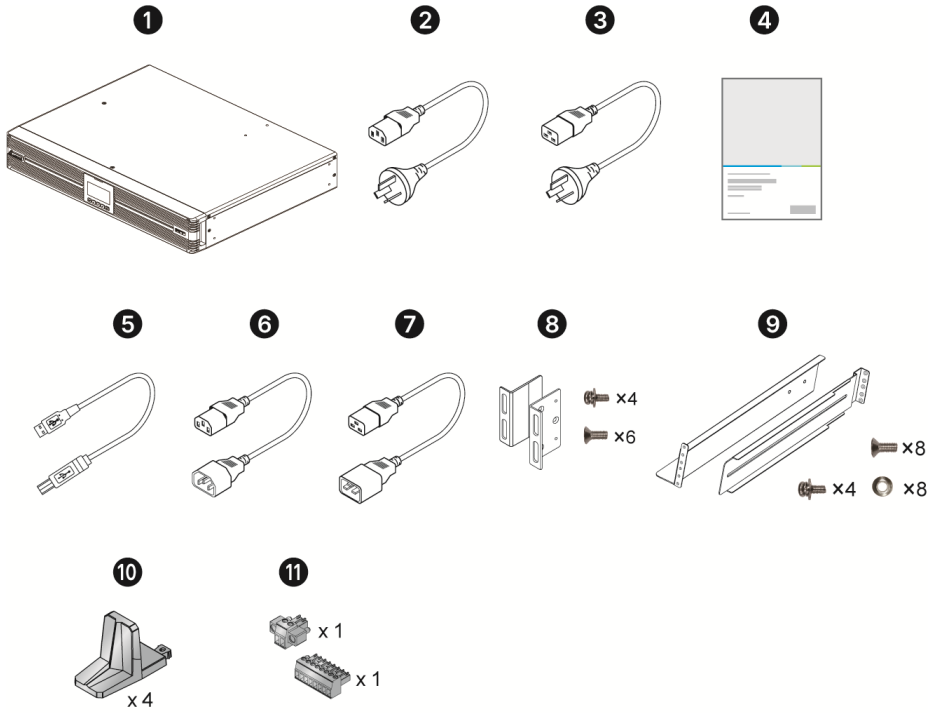
*For Models:
1kVA: UPS102R2RT1B0B6
2kVA: UPS202R2RT1B0B6
3kVA: UPS302R2RT1B0B6



No.	Item	Q'ty	1kVA	2/3 kVA
❶	UPS	1 PC	V	V
❷	Input Cable 10A	1 PC	V	X
❸	Input Cable 16A	1 PC	X	V
❹	User's Manual	1 PC	V	V
❺	USB Cable	1 PC	V	V
❻	Output Cable 10A	1 PC	V	V
❼	Output Cable 16A	1 PC	X	V
❽	Bracket Ear	1 PC	V	V
❾	Rail Kit	1 PC	V	V
❿	Tower Stand	4 PCS	V	V

No.	Item	Q'ty	1kVA	2/3 kVA
⓫	Pluggable Terminal	2 PCS	V	V

***For Models:**
1kVA: UPS102R2RT1B0BB
2kVA: UPS202R2RT1B0BB
3kVA: UPS302R2RT1B0BB



No.	Item	Q'ty	1kVA	2/3 kVA
❶	UPS	1 PC	V	V
❷	Input Cable 10A	1 PC	V	X
❸	Input Cable 16A	1 PC	X	V
❹	User's Manual	1 PC	V	V
❺	USB Cable	1 PC	V	V
❻	Output Cable 10A	1 PC	V	V

No.	Item	Q'ty	1kVA	2/3 kVA
❼	Output Cable 16A	1 PC	X	V
❽	Bracket Ear	1 PC	V	V
❾	Rail Kit	1 PC	V	V
❿	Tower Stand	4 PCS	V	V
⓫	Pluggable Terminal	2 PCS	V	V

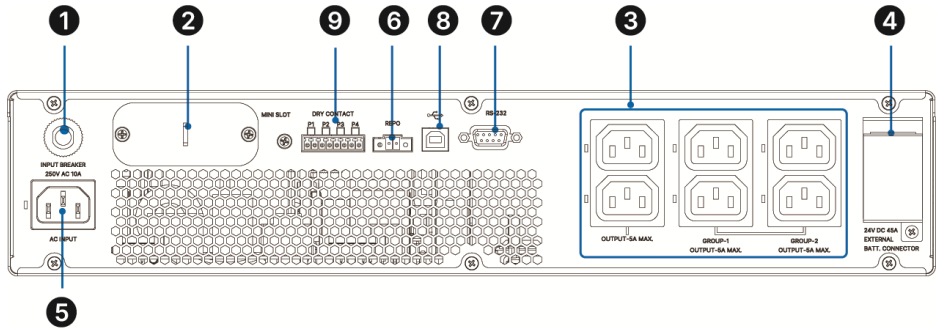


NOTE:

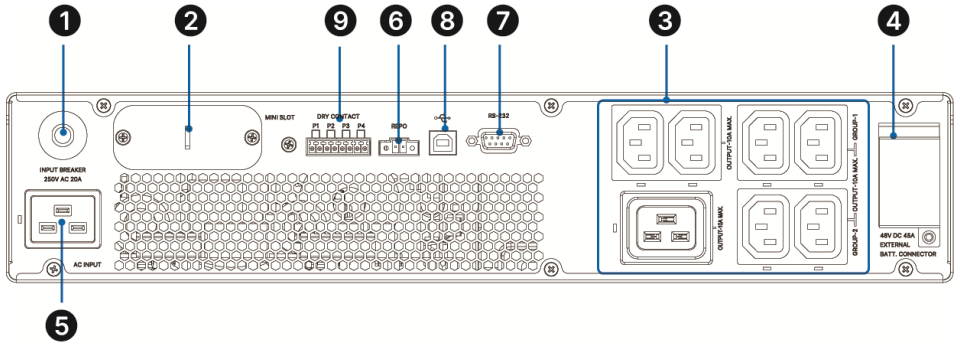
1. If there is any damage or anything missing, please immediately contact the dealer from whom you purchased the unit.
2. If the UPS needs to be returned, carefully repack the UPS and all of the accessories using the original packing materials.

2.4 Rear Panel

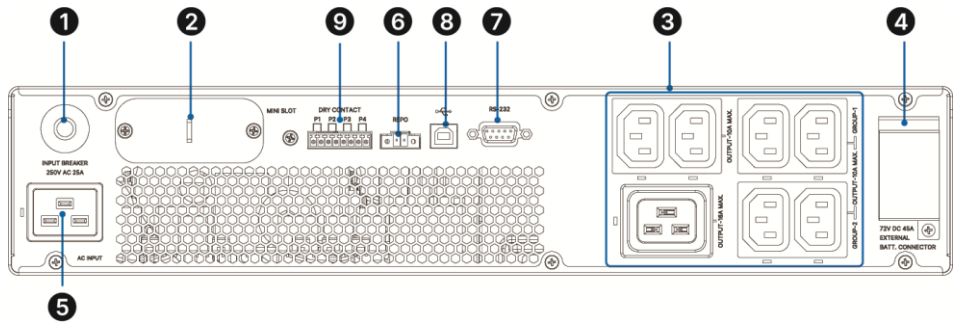
- 1kVA Models: UPS102R2RT1B035/ UPS102R2RT1B135/ UPS102R2RT1B0B6/ UPS102R2RT1B0BB



- 2kVA Models: UPS202R2RT1B035/ UPS202R2RT1B135/ UPS202R2RT1B0B6/ UPS202R2RT1B0BB



- 3kVA Models: UPS302R2RT1B035/ UPS302R2RT1B135/ UPS302R2RT1B0B6/ UPS302R2RT1B0BB



No.	Item	Function
❶	Input Breaker	Protects the utility power from further damage when the UPS fails.
❷	MINI Slot	For installation of an optional card, such as Mini SNMP IPv6 card, Mini Relay I/O card, or Mini MODBUS card. For more information, please refer to *Chapter 4 : Communication Interfaces* for detailed information.
❸	Output Receptacle	Connect to your loads.
❹	External Battery Pack Connector	Connects to the Delta external battery pack (optional). Please see *5.6 Delta External Battery Pack (Optional) Connection* for detailed information. (1 kVA: 24V DC 45A) (2 kVA: 48V DC 45A) (3 kVA: 72V DC 45A)
❺	AC Input Socket	Connects the UPS to the mains.
❻	REPO Port	Shuts down the UPS completely. Please see *Chapter 4 : Communication Interfaces* for detailed information.
❼	RS-232 Port	Communication interface port. Please see *Chapter 4 : Communication Interfaces* for detailed information.
❽	USB Port	Communication interface port. Please see *Chapter 4 : Communication Interfaces* for detailed information.
❾	Dry Contacts	1. Output dry contacts: Receive the UPS's event information to indicate the UPS status or internal messages. 2. Input dry contacts: Let the UPS to receive external control signals. 3. For more information, please refer to *Chapter 4 : Communication Interfaces*.

Chapter 3: Operation Panel

The operation panel is located on the front of the UPS with two LED indicators, an LCD display, and multi-function buttons. See ***Figure 3-1***.

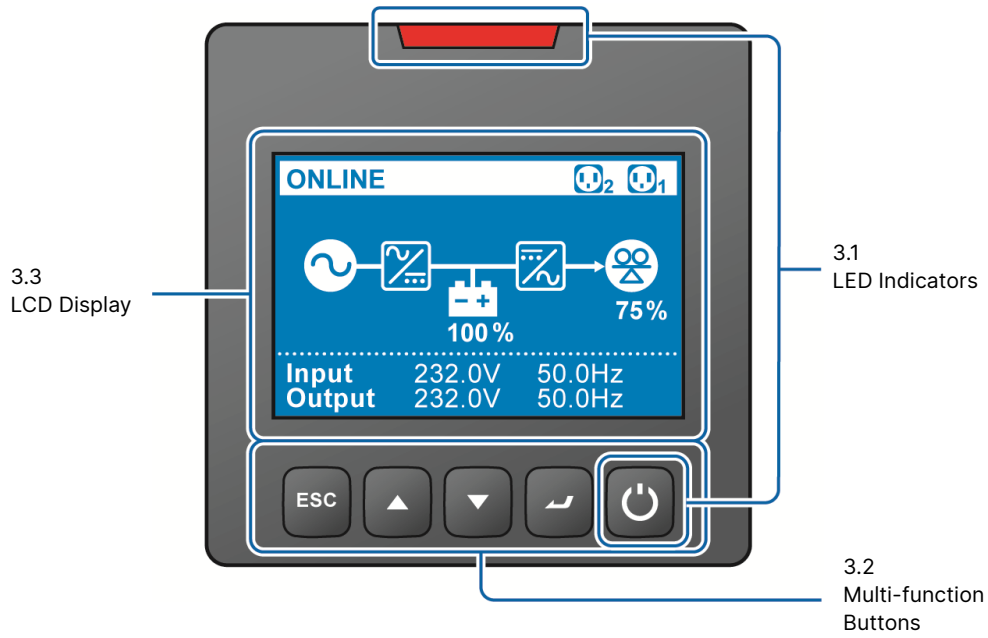


Figure 3-1: Operation Panel

3.1 LED Indicator

No.	LED	Description
1		**ON**: The output is protected. **OFF**: The output is not protected.
2		**ON**: The UPS detects an internal fault or an environmental fault. **OFF**: The UPS is in a normal state. **Flashing**: The UPS sends the alarm message(s). Please check the corresponding alarm message(s) in ***Chapter 9: Troubleshooting***.

3.2 Multi-function Buttons

No.	Multi-function Button	Description
1	 ON/ OFF Button	The button has multiple functions. Please refer to the following for detailed information. **1. Turn on** In standby/ bypass mode, press and hold the button for 3 seconds, and release it after you hear the beep sound. After that, the UPS will start up. **2. Turn off** In on-line mode, press and hold the button for 3 seconds, and release it after you hear the beep sound. After that, the inverter will be off and the UPS will transfer to run in standby/ bypass mode. The UPS will keep charging the batteries when in standby/ bypass mode. To fully turn off the UPS, it is advised to disconnect the UPS from the AC power. In battery mode, press and hold the button for 3 seconds, and release it after you hear the beep sound. After that, the UPS will turn off its output. **3. Fault clear** When the UPS is under fault conditions, press and hold the button for 3 seconds, and release it after you hear the beep sound. After that, the UPS will try to clear the fault conditions and restart itself. After the UPS is restarted, if the fault conditions have been cleared successfully, the buzzer will be off and the alarm message will disappear; If not, the buzzed will still be on and the alarm message will remain on the screen. For solution information, please refer to *Chapter 9: Troubleshooting*.

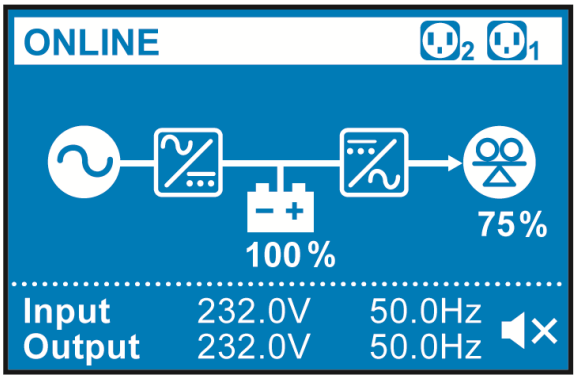
No.	Multi-function Button	Description
2	 Enter Button	The button has multiple functions. Please refer to the following for detailed information. **1. Entering setup mode** In **Main Screen** (that shows the current operation mode), press the button and the UPS will enter the **Main Menu** (setup mode). Please refer to *Chapter 7: LCD Display & Settings*. **2. Selecting and confirming the parameter in setup mode** In setup mode, press the button to choose the parameter that you want to change, and the chosen parameter will flash. Then, press the **Scrolling Up** or **Scrolling Down** button to change the parameter, and press the button again to confirm the change.
3	 Scrolling Up Button	The button has multiple functions. Please refer to the following for detailed information. **1. Scrolling up/ Increasing number** In **Main Screen**, press the button and the UPS will directly enter the **Measurement Menu**'s Output screen. See *Figure 7-1: Menu Tree*. In setup mode, the button can be used to navigate the setting items. Press the button to go to the previous setting item. The button can also be used to set up the parameter. Press the button to increase the number. If the button is pressed for more than 2 seconds, the digit will increase by its minimum adjustable unit every 0.2 second automatically until the button is released or the setting item reaches its highest value. **2. LCD reset** Press **Scrolling Up** and **Scrolling Down** buttons together for 3 seconds to reset the LCD display.

No.	Multi-function Button	Description
4	 Scrolling Down Button	The button has multiple functions. Please refer to the following for detailed information. **1. Scrolling down/ decreasing number** In **Main Screen**, press the button and the UPS will directly enter the **Measurement Menu**'s Output screen. See *Figure 7-1: Menu Tree*. In setup mode, the button can be used to navigate the setting items. Press the button to go to the next setting item. The button can also be used to set up the parameter. Press the button to decrease the number. If the button is pressed for more than 2 seconds, the digit will decrease by its minimum adjustable unit every 0.2 second automatically until the button is released or the setting item reaches its lowest value. **2. LCD reset** Press the **Scrolling Up** and **Scrolling Down** buttons together for 3 seconds to reset the LCD display.
5	 Escape Button	The button has multiple functions. Please refer to the following for detailed information. **1. Going back to the previous menu level** In setup mode, press the button to go back to the previous menu level. **2. Silence buzzer temporarily** When the UPS is under fault conditions, press and hold the button for 3 seconds, release it after you hear the beep sound, and the buzzer will stop sounding unless a new fault condition occurs.

NOTE:

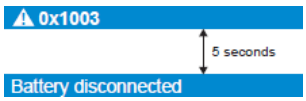
When the LCD backlight is off and you would like to wake it up, press any of the multi-function buttons listed above.

3.3 LCD Display



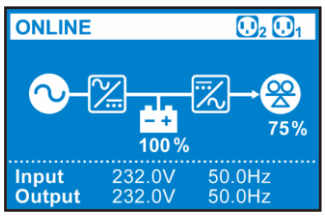
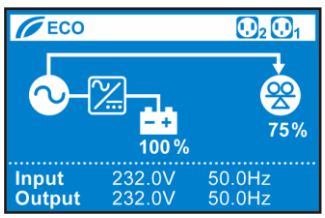
3.3.1 Icon/ Display Definition

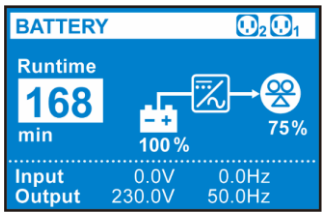
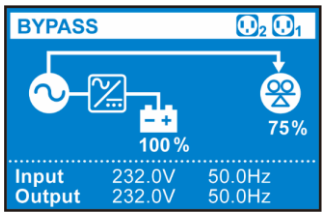
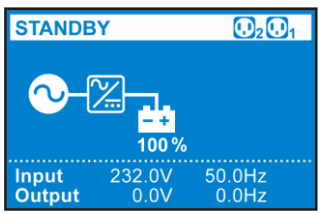
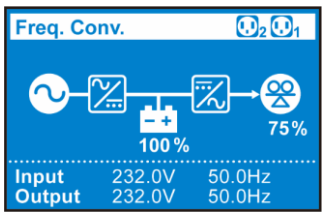
No.	Icon	Description
1		Indicates that the load bank status is ON.
		Indicates that the load bank status is OFF.
2		Indicates the battery capacity level.
		Indicates that the battery is abnormal and needs replacement. If the battery is abnormal, the battery capacity icon () will be off.
3		Indicates the load level (%).

No.	Icon	Description
4		When the UPS runs normally, the input/ output voltage and frequency will show at the bottom of the screen.
		When the UPS has abnormalities or is in fault condition, the display will show an error code and its corresponding fault or warning message. **NOTE:** The error code and the fault/ warning message will appear alternately every 5 seconds.
5		Indicates that the buzzer is muted.

3.3.2 Operation Mode Diagram Definition

The six general operation modes of the UPS are listed below. For more information, please refer to *Chapter 8.4 Operation Modes*.

No.	Icon	Description
1		Indicates **on-line** mode.
2		Indicates **ECO** mode. **NOTE:** In ECO mode, the diagram's power flow will change according to the UPS input voltage and frequency. However, the ECO icon (ECO) shown on the upper-left corner will not change even if the UPS transfers to online mode or battery mode.

No.	Icon	Description
3		Indicates **battery** mode.
4		Indicates **bypass** mode.
5		Indicates **standby** mode.
6		Indicates **Frequency Conversion** mode. **NOTE:** In frequency Conversion mode, the diagram's power flow will change according to the UPS input voltage and frequency. However, the text **Freq. Conv.** (Freq. Conv.) shown on the upper-left corner will not change even if the UPS transfers to battery mode.

Chapter 4: Communication Interfaces



NOTE:

1. The UPS can still function properly without making the connections below.
2. For the location of the following communication interfaces, please refer to *2.4 Rear Panel*.

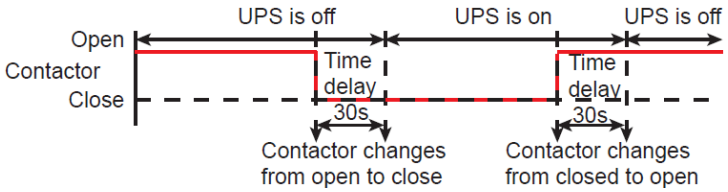
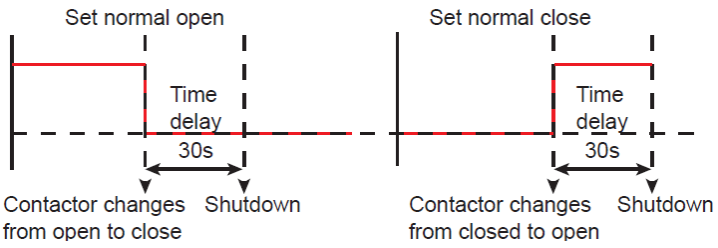
4.1 MINI Slot

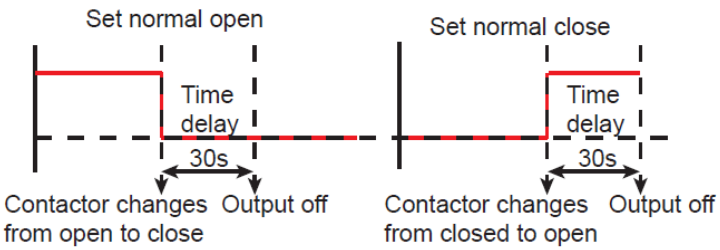
The MINI slot is for mini-size cards. You can install the Mini SNMP IPv6, Mini Relay I/O, or Mini MODBUS card in this slot to let the system have network communication, dry contact function, and MODBUS communication respectively.

4.2 Dry Contacts

The RT UPS provides one input dry contact for you to receive external control signals. You can set up relevant items in the **Dry Contact Setting** screen, which includes Disable/ ROO/ REPO/ Remote shutdown/ Forced bypass. Besides, there are three configurable output dry contacts for you to receive UPS events. The output dry contacts are normally open (NO). You can set up relevant items in the **Dry Contact Setting** screen, which includes Disable/ On bat/ Low bat/ Bat fault/ Bypass/ UPS OK/ Load protected/ Load powered/ General alarm/ Overload alarm. Please refer to *7.2.2 Setting Menu* and *7.2.4 Maintenance Menu* for relevant information.

Function of Input Dry Contacts:

Function	Description
Disable	No function
ROO	Remote On/ Off allows remote action of button to switch On/ Off UPS after user defined time delay, maximum time delay is 999 seconds. (Cold start is prohibited while using the ROO function) When contact changes from open to closed, UPS is switched on. When contact changes from closed to open, UPS is switched off. For example, set time delay is 30 seconds.  **NOTE:** 1. During time delay, if UPS receive other On/ Off command via button or contactor, UPS should still finish countdown and previous command then do the next action. 2. For this item, there is no setting for “Normal Open” or “Normal Close”.
REPO	When UPS is at DC mode, UPS will transfer to shutdown mode after user defined time delay while receiving this command, if UPS is at other operation modes, this command will be ignored. For example, set time delay is 30 seconds.  **NOTE:** During time delay, if UPS receive auto start command, UPS should still finish countdown and the previous command then do the next action.

Function	Description
Remote Shutdown	When the output of Standby mode is set as “no output”, UPS will turn off output (or outlet groups) after user defined time delay while receiving this command but keeps on charging batteries according to a selected charging scheme. For example, set time delay is 30 seconds.  When the output of Standby mode is set as “bypass output”, this command will be ignored. **NOTE:** During time delay, if UPS receive auto start command, UPS should still finish countdown and the previous command then do the re-start action.

4.3 REPO Port

The REPO port can be connected to an external switch. After the external switch is turned to the ‘**CLOSED**’ position, the UPS will switch off the inverter immediately and cut off the UPS output without transferring to bypass mode.

NOTE:

1. You can use the management software to configure the REPO port as normally open (NO) or normally closed (NC). The factory default setting is normally open (NO).
2. The REPO port can also be used for ROO application, which allows you remotely turn on/ off the inverter. If you need detailed ROO information or ROO setup service, please contact your local dealer or customer service. Please note that this port can only be modified by qualified service personnel.

4.4 RS-232 Port

You can use a RS-232 cable (user supplied) to connect the UPS with a computer and install the UPSentry 2012 software*1 to check and monitor the UPS status.

- **The RS-232 port provides the following functions**

1. RS-232 communication (baud rate: 2400/ 9600)
2. UPS configuration
3. Firmware upgrade (baud rate: 9600)

- **Pin Assignment**

1. PIN 2: TXD <Transmitting Data>
2. PIN 3: RXD <Receiving Data>
3. PIN 5: GND <Signal Ground>

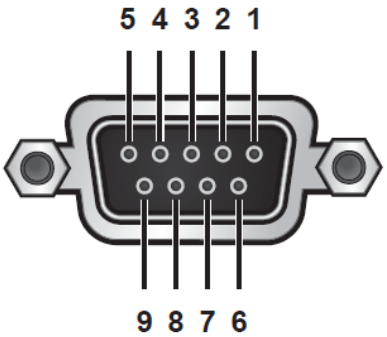


Figure 4-1: RS-232 Port

- **Hardware**

1. Baud Rate: 2400/ 9600bps
2. Data Length: 8 bit
3. Stop Bit: 1 bit
4. Parity: None

NOTE:

1. [*1] You can download the software from the following link: https://datacenter-softwarecenter.deltaww.com
2. Do not use the USB port and the RS-232 port simultaneously. If you connect the USB cable (user-supplied) to the USB port, the RS-232 port will be disabled right away.

4.5 USB Port

Please use the provided USB cable to connect the UPS with a computer and install the UPSentry 2012 software[*1] to check and monitor the UPS status. The USB port has the following functions:

1. UPS configuration with EEPROM programming
2. UPS firmware upgrade
3. Event logs download
4. Dry contacts setup

NOTE:

1. [*1] You can download the software from the following link: https://datacenter-softwarecenter.deltaww.com
2. Do not use the USB port and the RS-232 port simultaneously. If you connect the USB cable (user-supplied) to the USB port, the RS-232 port will be disabled right away.

4.6 External Battery Connector

To increase the battery backup time, you can connect several external battery packs to the UPS. The connector is for connection to the external battery pack(s). Please see below for relevant information.

- **Battery**

UPS	Charge Voltage	Charge Current	Low Battery Shutdown	The Number Of Batteries
1kVA	27.4V	2.2A	20V±3%	13.7V x 2 PCS
2kVA	54.8V	2.2A	40V±3%	13.7V x 4 PCS
3kVA	82.2V	2.2A	60V±3%	13.7V x 6 PCS

WARNING:

If you need to modify the charge current default setting, please contact your local dealer or customer service.

- **External Battery Pack**

  Delta external battery pack is optional. Please refer to the Quick Guide, User Manual or Installation & Operation Guide included in the package of the external battery pack.

- **Battery/ Battery Pack Connection Warnings**

1. Only use the same type of batteries from the same supplier. Never use old, new and different Ah batteries at the same time.
2. The number of batteries must meet UPS requirements.
3. Do not connect the batteries in reverse.
4. Use the voltage meter to measure whether the total voltage, after battery pack connection, is around 12.5Vdc × the total number of batteries.



NOTE:

1. Only qualified service personnel can perform battery replacement. Before battery replacement, please turn off the battery breaker. If replacing the batteries without turning off the UPS, please make sure the UPS has detected "Battery Disconnected" before connecting the battery cable or turning on the battery breaker.
2. A battery can present a risk of electric shock and high short-circuit current.
3. Servicing of batteries and battery packs must be performed or supervised by qualified service personnel knowledgeable in batteries, battery packs and the required precautions. Keep unauthorized personnel away from batteries and battery packs.

- **Alarm**

When any external battery pack connected to the UPS has the following problems, the UPS system will sound an alarm. Please see the table below.

No.	External Battery Pack Status	Description
1	Battery Mode	The alarm beeps once every 2 seconds.
2	Battery Low Warning	The alarm beeps once every 0.5 second.
3	Battery Missing/ Weak Battery/ Battery Replacement	The alarm beeps once every 2 seconds.
4	Overload	Load<105%: Continuous; 105-125%: 1min; 125-150%: 15sec; ≧150%±5% ≧0.1 second (Linear Load Only)

No.	External Battery Pack Status	Description
5	Fault	The alarm beeps continuously for 5 seconds when the UPS detects an internal fault. After the 5-seconds long beep, the alarm beeps once every 2 seconds.

NOTE:

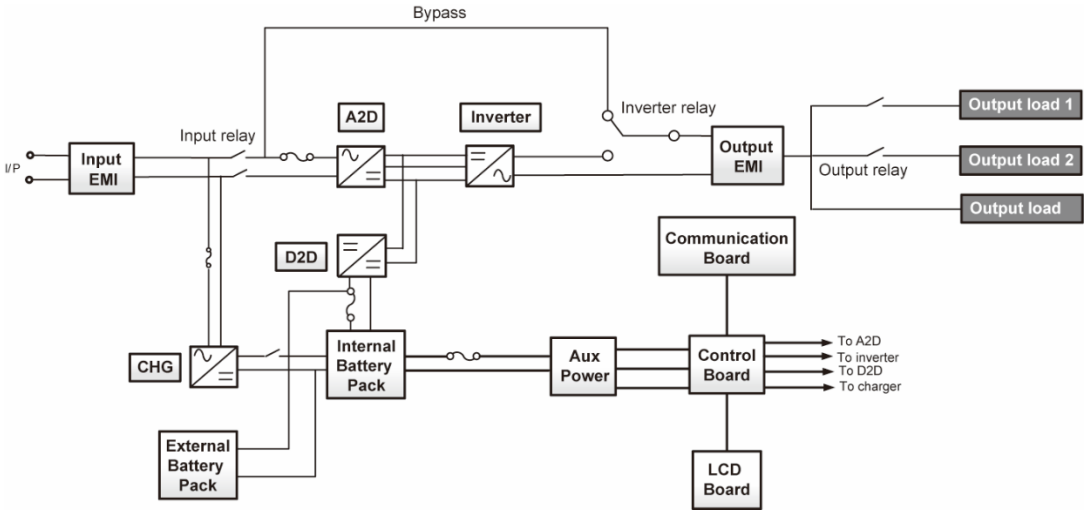
After reconnecting or replacing the batteries, it might take a while for the UPS to switch off the alarm automatically. If, after a period of time, the audible alarm still exists, please manually initiate a battery test. Please follow the route below to execute the manual battery test in order to clear the alarm.

Route: press the button  for 0.1 second → select 

→ select **Test** → select **Start Battery Test**. Fore relevant information, please refer to *7.2 Main Menu*.

Chapter 5: Installation and Connections

Please refer to the system block diagram and related information below for correct installation.



NOTE:

1. Before installation, please read *Chapter 1. Important Safety Instructions* thoroughly.
2. Each model has internal batteries and each model can connect the Delta external battery pack (optional).
3. Only qualified personnel can perform installation. If you want to install the UPS and the Delta external battery pack (optional) by yourself, installation must be under the supervision of qualified personnel.

5.1 Installation Data

No.	Item	Specification
1	Installation Environment	Indoor only
2	UPS Dimensions	1kVA: 440 x 335 x 88 mm (17.3 x 13.2 x 3.5 inch) 2kVA: 440 x 430 x 88 mm (17.3 x 16.9 x 3.5 inch) 3kVA: 440 x 565 x 88 mm (17.3 x 22.2 x 3.5 inch)
3	Operating temperature	0~40°C
4	Relative Humidity (non-condensing)	5%~95%

No.	Item	Specification
5	Max. altitude	0 ~ 3000 m (0 ~ 10000 ft); 0 ~ 1000 m (0 ~ 3300 ft) (without derating)
6	Input power connection	Rear
7	Output power connection	Rear
8	Battery power connection	Rear
9	Air inlet	Front
10	Air outlet	Rear

5.2 Rack Mounting

You can rack-mount the UPS and the Delta external battery pack (optional) in a four-post frame. The UPS and the Delta external battery pack (optional) use identical mounting kits and their mounting procedures are the same.

NOTE:

1. The UPS draws cooling air from its front. If your rack has a door on the front, make sure that there is sufficient clearance between the UPS vents and the rack door.
2. It is strongly recommended that at least two people lift the unit when rack-mounting. If there is only one person available, we suggest that the UPS's internal batteries should be taken out (less weight) before rack-mounting. After rack-mounting, re-install the internal batteries.
3. Only use the provided bracket ears and rail kits to perform rack mounting. NEVER depend on lower devices to support the UPS and the Delta external battery pack (optional).

- **Rack-mounting procedures:**

Step 1

Attach the included bracket ears to the lateral mounting holes of the UPS.
See *Figure 5-1*.

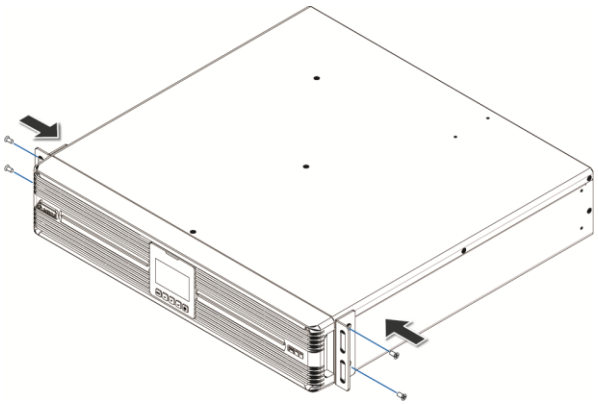


Figure 5-1: Mount the Bracket Ears

Step 2

Adjust the length of the provided rails according to your rack and tighten the nuts. See *Figure 5-2*.

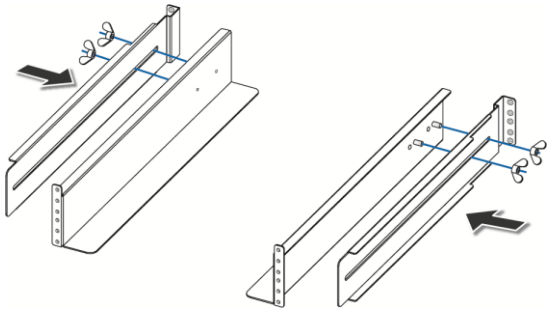


Figure 5-2: Adjust the Rails and Tighten the Nuts

Step 3

Use the provided eight screws and eight washers to attach the rails to your rack. See *Figure 5-3*.

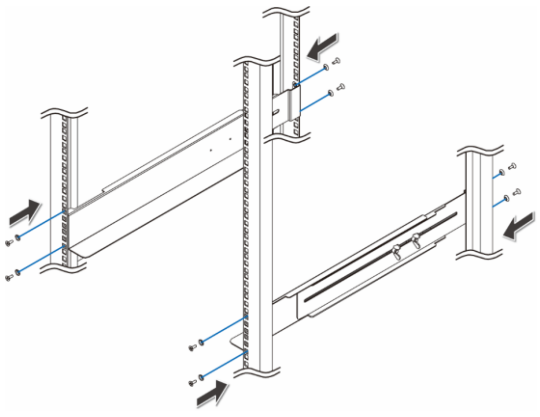


Figure 5-3: Attach the Rails to Your Rack

Step 4

Insert the UPS into the rack and tighten the provided four screws. See ***Figure 5-4***. Please note that there will be extra four screws left after installation. The four screws are spare parts.

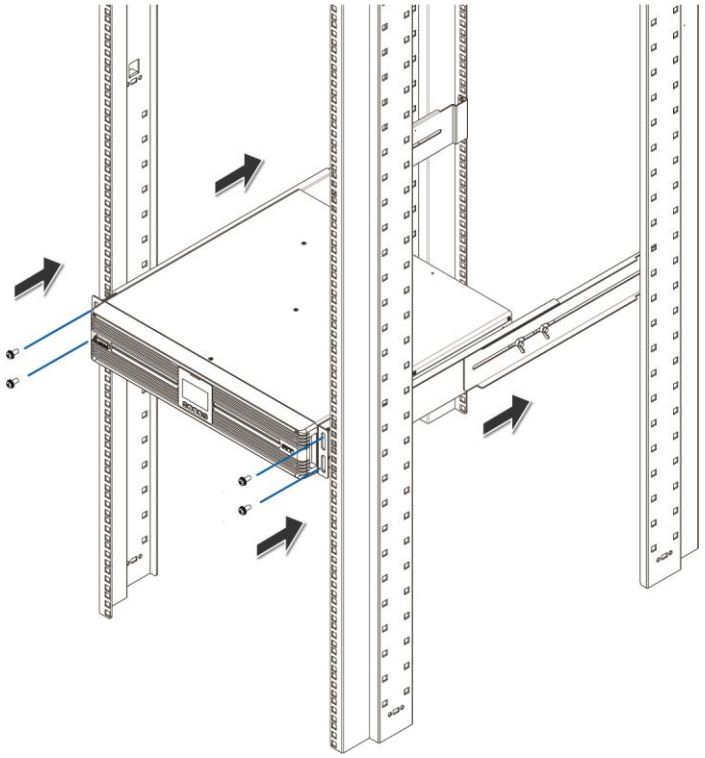


Figure 5-4: Insert the UPS into Your Rack

5.3 Tower Mounting

You can mount the UPS and the Delta external battery pack (optional) in an upright position by following the procedures below. The UPS and the Delta external battery pack (optional) use identical mounting kits and their mounting procedures are the same. Please note that the package does not include any tower-mounting kits. If you need to purchase any, please contact Delta customer service and refer to ***Chapter 8: Optional Accessories***.

NOTE:

1. The tower stand picture shown below is just descriptive.
2. Leave adequate space at least 15cm in front and at rear of the UPS for proper ventilation.

- **Tower mounting procedures:**

Step 1

Assemble the tower stands. See ***Figure 5-5***.

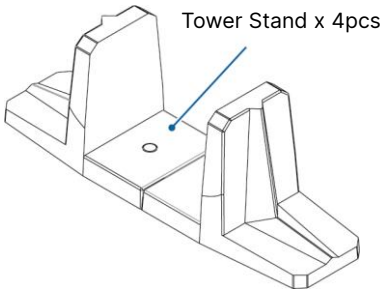


Figure 5-5: Assemble the Tower Stands

Step 2

Pull out the control panel ❶, rotate the panel and the Delta logo nameplate 90° clockwise ❷ and re-insert the control panel ❸. See ***Figure 5-6***.

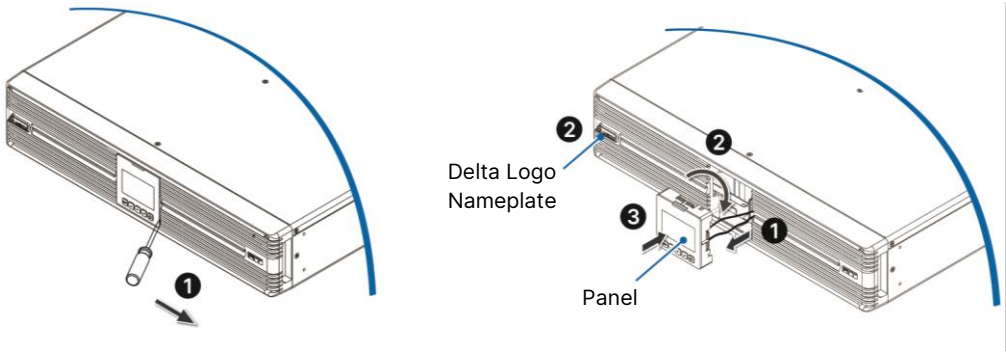


Figure 5-6: Rotate the Control Panel and the Delta Logo Nameplate

Step 3

Carefully lift the whole unit upright ❹ with the Delta logo nameplates and the icons shown on the panels facing up. See ***Figure 5-7***.

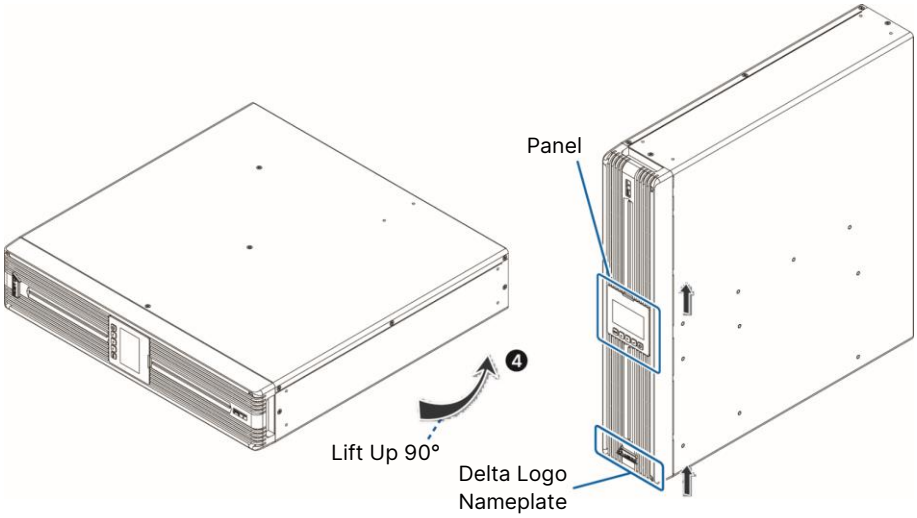


Figure 5-7: Place the Whole Unit Upright

Step 4

Place the whole unit inside the tower stands ❺. See *Figure 5-8*.

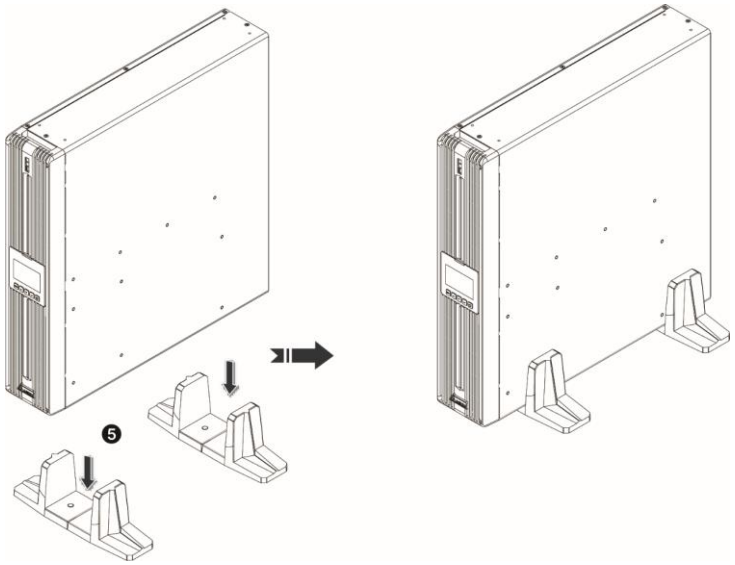


Figure 5-8: Place the Whole Unit inside the Tower Stands

Leave adequate space (at least 50cm) around all sides of the unit for good ventilation.

NOTE:

A minimum of two people are required to execute **step 3** and **step 4** .

5.4 Battery/ Battery Pack Replacement

WARNING:

1. Turn off the UPS and cut off the AC source before performing battery/ battery pack replacement.
2. A battery can present a risk of electrical shock and high short-circuit current.
3. Servicing of batteries and battery packs should be performed or supervised by qualified service personnel knowledgeable in batteries, battery packs and the required precautions.
4. Only use the same type of batteries from the same supplier. Never use old, new and different Ah batteries at the same time. The types of batteries are HR9-12 (BB), HPS12-36W (Center Power).
5. Keep unauthorized personnel away from batteries and battery packs.
6. The following precautions should be observed before replacement of batteries:
   - Remove watches, rings, or other metal objects.
   - Use tools with insulated handles.
   - Wear rubber gloves and boots.
   - Do not lay tools or metal parts on top of batteries.
   - Disconnect charging source prior to connecting or disconnecting battery terminals.
7. Please read ***Battery Precautions*** stated in ***Chapter 1: Important Safety Instructions*** before replacing batteries.

The 1kVA, 2kVA and 3kVA UPSs contain two, four, and six internal batteries respectively. Below, we take 1kVA model as an example to describe the internal battery replacement procedures.

1. Remove the UPS's front plastic panel (there are four screws).

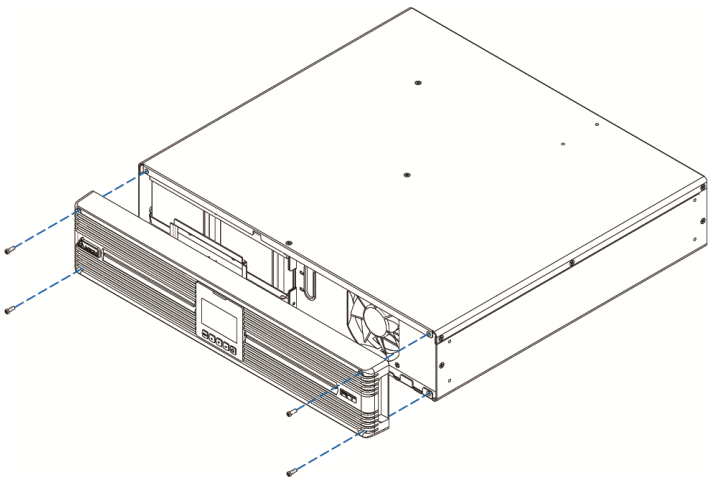


Figure 5-9: Remove the Front Plastic Panel

From the back of the front panel, carefully push the backside of the operation panel until it slides out of the front plastic panel. Please handle with care to avoid damaging the cable connecting the operation panel and the UPS's internal connector. See *Figure 5-10*.

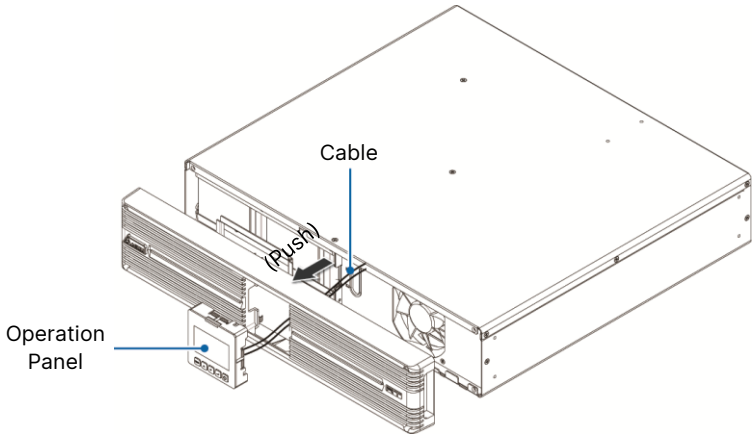


Figure 5-10: Push the Backside of the Operation Panel

2. Put the front plastic panel aside.

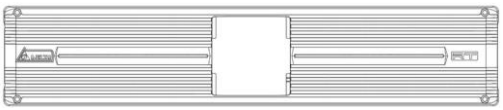


Figure 5-11: Push the Backside of the Operation Panel

3. Disconnect the battery cables.

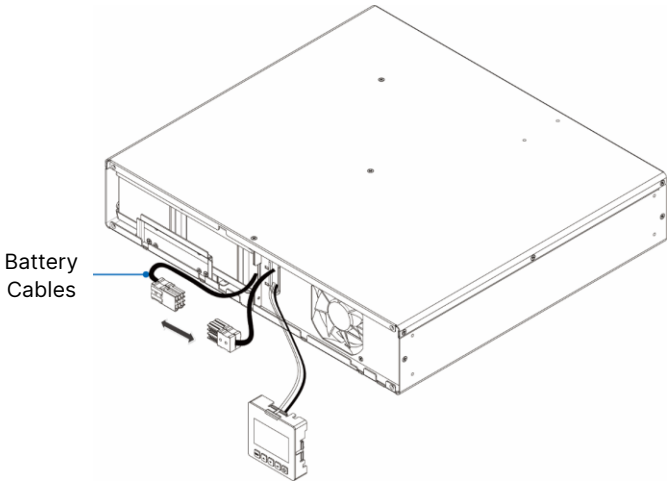


Figure 5-12: Open the Connector Holder and Disconnect the Battery Cables

4. Remove the two screws shown in the following figure.

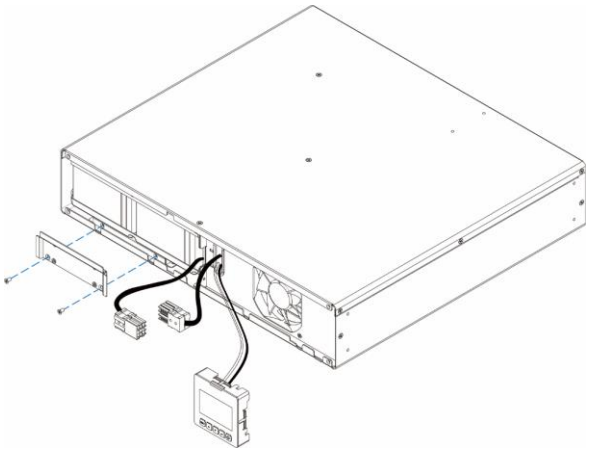


Figure 5-13: Remove the Two Screws

5. Pull out the tab carefully to take out the internal batteries.

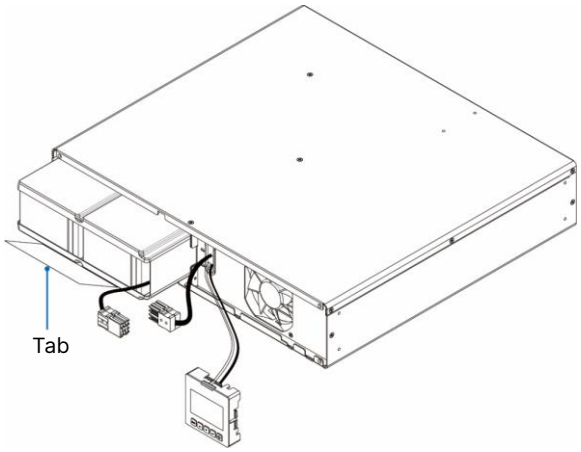


Figure 5-14: Pull out the Tab to Take out the Internal Batteries

6. Insert the new batteries and reverse the procedures mentioned above to complete battery replacement.

5.5 Pre-connection warnings

1. Before connection, please read *Chapter 1: Important Safety Instructions* thoroughly.
2. The UPS is supplied with standard power cords and receptacles suitable for its use in your area of operation. Only qualified personnel can perform installation, wiring, operation and maintenance.
3. Before connecting any input wiring to the UPS, ensure that all circuits being used are proper voltage and current required for the UPS. The power supply to the UPS must be single-phase in accordance with its rating label.
4. Calculate the power consumption of the connected loads to ensure that an overload condition will not occur.
5. Prior to providing any power to the UPS, the UPS must be suitably grounded. The unit is equipped with a safety-inspected mains line and must be connected to an earthing-contact wall socket. If the wall socket does not have an earthing function, please ground the UPS via the ground terminal located at the rear of the UPS. Please see *2.4 Rear Panel*.

5.6 Delta External Battery Pack (Optional) Connection

NOTE:

1. Please read *4.1 Pre-connection Warnings* before connection.
2. Before connecting the Delta external battery pack (optional) to the UPS, check whether the rating voltage of the battery pack is suitable for the UPS.

Please see the following figure for the rear view of the Delta external battery pack (optional). There are three different ratings, 24Vdc, 48Vdc and 72Vdc. Please select the correct rating of the battery pack for your UPS.

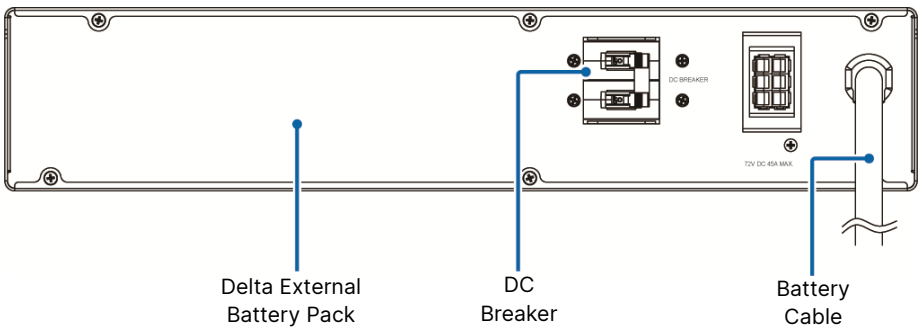


Figure 5-15: Delta External Battery Pack Rear View

1. Set the battery pack's DC breaker to the OFF position.
2. Remove the cover of the external battery pack connector located on the rear side of the UPS.

3. Connect the battery cable attached to the Delta external battery pack (optional) to the UPS's battery pack connector. Make sure the battery cable's iron strip shown in the figure below is tightly screwed. Here, we take the RT PRO-1K model as an example; please see *Figure 5-16*.

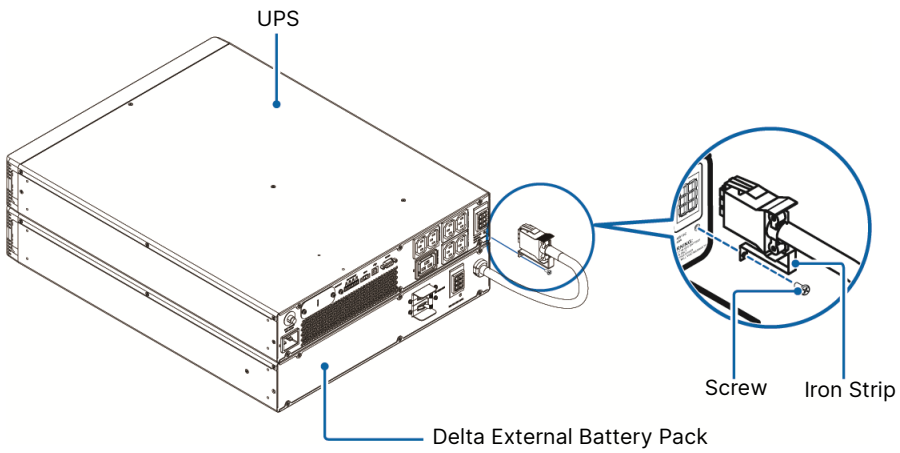


Figure 5-16: Connect the UPS and the Delta External Battery Pack (Optional)

4. Set the battery pack's circuit breaker to the ON position.
5. Use either the UPSentry 2012 software or the LCD to set up the battery pack number.

NOTE:

1. If the UPS is going to run for the 1st time, before operation, please fully charge the batteries (internal and external) until the Battery Level Bar Graph shown on the UPS's LCD is fully on.
2. Normally, the life of a battery is 3~5 years. However, an extreme operating condition and environment may shorten its life-span.
3. When the UPS has not been used for a period of time, the batteries will discharge slightly. It is recommended to charge the batteries (internal and external) once every 3 months, and each time, fully charge them until the Battery Level Bar Graph shown on the UPS's LCD is fully on.
4. Safety Requirement:
   For convenient removal of the battery power cord in an emergent situation, please arrange and organize each cable/ wire connecting to the UPS and the Delta external battery pack (optional) well.

5.7 Critical Load Connection

1. Please read *5.5 Pre-connection Warnings* before connection.
2. Calculate power consumption of your loads to ensure that an overload condition will not happen.
3. 1kVA model has 10A output outlets at the rear. 2kVA/ 3kVA model has 10A output outlets and one 16A output outlet at the rear.

4. Please follow your loads to select proper cables to connect the UPS output outlets and the loads.
5. Plug the power cord of the equipment into the output receptacles located at the rear of the UPS.

WARNING:

Do not connect laser printers or scanners to the UPS.

5.8 Utility Power Connection

Please read ***5.5 Pre-connection Warnings*** before connection.

Use the provided input cable to connect the UPS and a wall socket that has an earthing-contact function. If the wall socket does not have an earthing connection, please ground the UPS via the ground terminal. Please see ***2.4 Rear Panel*** for ground terminal location.

After the UPS is connected to the AC utility, the utility will supply power to the UPS. After that, the fan (at the rear panel) will run, all LEDs and LCD will be on for about 2-3 seconds. The user can check whether the LEDs and LCD are normal. The default setting of the UPS is set in 'STANDBY mode'. Please note that once the AC utility supplies power to the UPS, the batteries will be charged.

NOTE:

1. The diagram shown above is for reference only. Actual display depends on the operation of the UPS.
2. The UPS will charge its internal batteries and the optional Delta external battery pack (if connected and its DC breaker is turned on) whenever the UPS is connected to the AC source.
3. It is recommended that you fully charge the UPS's internal and external batteries until the Battery Level Bar Graph 

shown on the UPS's LCD is fully on. If you don't do this, you may use the UPS immediately but the 'On-Battery' runtime might be less than normally expected.
4. If the UPS is going to be out of service or stored for a prolonged period of time, you must recharge the batteries (internal and external) every three months and, every time, fully charge the batteries (internal and external) until the Battery Level Bar Graph 

shown on the UPS's LCD is fully on.
5. The batteries will immediately begin charging upon the availability of the input power.

Chapter 6: Operation

6.1 Start-up Procedures

NOTE:

1. Before start-up, ensure that the batteries are fully charged. Before using the UPS for the first time, please check the battery capacity and the charging settings. Make sure that you charge the batteries until the battery capacity percentage shown on the UPS's LCD is 100% (

).
2. If the UPS connects to an inductive load, the inrush current (initial surge current) may restart the inverter. To avoid this situation, please turn on the inductive load in bypass mode before starting up the inverter.

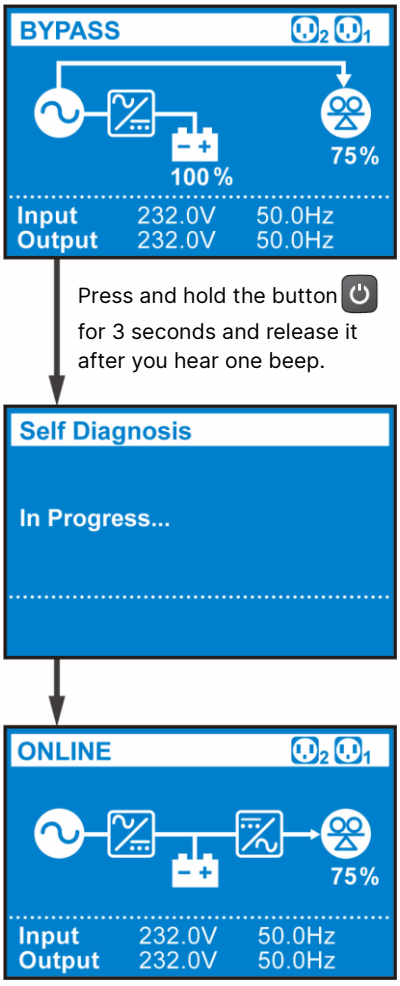
6.1.1 Start-up with AC Input

Step 1

Verify if the UPS's input cord meets with N, L & G of the wall socket and the utility AC power works normally.

Step 2

Press and hold the **ON/ OFF** button () for 3 seconds to start up the UPS. Release the button after you hear one beep and the UPS will start up. After the UPS performs self-diagnosis, the UPS will run in **ON-LINE** mode.



6.1.2 Start-up with Batteries

Step 1

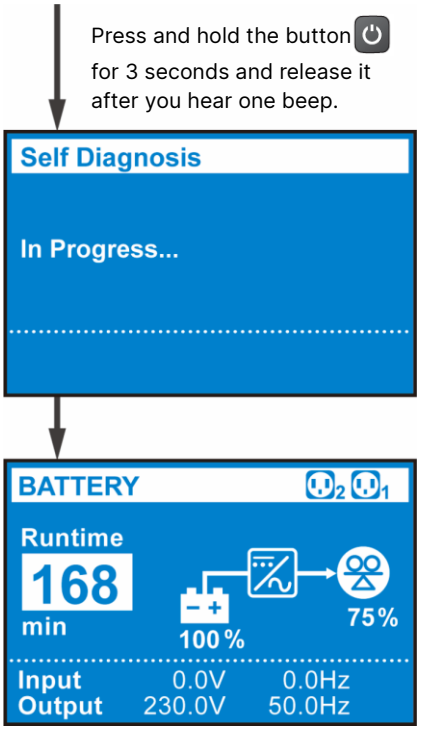
Please check the '+' and '-' poles of the batteries and ensure that wiring is correct.

Step2

Turn on the UPS's external battery pack's breaker.

Step 3

When there is no AC input, press and hold the **ON/ OFF** button ( ) for 3 seconds to start up the UPS. Release the button after you hear one beep and the UPS will start up. After the UPS performs self-diagnosis, the UPS will run in **BATTERY** mode.



NOTE:

To prevent the UPS from activating the overload protection mechanism during start-up process, please turn on the high-power loads first and then low-power loads.

6.2 Turn-off

Step 1

Make sure all of the loads connected to the UPS are off.

Step2

(1) Press and hold the **ON/ OFF** button ( ) for 3 seconds, (2) release it after you hear one beep, (3) use the Scrolling UP or Down button (/) to select '**Yes**', and (4) press the Enter button ( ) to confirm your selection.

Step 3

After the LCD backlight goes dim and the fans stop completely, switch off the battery breaker to ensure that there is no remaining battery power.

6.3 Operation Modes

- **Standby Mode**

After the UPS is connected to the utility AC power, it will supply power to the UPS and the batteries will be charged.

- **Online Mode**

In on-line mode, the connected loads are supplied by the inverter, which derives its power from the utility AC power, and the UPS charges the batteries and provides power protection to its connected loads.

- **Bypass Mode**

In bypass mode, the critical loads are directly supplied by the utility AC power and the batteries are charged. The default setting of the UPS is set in bypass mode.

- **Battery Mode**

When the UPS is operating during a power outage, the batteries provide DC power, which maintains inverter operation to supply power to the critical loads.
You can install the UPSentry 2012 software (please download from http://www.deltapowersolutions.com/en/mcis/software-center.php) or install the Mini SNMP IPv6 card (optional) or the Mini MODBUS card (optional) to monitor and estimate the battery remaining capacity. For more information about the Mini SNMP IPv6 card (optional) or the Mini MODBUS card (optional), please refer to its user manual.

- **ECO Mode**

In ECO mode, when the utility input voltage and frequency are within the range of rating voltage ±10% and rating frequency ±3Hz, the loads are supplied by the utility AC power; if out of the range, the loads are supplied by the inverter.

- **Frequency Conversion Mode**

In Frequency Conversion mode, the UPS output frequency is manually set up. The system will disable the bypass function and there is no bypass output.

Chapter 7: LCD Display & Settings

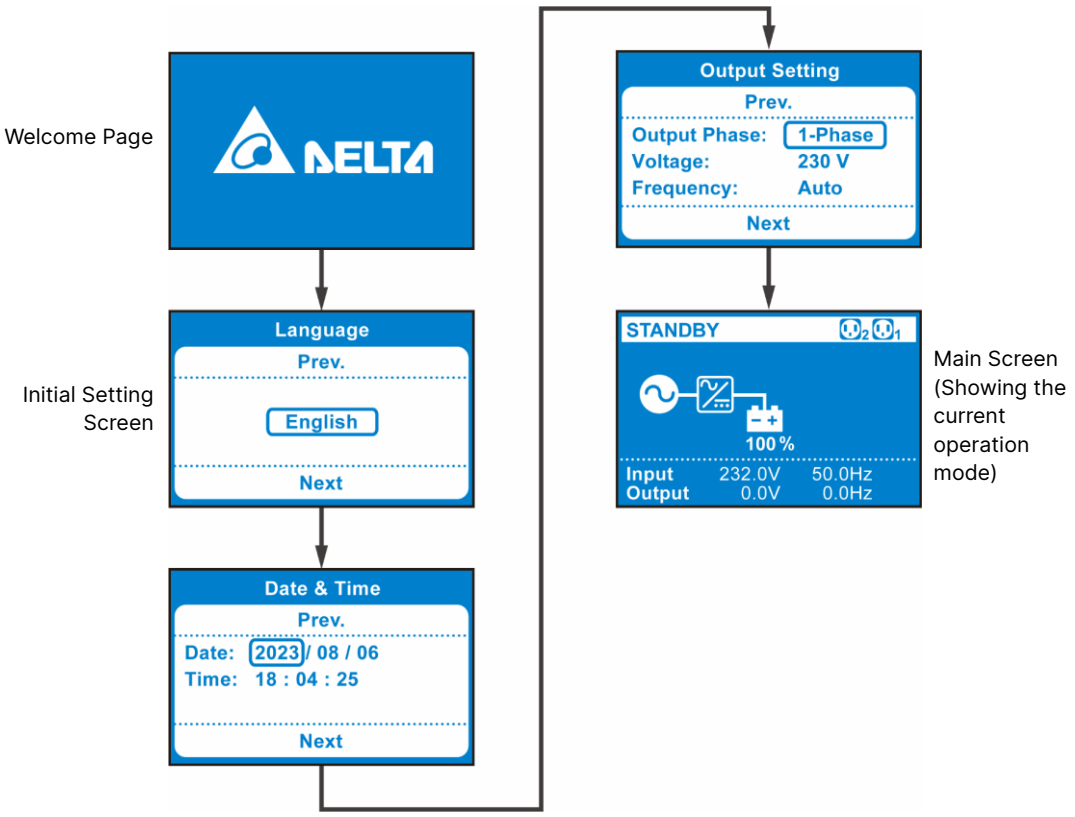
NOTE:

1. Please refer to ***Chapter 3: Operation Panel*** to learn how to operate the operation panel and understand the definition of individual icons/ diagrams.
2. Each of the display diagram shown in this chapter is for reference only. The actual display depends on the operation of the UPS.

7.1 Initial Setting Screen

When the UPS is powered on for the first time, the LCD display will show the **Initial Setting Screen** and you can modify language, output voltage, battery parameters based on actual needs during initial setup. The default settings of language, output voltage, and battery parameters may vary according to different models. Press the button to continue if there is no special requirement. After you configure the **Language**, **Date & Time**, and **Output Setting**, the LCD display will move to the **Main Screen** that shows the current operation mode.

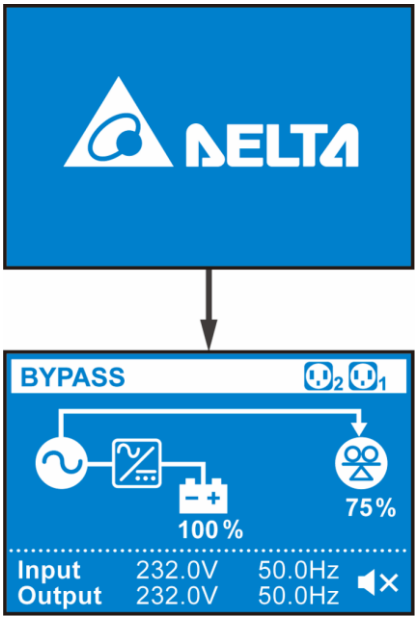
The following flow chart helps you to navigate the LCD screen.



The **Initial Setting Screen** will no longer appear after initial configuration. Next time, when the UPS is powered on, the LCD display will show **DELTA** welcome page for 3 seconds and then directly go to the **Main Screen** that shows the current operation mode.

Welcome Page

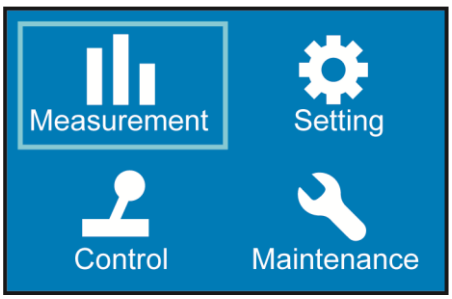
Main Screen



7.2 Main Menu

In the **Main Screen**, press the button for 0.1 second to enter the **Main Menu**. You can set up relevant items here.

Main Menu



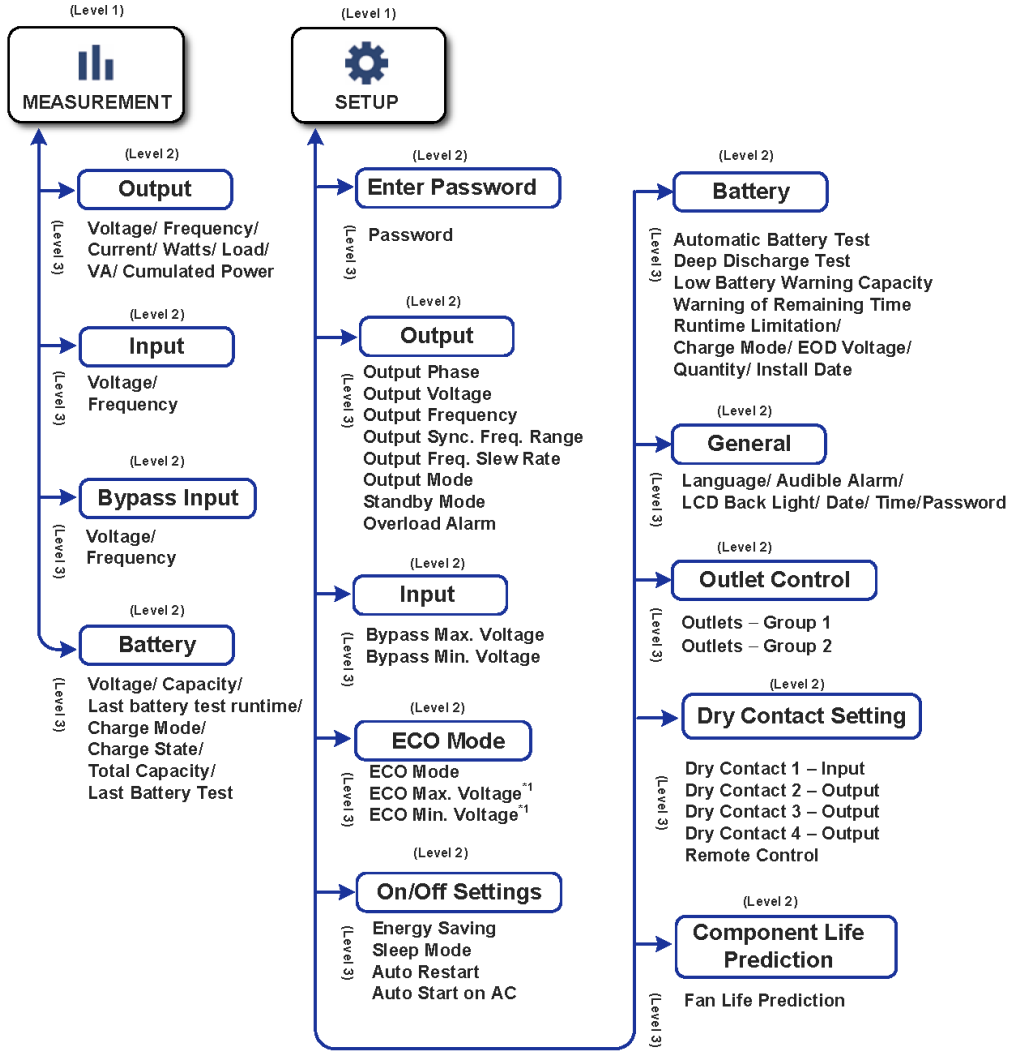
NOTE:

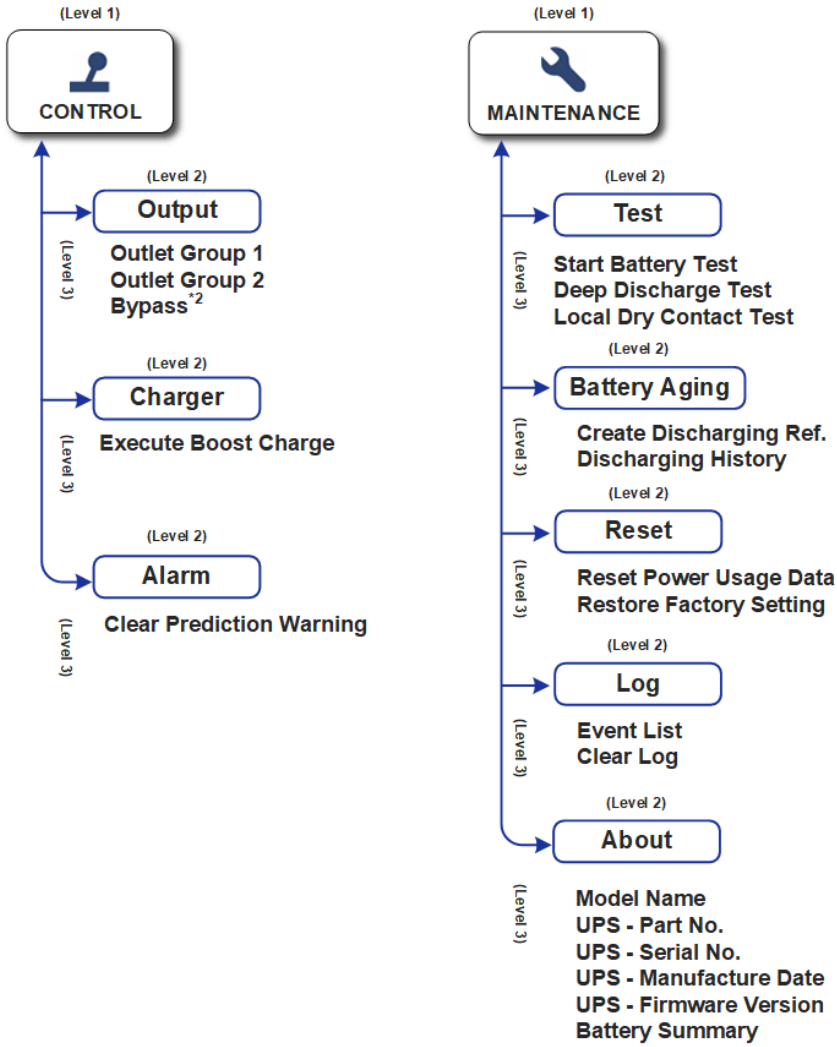
Please note that only qualified service personnel can perform setup actions.

For setup procedures, please refer to the following:

1. In the **Main Menu**, select the item you want to configure. Then, press the Enter button () for 0.1 second and the UPS will enter the setup mode.
2. Press the Scrolling UP or Down button (/) for 0.1 second to navigate the setting items.
3. Press the Enter button () for 0.1 second to choose the parameter that you want to change, and the parameter will flash.
4. Press the Scrolling UP or Down button (/) for 0.1 second to increase or decrease the parameter value. If either of the buttons is pressed for over 2 seconds, the LCD will automatically switch between the selectable values every 0.2 second until either of the buttons is released or the number reaches its highest or lowest value.
5. Press the Enter button () to confirm your parameter setting or press the ESC button () to go back to the previous status..
6. Press the Scrolling UP or Down button (/) for 0.1 second to move to the previous or the next setting item.
7. In setup mode, press the ESC button () and the LCD will exit from the setup mode.
8. In setup mode, if you do not press any button for more than 5 minutes, the LCD will exit from the setup mode and go back to the original display automatically.

Please refer to *Figure 7-1: Menu Tree* below for all the setup items.



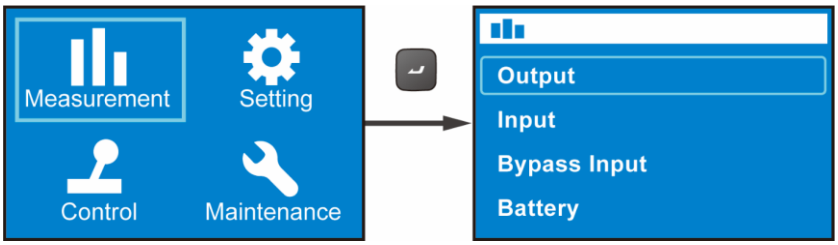


*1 The item will show up only when you set the UPS to run in ECO Mode
*2 The item will show up only when you select Output →Standby Mode→No output

Figure 7-1: Menu Tree

7.2.1 Measurement Menu

In the **Main Menu**, after selecting **Measurement** (Measurement), press the Enter button ( ) to enter the **Measurement Menu**. The **Measurement Menu** displays the UPS status readings, such as **Output**, **Input**, **Bypass** and **Battery** information.

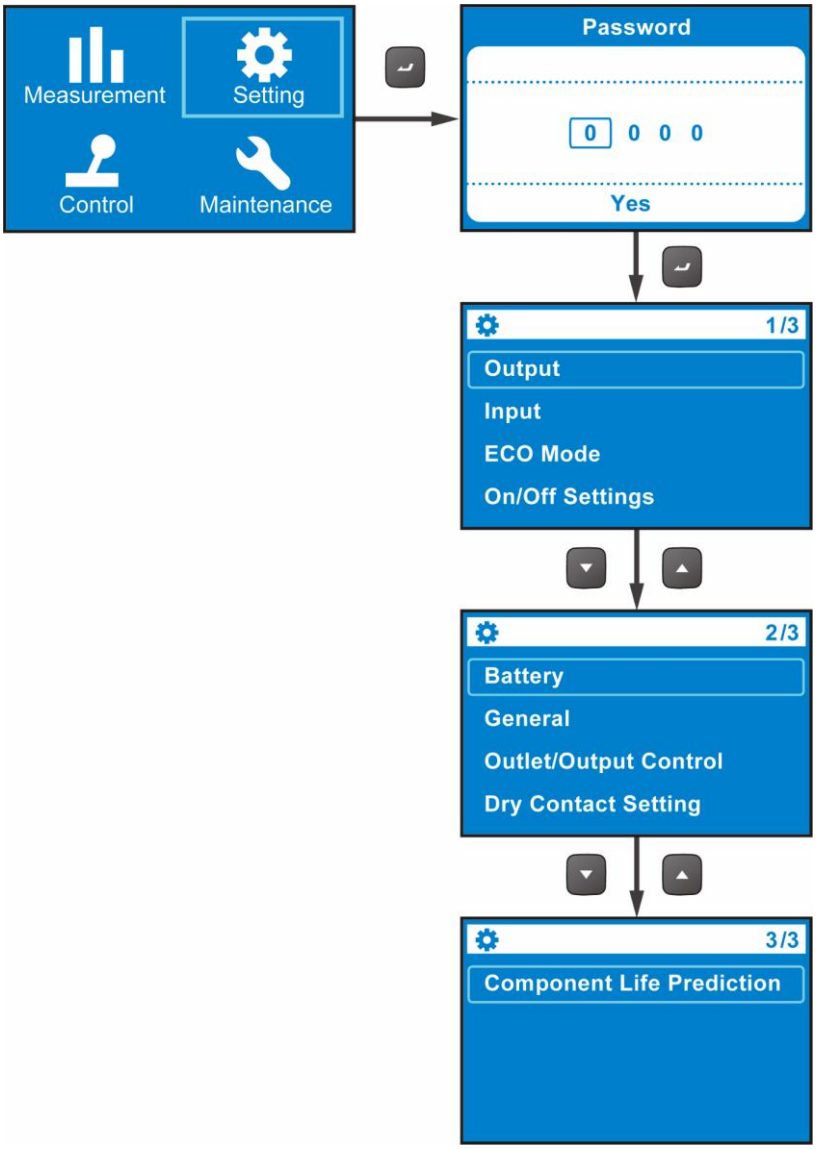


7.2.2 Setting Menu

In the **Main Menu**, after selecting **Setting** (Setting), press the Enter button ( ) to access the password entry screen. After entering the password[*1], press the Enter button ( ) to proceed to the **Setting Menu**, and press the Scrolling UP or Down button (/) to move to the previous or the next setup item.

NOTE:

1. [*1]: For the password (4 digits), please contact service personnel.
2. To change the password, please go to **Setting** (Setting) → **General** → **Password** (4 digits).



The setup items include **Output**, **Input**, **ECO Mode**, **On/ Off Settings**, **Battery**, **General**, **Outlet Control**, **Dry Contact Setting and Component Life Prediction.** For more information about the **Setting Menu**, please refer to the tables below for each setup item's default and selectable values/ options.

- Output

Setup Item	Selectable Values/ Options	Default
Output Phase	1-Phase	1-Phase
Output Voltage	200V, 208V, 220V, 230V, 240V	230V
Output Frequency	Auto[*1] / Converter-50 Hz[*2] / Converter-60 Hz[*2]	Auto
Output Sync. Freq. Range	± 0.5/ 1/ 3/ 5 Hz	± 3Hz
Output Freq. Slew Rate	0.5/ 1/ 2/ 3/ 4 Hz/Sec.	1 Hz/sec.
Output Mode	Industrial/ IT	IT
Standby Mode	No Output/ Bypass Mode	Bypass Mode
Overload Alarm	30-105% (5% per step)	105%



NOTE:

3. [*1]: When **Output Frequency** is set as '**Auto**', the output frequency will vary according to the bypass frequency.

   If the bypass frequency is ≥ 55 Hz, **Free_ Run_ Frequency** will be set as 60 Hz.

   If the bypass frequency is < 55 Hz, **Free_ Run_ Frequency** will be set as 50 Hz.

   When **Output Frequency** is set as '**Auto**' and **Bypass Output** (item under the **Standby Mode**) is set as '**Enable**', the bypass output range will be the same as **Output Sync. Freq. Range.**

4. [*2]: When the Output Frequency is set as Converter-50Hz/ Converter-60Hz, the UPS will enter the Frequency Conversion mode and the bypass output will become Disable.

- Input

Setup Item	Selectable Values/ Options	Default
Bypass Max. Voltage	+10/ 15/ 20%	+15%
Bypass Min. Voltage	-40/ 35/ 30/ 25/ 20/ 15/ 10%	-20%

- ECO Mode

Setup Item	Selectable Values/ Options	Default
ECO Mode	Disable/ Enable	Disable
ECO Max. Voltage	+(5-15)% (per step: 1%)	+10%
ECO Min. Voltage	-(5-15)% (per step: 1%)	-10%



NOTE:
The setup items **ECO Max. Voltage** and **ECO Min. Voltage** will only be shown on the display when ECO Mode is enabled.

- On/ Off Settings

Setup Item	Selectable Values/ Options	Default
Energy Saving[*1]	Option 1: Enable/ Disable Option 2: 1-15mins (1 min per step) Option 3: 100W-270W (100W per step)	Disable
Sleep Mode[*2]	Option 1: Enable/ Disable Option 2: 10-120mins (10mins per step)	Disable
Auto Restart[*3]	Enable/ Disable	Enable
Auto Start on AC[*4]	Enable/ Disable	Disable

NOTE:

1. In **Setting Menu**, the sub item **Option 1** under the item **Energy Saving** cannot be changed.
2. *1 The main purpose of this setting is to prevent the UPS from being discharged under light load for a long time and extend the battery lifetime.
3. *2 When the UPS is off, set a specific duration to let the UPS run in sleep mode.
4. *3 When the UPS is shut down due to end of discharge and the main AC power is restored next time, the UPS will automatically power on and run in online mode.
5. *4 When the main AC power is feeding and meets the UPS operation requirements, the UPS will automatically power on and run in on line mode.

- **Battery**

Setup Item	Selectable Values/ Options	Default
Automatic Battery Test	No test/ Daily/ Weekly/ Bi-weekly/ Monthly	Monthly
Deep Discharge Test	20-90% (per step: 10%)	70%
Low Battery Warning Capacity	0-95% (per step: 5%)	10%
Warning of Remaining Time	0-60mins (per step: 1 min)	2mins
Runtime Limitation	Disable/ 1/ 2/ 3 .../ 240mins (per step: 1 min)	Disable
Charge Mode	2-stage/ 3-stage	2-stage
EOD Voltage	9.5V-11V	10V
Quantity	0-16	0
Install Date	YYYY/ MM/ DD	

- General

Setup Item	Selectable Values/ Options	Default
Language	English/ Français/ Deutsch/	English
Audible Alarm	Enable/ Disable	Enable
LCD Back Light	Always On/ Auto Off	Auto off
Date	YYYY/ MM/ DD	
Time	HH:MM:SS	
Password	Set up the password (4 digits)	

- Outlet Control

Setup Item	Selectable Options	Default
Outlets-Group1	Output Reboot Duration: Enable/ Disable Load Bank Runtime Limitation: Disable/ 1-240mins	Disable
Outlets-Group2	Option 1: Enable/ Disable Option2: Disable/ 1-240mins	Disable

- Dry Contact Setting

Setup Item	Selectable Values/ Options	Default
Dry Contact 1 - Input	Option 1[*1]: Disable/ ROO/ RPO/ Remote shutdown/ Forced bypass/ On generator Option 2: 0-999s (per step: 1 sec) Option 3: Normal open/Normal close	Disable
Dry Contact 2 - Output	Disable/ On bat/ Low bat/ Bat fault/ Bypass/ UPS OK/ Load protected/ Load powered/ General alarm/ Overload alarm	On batt.
Dry Contact 3 - Output	Disable/ On bat/ Low bat/ Bat fault/ Bypass/ UPS OK/ Load protected/ Load powered/ General alarm/ Overload alarm	Low batt.
Dry Contact 4 - Output	Disable/ On bat/ Low bat/ Bat fault/ Bypass/ UPS OK/ Load protected/ Load powered/ General alarm/ Overload alarm	General alarm

Setup Item	Selectable Values/ Options		Default
Remote Control	Option 1: REPO/ ROO		REPO/ NO
	Option 2: Normally open/ Normally closed (For REPO)	Option 2: delay time 0-999sec (step: 1 sec) (For ROO)	

NOTE:

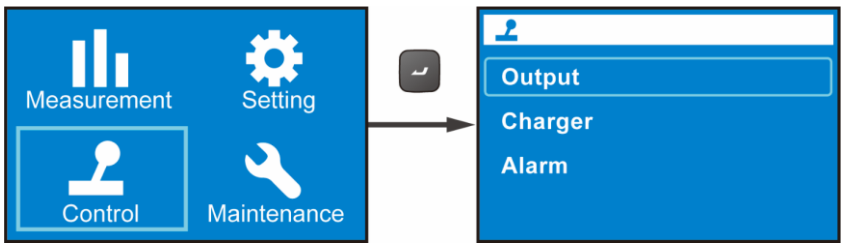
*1: For detailed information about option 1, please contact service personnel.

- **Component Life Prediction**

Setup Item	Selectable Values/ Options	Default
Fan Life Prediction	No/ Yes	No

7.2.3 Control Menu

In the **Main Menu**, after selecting ( ), press the Enter button ( ) to enter the **Control Menu**.



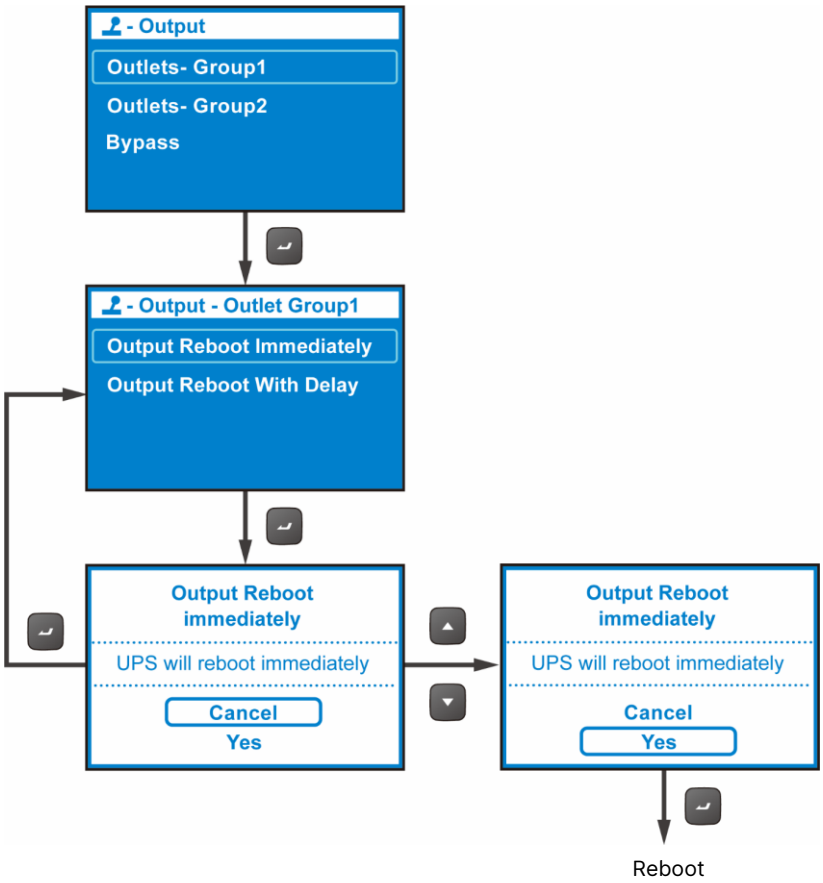
The **Control Menu** provides commands that enable the UPS control functions. Please refer to the table below for the setup items and relevant options.

Level 1	Level 2	Level 3	Level 4	Level 5
Control	Output	Outlet Group 1	Output Reboot Immediately	Yes/ No
			Output Reboot With Delay	Yes/ No
		Outlet Group 2	Output Reboot Immediately	Yes/ No
			Output Reboot With Delay	Yes/ No
	Charger	Execute Boost Charge	UPS will charge batteries in boost mode immediately	Yes/ No
	Alarm	Clear Prediction Warning	Yes/ No	

NOTE:

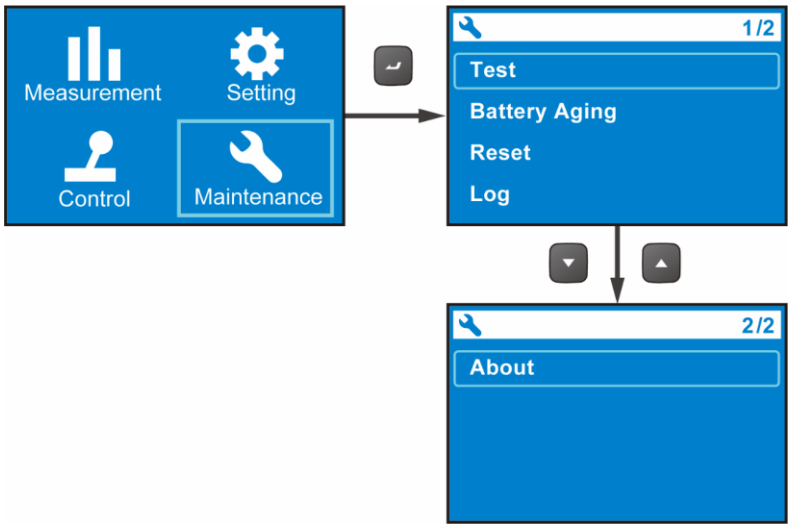
1. *1: The item **Bypass** will be hidden if you set the **Standby Mode** as Bypass Output. To set up **Bypass Output**, please go to Setting → **Output** → **Standby Mode** → **Bypass Output**.
2. *2: The item **Delay Alarm Again** under **Control** → **Alarm** → **Clear Prediction Warning** can be set from 1 week to 52 weeks.

For example, if you need the UPS to reboot the output immediately, please go to Control → **Output** → **Outlet Group 1** → **Output Reboot Immediately** → **Yes**.



7.2.4 Maintenance Menu

In **Main Menu**, after selecting **Maintenance** (Measurement), press the Enter button ( ) to enter the **Maintenance Menu**, and press the Scrolling UP or Down button (/) to move to the previous or the next setup item.

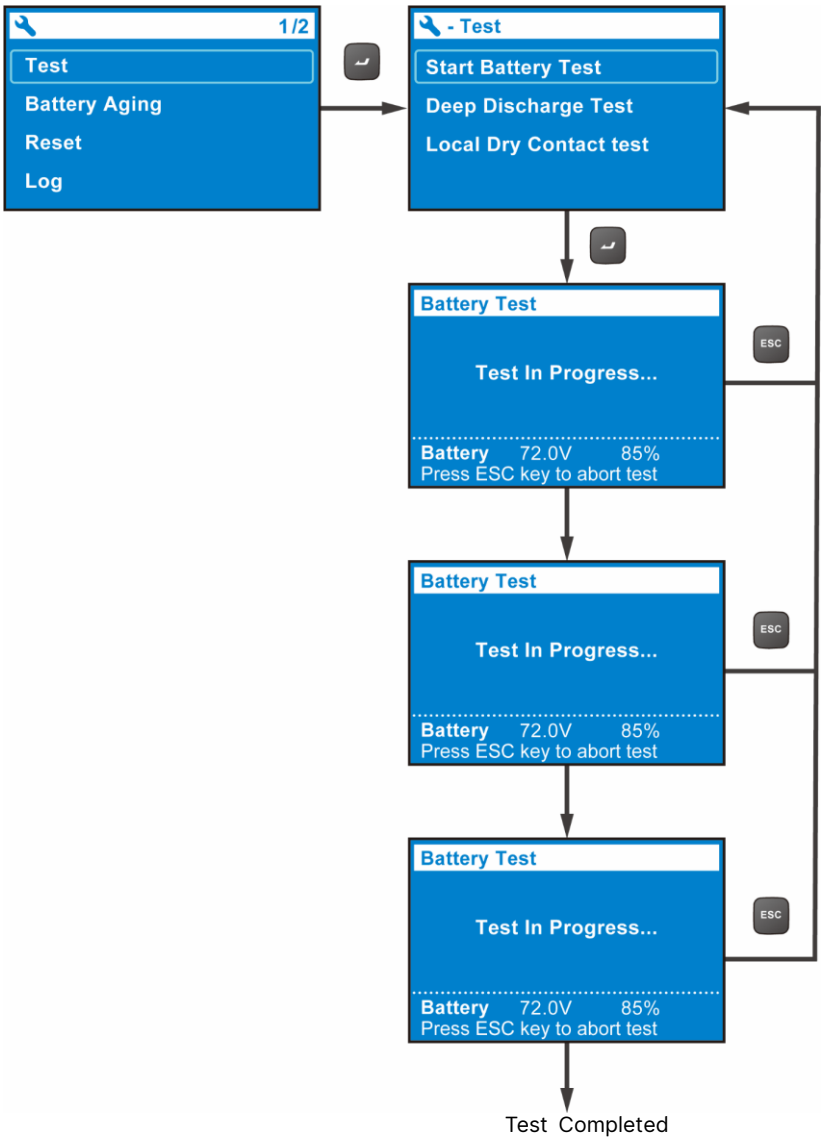


The **Maintenance Menu** provides commands that enable the UPS maintenance functions. It also provides event logs and UPS identification information. Please refer to the table below for the setup items and relevant options.

Level 1	Level 2	Level 3	Level 4	Level 5
Maintenance	**Test**	Local Dry Contact Test	Dry Contact 2 Dry Contact 3 Dry Contact 4	Test Result: Pass
				Test Result: Fail
				Test Result: Not Finished
		Start Battery Test	In Progress...	Test Result: Pass
				Test Result: Fail
				Test Result: Not Finished
		Deep Discharge Test	In Progress...	Test Result: Pass
				Test Result: Fail
				Test Result: Not Finished

Level 1	Level 2	Level 3	Level 4	Level 5
Maintenance	Battery Aging	Create Discharging Ref.	Yes/ Cancel	
		Discharging History	Item, Watts, T-total	Date/ Time, Average Watts, Actual Discharging Time, Est. Remaining Time, Total Discharging Time
	Reset	Reset Power Usage Calculator	Yes/ Cancel	
		Restore Factory Setting	Yes/ Cancel	
	Log	Event List	Date/ Time, Event Code, Alarm Message	
		Clear Log	Yes/ Cancel	
	About	Model Name: RT PRO-1K		
		UPS - Part No. UPS102R2RT1B035		
		UPS - Serial No. AKT23C00001WB		
		UPS - Manufacture Date YYYY-MM		
		UPS - Firmware Version 0F0013AR00.00.00		
		Battery Summary: Installed YYYY/MM/DD Replace YYYY/MM/DD		

For example, if you need to execute a battery test, please go to Measurement → **Test** → **Start Battery Test** → **In Progress...** → **Test Result: Pass (or Fail).**



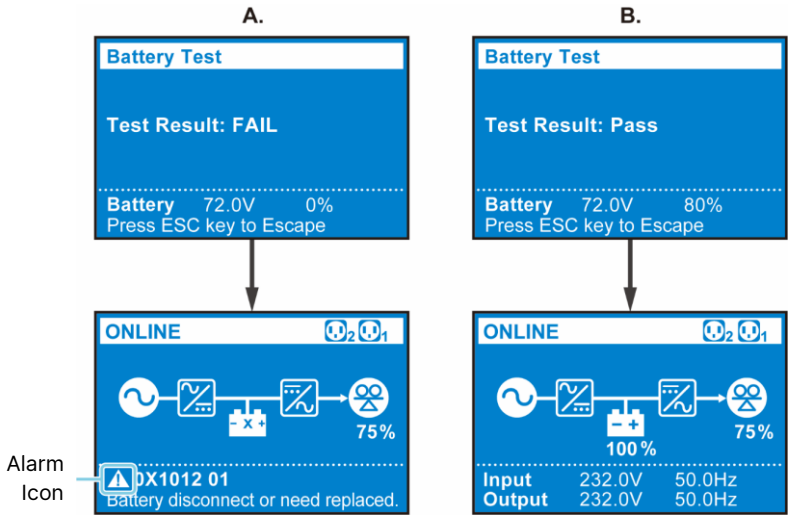
Once the test is completed, the test result will be shown as follows.

A. **Test Result: Fail**

The alarm icon will show at the left bottom of the LCD display.

B. **Tests Result: Pass**

No alarm icon occurs, and the UPS runs normally.


A.
B.
Battery Test
Test Result: FAIL
Battery 72.0V 0%
Press ESC key to Escape
Battery Test
Test Result: Pass
Battery 72.0V 80%
Press ESC key to Escape
ONLINE
75%
0X1012 01
Battery disconnect or need replaced.
ONLINE
75%
100 %
Input 232.0V 50.0Hz
Output 232.0V 50.0Hz
Alarm Icon

Chapter 8: Optional Accessories

There are several optional accessories available for this RT series UPS. Please refer to the table below for the optional accessories and their functions.

No.	Item	Function
1	Dust Filter	Prevents dust from entering into the UPS to ensure UPS reliability and to prolong product life.
2	Mini SNMP IPv6 Card	Monitors and controls the status of the UPS via a network system.
3	Mini Relay I/O Card	Increases the quantity of dry contacts.
4	Mini MODBUS Card	Lets the UPS have MODBUS communication function.
5	Delta External Battery Pack	Provides external batteries to let the UPS continue supplying power to its connected loads when a power outage occurs.
6	Maintenance Bypass Box	Lets the UPS continue supplying power to its connected loads when the UPS is under maintenance.
7	Power Supply Cord for 1kVA UPS (Length: 3 m (118.1"), NEMA 6-15P to C13, SJT 3*14AWG)	Connects to the mains. Applicable for North America market.
8	Power Supply Cord for 2/ 3kVA UPS (Length: 3 m (118.1"), NEMA L6-20P to C19, SJT 3*12AWG)	Connects to the mains. Applicable for North America market.

NOTE:

1. For installation and operation details, please refer to the ***Quick Guide*** or ***User Manual*** included in the package of the optional accessory. To purchase any accessory mentioned above, please contact your local dealer or customer service.
2. If you want to buy any accessory mentioned above, please contact your local dealer or customer service.

Chapter 9: Troubleshooting

1. When a problem occurs, please check if the following situation exists before contacting Delta service personnel.

- Whether the main input voltage is present.

2. Please have the following information ready before contacting the Delta service personnel:

- Unit information including model, serial number, etc.
- An exact description of the problem, the more detailed, the better.

3. When you see the following problems occur, please refer to the solutions shown below.

Event Code	Alarm Message	Possible Cause	Solution
0X61C1	Input Fuse Open	The input fuse is melted or the input relay is open.	Please contact service personnel.
0X60C0	PFC Soft Start Fail	The UPS has an internal fault.	Please contact service personnel.
0X6221 0X6241	DC Bus Over Shutdown	1. The output has capacitive or inductive loads. 2. The UPS has an internal fault.	1. Remove the capacitive or inductive loads. 2. Please contact service personnel.
0X62A0 0X62C0	DC Bus Under Shutdown	The UPS has an internal fault.	Please contact service personnel.
0x1200	INV Volt Abnormal	The UPS has an internal fault.	Please contact service personnel.
0X1101	Output Overload Shutdown	The UPS is overloaded.	Check the power consumption of the loads, and remove the unnecessary loads.

Event Code	Alarm Message	Possible Cause	Solution
0XA000	Charger Fault	The UPS has an internal fault.	Please contact service personnel.
0X8106	INV IGBT Over Heat Shutdown	1. The vents are blocked. 2. The UPS has an internal fault.	1. Check whether the vents are blocked. 2 Contact service personnel.
0X6100	PFC Over Heat Shutdown	1. The vents are blocked. 2. The UPS has an internal fault.	1. Check whether the vents are blocked. 2. Contact service personnel.
0X1003	Battery Disconnected	1. The UPS is not properly connected to the external battery pack(s). 2. The battery/ batteries is (are) damaged.	1. Check whether the UPS is properly connected to the external battery pack(s). 2. Contact service personnel.



NOTE:

If all possible causes are eliminated but the alarm still appears, please contact your local dealer or customer service.

Chapter 10: Maintenance

10.1 UPS

- UPS Cleaning

Regularly clean the UPS, especially the slits, openings and filters, to ensure that the air freely flows into the UPS to avoid overheating. If necessary, use an air-gun to clean the slits and openings, and clean and replace the filters regularly to prevent any object from blocking or covering these areas.

- UPS Regular Inspection

  Regularly check the UPS every half year and inspect:

  1. Whether the UPS, LEDs, and alarm function are operating normally.
  2. Whether the battery voltage is normal. If the battery voltage is too high or too low, find the root cause.

10.2 Batteries

The RT 1-3kVA series UPS uses sealed lead-acid batteries. Though the typical battery life cycle is 3~5 years, the battery life depends on the temperature, the usage, and the charging/ discharging frequency. High temperature environments and high charging/ discharging frequency will quickly shorten the battery life. The UPS does not require maintenance by the user; however, the batteries should be checked periodically. Please follow the suggestions below to ensure a normal battery lifetime.

- Keep the usage temperature at 20°C ~ 25°C (68°F ~ 77°F).
- If the batteries are stored for an extended period of time, please connect the external battery pack(s) to the UPS to recharge the batteries every three months and ensure that every time after charging, the battery percentage shown on the UPS's LCD is 100% (

).



NOTE:

If the batteries need to be replaced, please contact qualified service personnel. During battery replacement, the loads attached to the UPS will not be protected if input power fails.

10.3 Fan

Higher temperatures shorten fan life. When the UPS is running, please check if each fan works normally and make sure if the ventilation air can move freely around and through the UPS. If not, replace the fans immediately.



NOTE:

Please ask your local dealer or customer service for more maintenance information. Do not perform maintenance if you are not trained for it.

Appendix 1: Technical Specifications

Model		RT PRO-1K	RT PRO-2K	RT PRO-3K
Power Rating	kVA	1kVA	2kVA	3kVA
	kW	1kW	2kW	3kW
Input	Nominal Voltage	200[*1]/ 208[*1]/ 220/ 230/ 240Vac		
	Voltage Range	220/230/240 Vac: 175 ~ 280 Vac (100% load); 120 ~ 175 Vac (70% ~ 100% load) 200/208 Vac: 160 ~280 Vac (100% load); 120 ~ 160 Vac (70% ~ 100% load)		
	Frequency Range	40~70Hz		
	Total Harmonic Distortion (THDi)	<5%		
	Power Factor (100% load)	0.99		
	Connection (or Plug Type)	IEC C14×1	IEC C20×1	
Output	Nominal Voltage	200/ 208/ 220/ 230/ 240Vac		
	Voltage Regulation	±2% (AC mode, Linear load)		
	Frequency	50/60 Hz ± 0.05 Hz		
	Total Harmonic Distortion (THDv)	≦2% Linear Load, AC mode		
	Power Factor	1		
	Connection	IEC C13×2×3	IEC C19×1, IEC C13×2×3	

Model		RT PRO-1K	RT PRO-2K	RT PRO-3K
Output	Overload Capability	~105%±3%: Continuous 105% ~ 125%: 1 minute±5 seconds (Linear Load Only) 125% ~ 150%: 15 seconds±3 seconds (Linear Load Only) ≧150%±5%: ≧0.1 second (Linear Load Only)		
	Short-circuit Current (RMS)	15A	30A	45A
	Current Crest Ratio	3:1		
Efficiency*3	Online Mode	Up to 93.5%	Up to 94%	Up to 94.3%
	Eco Mode	99%	99%	99%
Battery	Battery Type	12V/9 Ah Sealed lead-acid battery		
	Battery Nominal Voltage	24Vdc	48Vdc	72Vdc
	Charge Current	2.2A	2.2A	2.2A
Communication Interfaces	Display	LED indicators and LCD display		
	Ports	MINI Slot × 1, RS-232 Port × 1, USB Port × 1, REPO/ROO × 1, Dry Contact × 4		

Model		RT PRO-1K	RT PRO-2K	RT PRO-3K
Physical	Dimensions (W x D x H)	440 x 335 x 88 mm (17.3 x 13.2 x 3.5 inch)	440 x 430 x 88 mm (17.3 x 16.9 x 3.5 inch)	440 x 565 x 88 mm (17.3 x 22.2 x 3.5 inch)
	Net Weight (kg)	11.7 kg 25.8 lb	19.6 kg 43.2 lb	28 kg 61.7 lb
	Packing Dimensions (W x D x H)	484 x 579 x 220 mm (19.1 x 22.8 x 8.7 inch)	594 x 508 x 220 mm (23.4 x 20.0 x 8.7 inch)	605 x 1005 x 220 mm (23.8 x 39.6 x 8.7 inch)
	Packing Dimensions (W x D x H)	17.5 kg 38.6 lb	26.2 kg 57.8 lb	38.5 kg 84.9 lb
Environment	Operating Temperature	0°C ~ 55°C[*2] (32°F ~ 131°F)		
	Humidity	5% ~ 95% (non-condensing)		
	Audible Noise	48 dBA (75% load, AC mode, 40°C) 40 dBA (ECO mode at front side 1 meter)		
	Altitude	0 ~ 3000 m (0 ~ 10000 ft); 0 ~ 1000 m (0 ~ 3300 ft) (without derating)		
	Storage Temperature	-20°C ~ 55°C (-4°F ~ 131°F)		
	Storage Humidity	5% ~ 95% (non-condensing)		
	Ingress Protection Level	IP20		

Model		RT PRO-1K	RT PRO-2K	RT PRO-3K
Conformance	IEC Pollution Degree (PD)	PD 2		
	Over Voltage Category (OVC)	OVC II		
	Type of System Earthing	TN-S, TN-C, TN-C-S		
	Safety	CE, UL, cUL, RCM, UKCA		
	EMC	IEC 62040-2		
	Sustainability	RoHS, REACH, Energy Star 2.0		

NOTE:

1. *1 When the UPS is de-rated to 90% of its capacity.
2. *2 When the operating temperature is at 40°C ~ 50°C (104°F ~ 122°F), the UPS will be de-rated to 90% of its capacity, When the operating temperature is at 50°C ~ 55°C (122°F ~ 131°F), the UPS will be de-rated to 75% of its capacity.
3. *3 The reported UPS efficiency values are based on tests conducted under specific conditions. Actual efficiency may vary depending on load characteristics, input voltage, frequency, and environmental conditions.
4. Please refer to the rating label for the safety certification.
5. All specifications are subject to change without prior notice.

Appendix 2: 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.

No.: 501331410102
Version : 1.2
Release Date : 2026_06_09

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