

The power behind competitiveness

Delta UPS - Amplon Family

RT Series, Three Phase
11/ 15/ 17/ 20 kVA
Lithium-ion Battery Pack

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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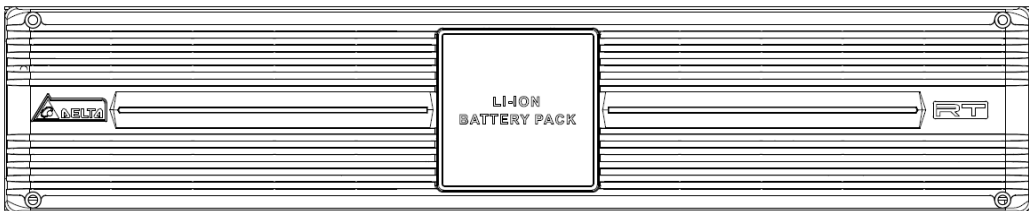
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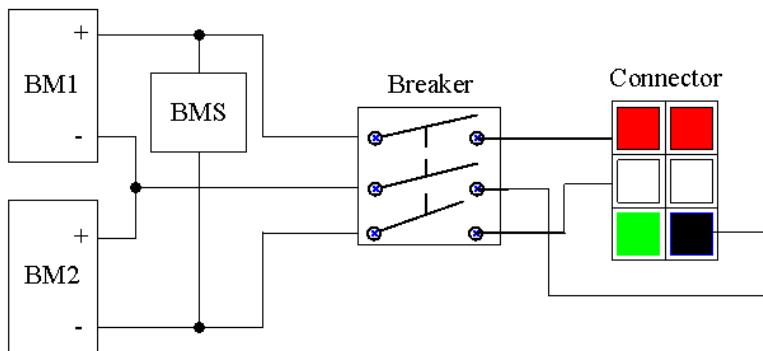
Chapter 1 : Product Introduction

The Delta Lithium-ion Battery Pack RT-20K-LIB is the external battery pack providing DC power, which maintains inverter operation to supply stable power to the critical loads connected to the UPS. Please note that the Delta Lithium-ion Battery Pack RT-20K-LIB must operate in conjunction with different Delta Amplon RT series UPS model. Please refer to the following table. You can also see **Figure 1-1** and **Figure 1-2** to check the appearance and block diagram of RT-20K-LIB.

The Delta Lithium-ion Battery Pack Model	Applicable to Delta Amplon RT Series UPS Model
RT-20K-LIB	RT-11K3P-LV, RT-15K3P, RT-17K3P, RT-20K3P



(Figure 1-1: the Front View of the RT-20K-LIB)



(Figure 1-2: Block Diagram of the RT-20K-LIB)

Chapter 2 : Important Safety Instructions

2.1 Safety Instructions

- 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.
- A battery can present a risk of electric shock and high short-circuit current.
- To reduce the risk of fire or electric shock, install the battery pack in a temperature and humidity controlled indoor area free of conductive contaminants.
- Forbid opening or removing the cover of the battery pack to avoid high voltage electric shock.
- The risk of dangerous high voltage is possible when the batteries are still connected to the UPS even though the UPS is disconnected from the mains.
- Do not forget to disconnect the battery cable to completely cut off the battery source.
- Turn off the UPS and cut off the AC source before performing battery/ battery pack replacement.
- Only use the same type of batteries from the same supplier. Never use old, new and different Ah batteries at the same time.
- Do not reverse or short circuit the polarity + and – when connecting the batteries because this will destroy the device and constitute a risk of electric shock or fire.
- The external slits and openings in the battery pack are provided for ventilation.
- To ensure reliable operation of the battery pack and to protect the battery pack from overheating, these slits and openings must not be blocked or covered. Do not insert any object into the slits and openings that may hinder ventilation.
- Do not allow liquid or any foreign object to enter the battery pack.

- Do not place beverages or any other liquid-containing vessels on or near the battery pack.
- Do not dispose of the battery or batteries in a fire. The batteries may explode.
- Do not open or mutilate the battery or batteries. The released electrolyte is harmful to the skin and eyes and may be toxic.
- Observe the following before replacing 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 the top of batteries.
 5. Disconnect charging source prior to connecting or disconnecting batteries' terminals.



The two figures above indicate there is high voltage circuit inside, and do not open the cover of lithium-ion battery pack.

2.2 Standard Compliance

- CE
- CAN/ UL1973
- UN38.3
- PSE
- CB
- RCM
- Gost-R
- IEC/EN 62619

2.3 Storage

- Prior to installation

If the Lithium-ion battery pack needs to be stored prior to installation, it should be placed in a dry area. The allowable storage temperature and relative humidity (non-condensing) are $-15^{\circ}\text{C} \sim +50^{\circ}\text{C}$ ($5^{\circ}\text{F} \sim 122^{\circ}\text{F}$) and 5 ~ 95% respectively.

- After usage

Remove all equipment from the Lithium-ion battery pack, and store the Lithium-ion battery pack in a dry and well-ventilated area at a temperature between -15°C and $+50^{\circ}\text{C}$ ($5^{\circ}\text{F} \sim 122^{\circ}\text{F}$) and at a relative humidity (non-condensing) between 5 ~ 95%.

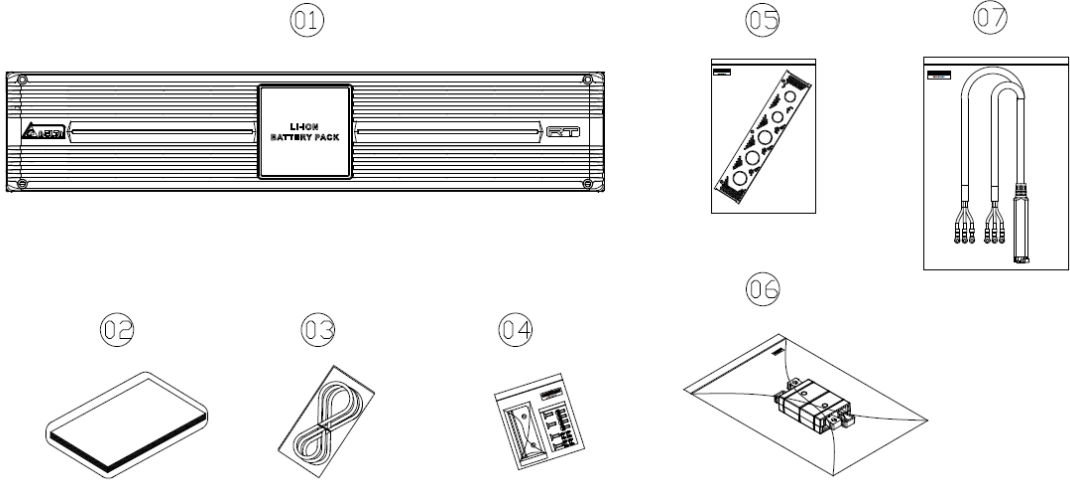
2.4 Recycling and disposal

- Please follow the law of local government to handle Lithium-ion battery pack.

Chapter 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.

Models: RT-20K-LIB



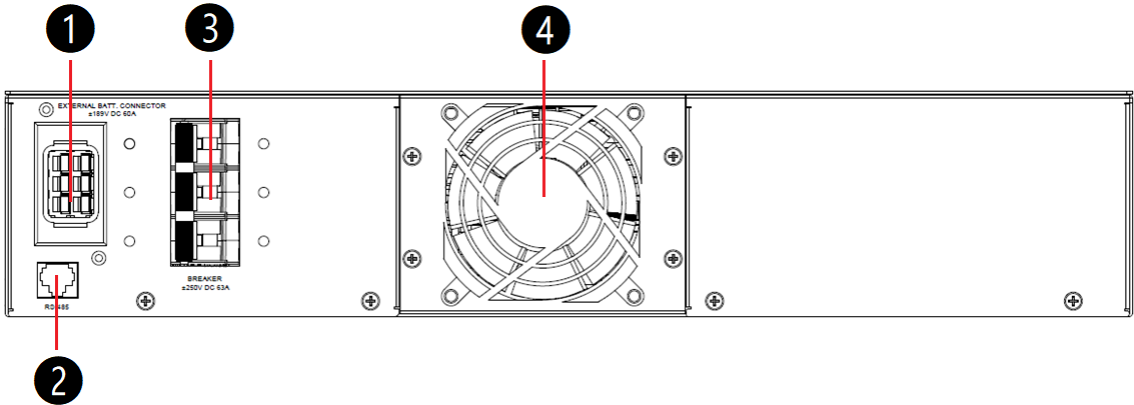
No.	Item	Q'ty
1	Lithium-ion Battery Pack	1 pc
2	User Manual	1 pc
3	RS-485 Cable	1 pc
4	Ear Bracket Kit	1 set
5	Rear Panel for UPS	1 set
6	Tower Stand Extenders	4 pcs
7	Battery Cable	1 pc



NOTE:

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

Chapter 4 : The Rear Panel



(Figure 4-1: the Rear View of the RT-20K-LIB)

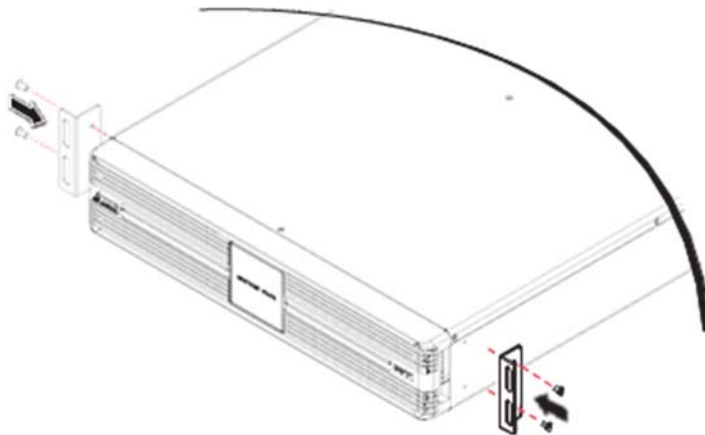
No	Item	Function												
1	External Batt. Connector	<p>Connects with the UPS to supply power. Please note that pin assignment of the battery connector is shown as below.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>Battery Positive (Red)</td> <td></td> <td></td> <td>Battery Positive (Red)</td> </tr> <tr> <td>Battery Negative (White)</td> <td></td> <td></td> <td>Battery Negative (White)</td> </tr> <tr> <td>Ground (Green)</td> <td></td> <td></td> <td>Neutral line(Black)</td> </tr> </table>	Battery Positive (Red)			Battery Positive (Red)	Battery Negative (White)			Battery Negative (White)	Ground (Green)			Neutral line(Black)
Battery Positive (Red)			Battery Positive (Red)											
Battery Negative (White)			Battery Negative (White)											
Ground (Green)			Neutral line(Black)											
2	RS-485 Port	The lithium-ion battery pack communicates with the UPS via the RS-485 port.												
3	Breaker	Serves as a switch for safety protection.												
4	Fan	Ventilates the air to avoid overheat.												

Chapter 5 : Installation Procedure

5.1 Rack Mounting

You can rack-mount the UPS and the Delta lithium-ion battery pack RT-20K-LIB in a standard 19-inch server rack. The UPS and the Delta lithium-ion battery pack RT-20K-LIB should adopt the same mounting kits and mounting procedures. The instruction below only shows the rack mounting of the Delta lithium-ion battery pack RT-20K-LIB, if you want to check the rack mounting of the UPS, please refer to the Delta Amplon RT Series UPS *User Manual*.

1. Attach the bracket ears provided in the package to the lateral mounting holes of the Delta lithium-ion battery pack RT-20K-LIB. See *Figure 5-1*.



(Figure 5-1: Mount the Bracket Ears)

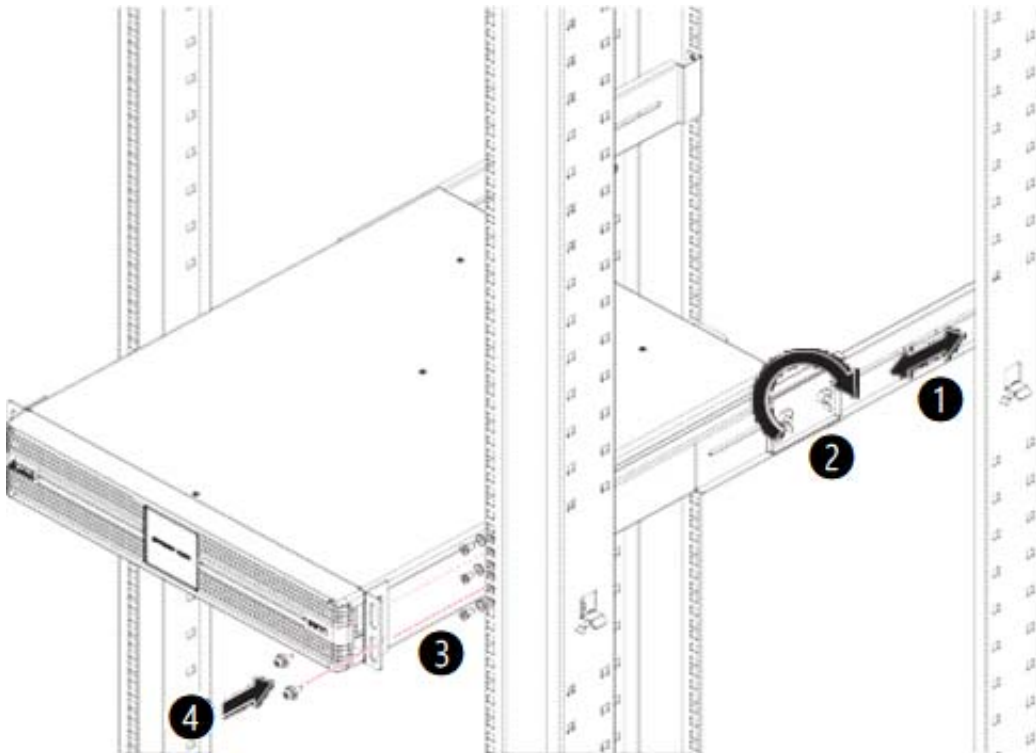
2. Follow step ① to ④ to install the Delta lithium-ion battery pack RT-20K-LIB in Delta's rail kit (optional). See *Figure 5-2*.

Step ① : Adjust the length of the rails according to your rack.

Step ② : Tighten the rails' nuts.

Step ③ : Fix the rails on your rack.

Step ④ : Insert the Delta lithium-ion battery pack RT-20K-LIB in your rack and tighten the provided screws.



(Figure 5-2: Insert the RT-20K-LIB to Your Rack)



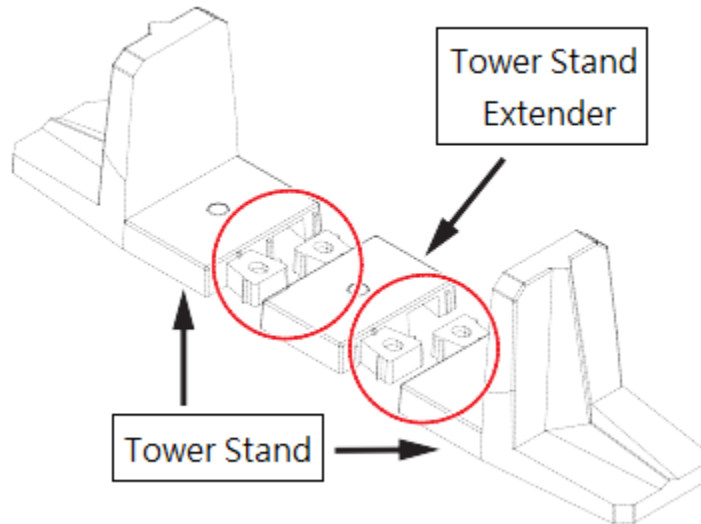
NOTE:

If you want to use a non-Delta rail kit, please only follow step 4.

5.2 Tower Mounting

You can tower-mount the UPS and the Delta lithium-ion battery pack RT-20K-LIB in an upright position. The UPS and the Delta lithium-ion battery pack RT-20K-LIB should adopt the same mounting kits and mounting procedures. The instruction below mainly shows the tower mounting of the Delta lithium-ion battery pack RT-20K-LIB, if you want to check the tower mounting of the UPS, please refer to the Delta Ampron RT Series UPS *User Manual*.

1. Connect the provided tower stand extenders with the tower stands provided in the UPS's carton (please take the UPS and the Delta lithium-ion battery pack's size into consideration). See **Figure 5-3**.



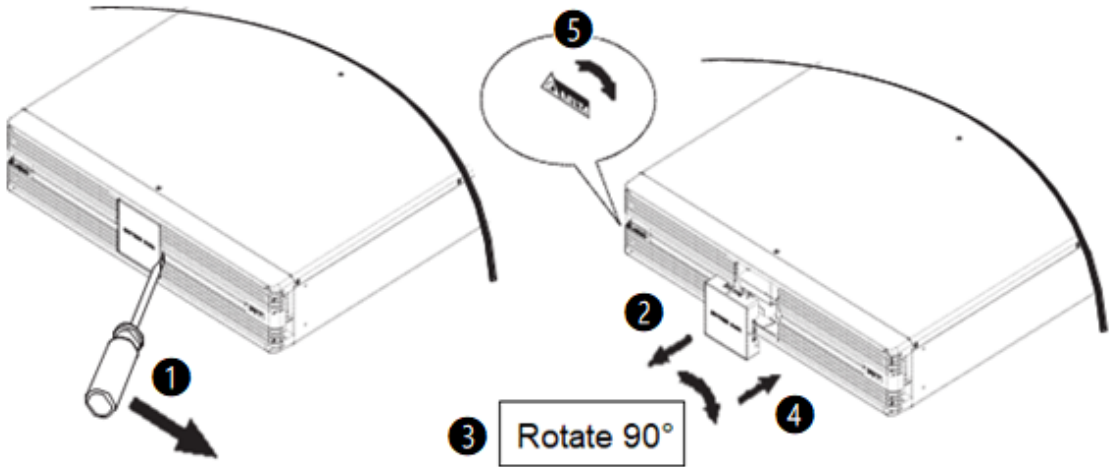
(Figure 5-3: Connect the Tower Stand Extenders with the UPS's Tower Stands)



NOTE:

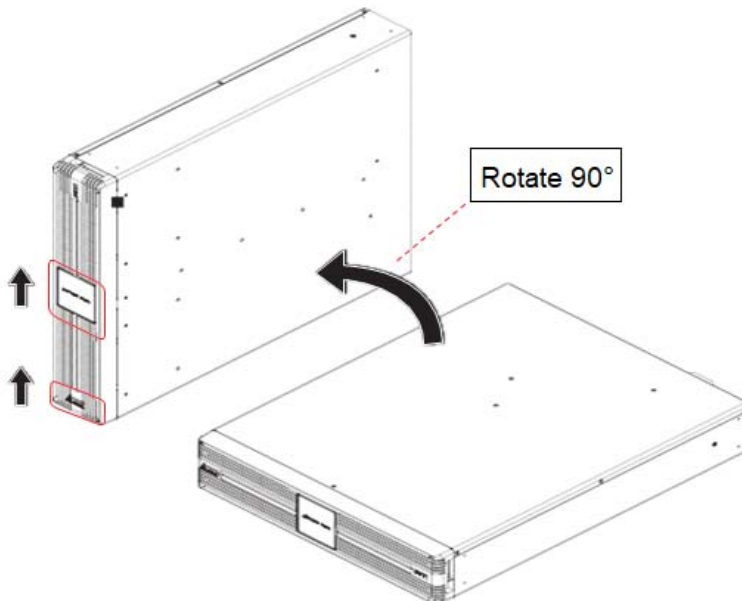
This battery pack does not provide any tower stand. The tower stands are only provided in the UPS package.

2. Pull out the Delta lithium-ion battery pack RT-20K-LIB's control panel (❶ & ❷), rotate it 90° clockwise (❸) and re-insert the control panel (❹). After that, rotate the Delta logo nameplate 90° clockwise (❺). See **Figure 5-4**.



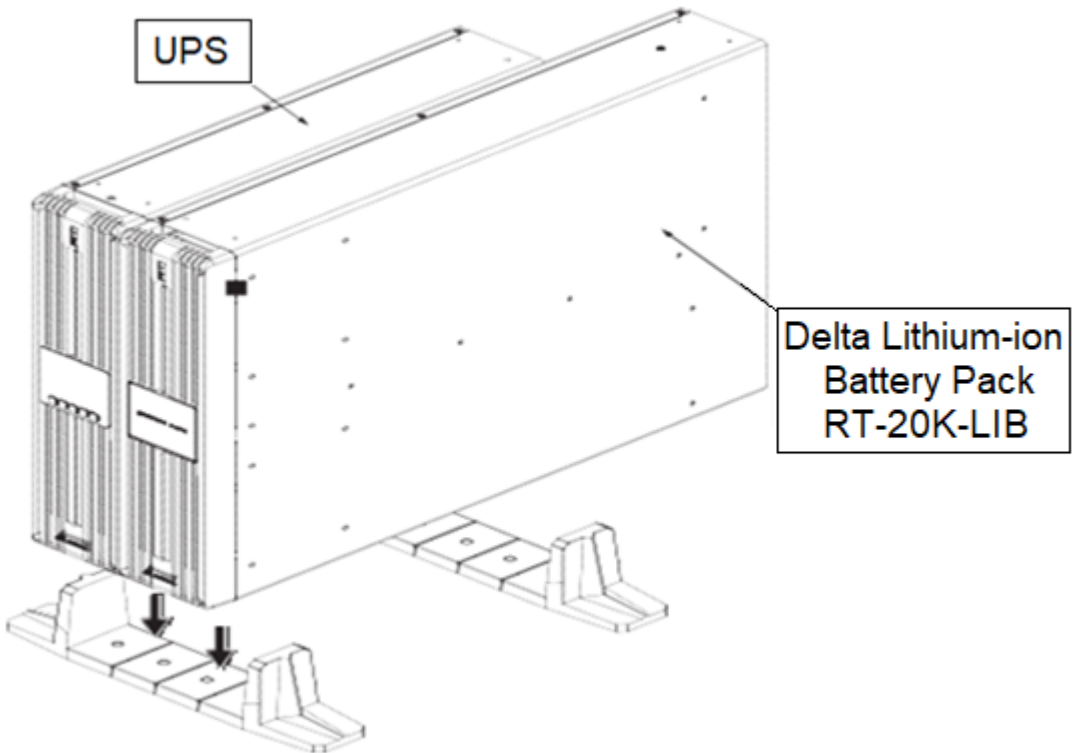
(Figure 5-4: Rotate the RT-20K-LIB's Panel & Delta Logo Nameplate)

3. Carefully lift the Delta lithium-ion battery pack RT-20K-LIB upright with the Delta logo and the icon shown on the panel facing up. A minimum of two people are required. See **Figure 5-5**.



(Figure 5-5: Rotate the RT-20K-LIB upright)

4. Place the Delta lithium-ion battery pack RT-20K-LIB and the UPS inside the tower stands. See **Figure 5-6**.



(Figure 5-6: Place the RT-20K-LIB and the UPS inside the Tower Stands)

Chapter 6 : Connection



NOTE:

For the connection of the Delta UPS with the Delta Lithium-ion Battery Pack RT-20K-LIB, you have to replace the rear panel of the UPS because the original rear panel of the UPS is used to match with the Delta lead-acid battery pack.

6.1 The connection of the Delta Lithium-ion Battery Pack RT-20K-LIB with the UPS

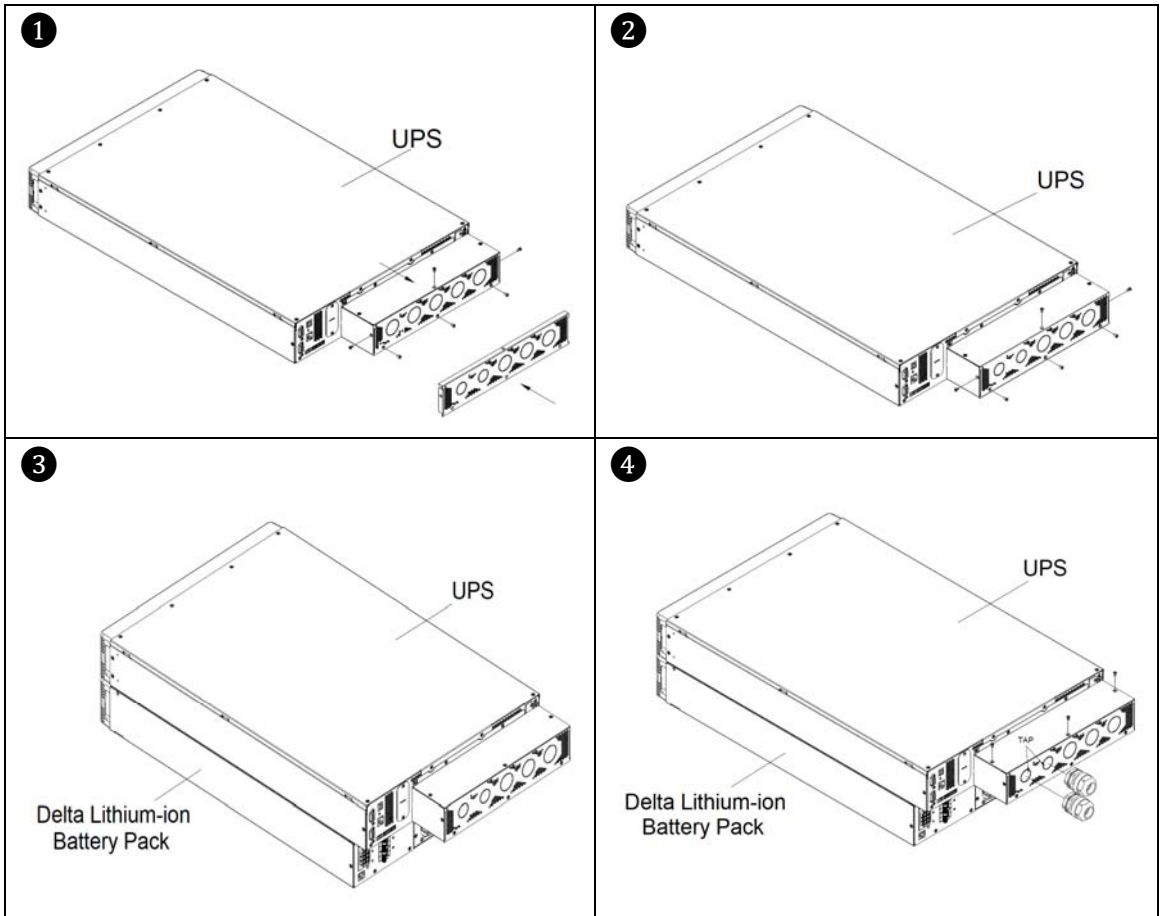
1. Before connecting the Delta lithium-ion battery pack RT-20K-LIB to the UPS, please follow step ① ~ ④ in **Figure 6-1** to change the rear panel of the UPS to the rear panel provided in the package.

Step ① : Replace the rear panel of the UPS to the rear panel provided in the package.

Step ② : Tighten the screws.

Step ③ : Put the Delta lithium-ion battery pack RT-20K-LIB under the UPS.

Step ④ : Install the cable glands.



(Figure 6-1: the Connection of the RT-20K-LIB with the UPS Step ① ~ ④)

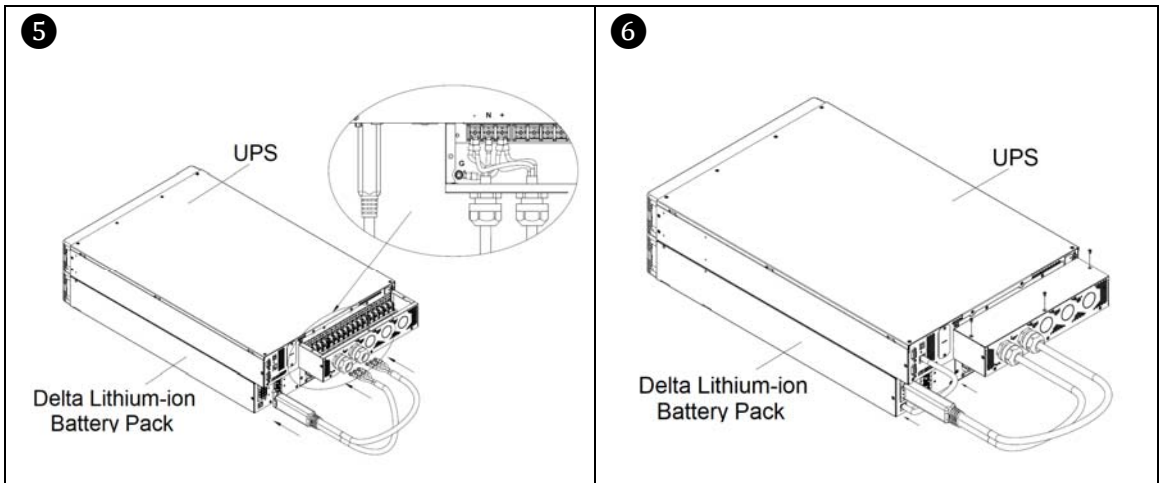
2. Connect one end of the provided battery cable to the RT-20K-LIB's terminal on the UPS and make sure that the positive pole (+) of the cable connects to the positive pole (+) of the terminal, the negative pole (-) of the cable connects to the negative pole (-) of the terminal and the neutral pole (N) of the cable connects to the neutral pole (N) of the terminal. Then connect the other end to the external battery connector on the Delta lithium-ion battery pack RT-20K-LIB. See step ⑤ in **Figure 6-2**.



NOTE:

You have to remove the upper cover at the rear of the UPS to see the wiring terminals and conduct the connection. For the terminal cover location and the UPS wiring terminals, please refer to the Delta Amplon RT Series UPS *User Manual*.

3. Install the two ends of the provided RS-485 cable on the two RJ45 ports located at the UPS and Delta lithium-ion battery pack RT-20K-LIB's battery rear panel. Please see step 6 in *Figure 6-2*.



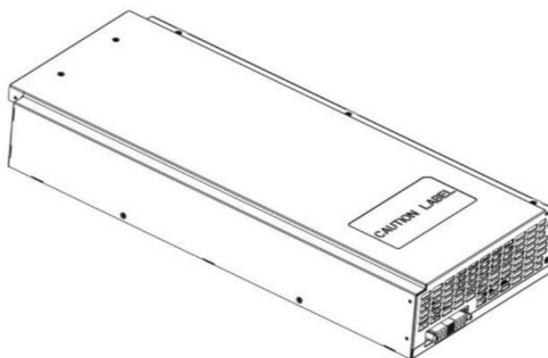
(Figure 6-2: the Connection of the RT-20K-LIB with the UPS Step 5~6)

Chapter 7 : Installation of Lithium-ion Battery Module



NOTE:

1. The battery module is optional. Refer to **Figure 7-1** to see the appearance of the battery module.



(Figure 7-1: The Lithium-ion Battery Module)

Install the Lithium-ion battery module into the Delta lithium-ion battery pack RT-20K-LIB.

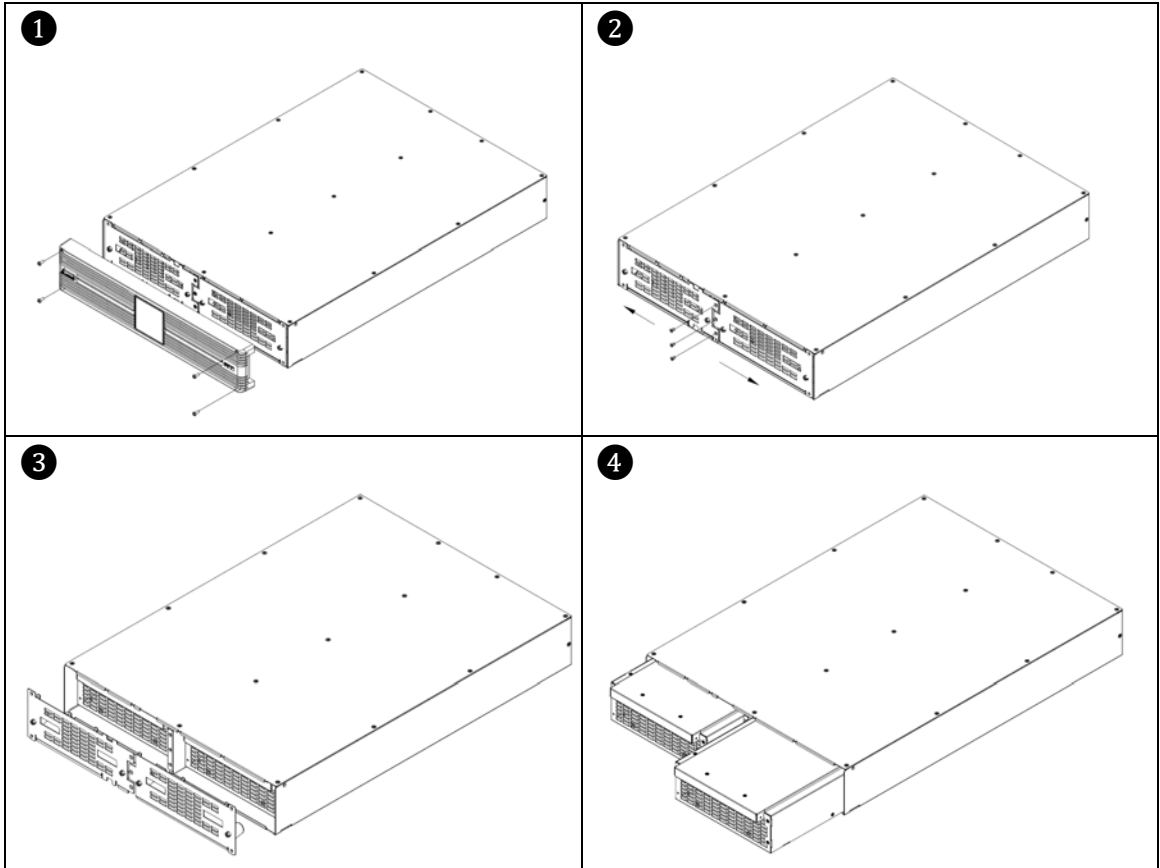
1. Follow step ① to ④ in **Figure 7-2** to install the Lithium-ion battery module in the Delta lithium-ion battery pack RT-20K-LIB.

Step ① : Unscrew the screws and remove the battery pack's front bezel.

Step ② : Use the Phillips screwdriver to remove the screws on the protective cover in front of the battery module.

Step ③ : Remove the protective cover.

Step ④ : Extract the battery from the left battery compartment and then insert a new battery.



(Figure 7-2: Install the Lithium-ion Battery Module)



NOTE :

1. If the MBB (The Delta Maintenance Bypass Box) is installed behind the Delta Lithium-ion battery pack, please keep the MBB away from the Delta Lithium-ion battery pack RT-20K-LIB at least 1cm (0.39”).
2. If you install 2 battery modules and there is any fault in one of the 2 modules, it is suggested to replace both of the modules at the same time.
3. Follow the same procedure to replace the battery in the right battery compartment and reassemble the battery pack in reverse order of the removal steps (the steps ④ → ③ → ② → ① shown in **Figure 7-2**).

Chapter 8 : Operation Procedures

1. Follow **Chapter 6: Connections** to connect the UPS and the Delta lithium-ion battery pack RT-20K-LIB.
2. After making sure that the UPS and the Delta lithium-ion battery pack RT-20K-LIB have been connected with the power cable and the communication cable, turn on the RT-20K-LIB's breaker and the UPS's input breaker.
3. Follow the Delta Amplon RT Series UPS **User Manual** to turn on the UPS.



NOTE :

After usage, you can turn off the Delta lithium-ion battery pack RT-20K-LIB safely by following the steps below:

Step ① : Turn off the breaker.

Step ② : Disconnect the communication cable.

Step ③ : Disconnect the power cable.

Chapter 9 : Maintenance

The Lithium-ion battery pack RT-20K-LIB should generally be recommended to follow the following maintenance items and intervals to ensure continued reliability and efficiency.

1. Check the State of Capacity every week via the LCD panel of UPS.
2. Check the State of Health (SOH) every 3 months (performing deep discharge test). If the SOH is lower than 30%, please replace the battery module.
3. Check the air flow every month.

Appendix 1 : Technical Specifications

Model		RT-20K-LIB
Battery type		NMC
Battery module Rated Capacity		4.4Ah
Max. discharging power		22kW
Nominal Voltage		± 189 Vdc
Nominal Current		60A
Connection		Battery Connector
Breaker		63A, ± 250Vdc 3P
Charging	Max. Charging voltage	± 216Vdc
	Max. Charging current	5.7A
Communication Interfaces		RJ45 Port x1
Physical	Dimensions (W x D x H)	Battery Cabinet 440 x 646 x 88 mm (17.3" x 25.5" x 3.5") Battery module 212 x 506 x 76.8 mm (8.3" x 19.9" x 3.0")
	Weight	Battery Cabinet (with 2 battery modules) 37.7 kg (83 lb) Single Battery module 12.0 kg (26.5 lb)
Environment	Operating Altitude	0 ~ 3000 m (0 ~ 10000 ft); 0 ~ 1000 m (0 ~ 3300 ft) (without derating)

Operating Temperature	0°C ~ 45°C (32°F ~ 113°F)
Storage Temperature	-15°C ~ 50°C (-59°F ~ 122°F)
Relative Humidity	5% ~ 95% (non-condensing)

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.

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