User Manual Easy UPS On-Line
Lithium-ion External Battery Pack SRVL48RMBP2U

Important Safety Instructions

SAVE THESE INSTRUCTIONS - This manual contains important instructions that should be followed during installation and maintenance of the battery pack.

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this document or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol either to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Product Handling Guidelines

<18 kg
<40 lb

18-32 kg
40-70 lb

32-55 kg
70-120 lb

>55 kg
>120 lb

Safety and General Information

Inspect the package contents upon receipt. Notify the carrier and dealer if there is any damage.

- This battery pack is intended for indoor use only.
- Do not operate this battery pack in direct sunlight, in contact with fluids, or where there is excessive dust or high humidity.
- Do not operate the battery pack near open windows or doors.
- Be sure the air vents on the battery pack are not blocked. Allow adequate space for proper ventilation.

  Note: Allow a minimum of 20 cm clearance on all four sides of the battery pack.

Battery safety

⚠ WARNING

RISK OF CHEMICAL HAZARD AND EXCESSIVE HEAT

- Replace the battery module at least every 10 years or at the end of its service life, whichever is earlier.
- Replace the battery module immediately when the UPS indicates battery replacement is necessary.
- Replace battery module with the same type of batteries as originally installed in the equipment.
- Replace the battery module immediately when the UPS indicates battery over-temperature condition. Power off the UPS, unplug it from the AC input, and disconnect the battery module.
- *Replace all External Battery Packs which are older than one year, when installing additional battery packs.

Failure to follow these instructions can result in death or serious injury.

* Contact APC by Schneider Electric Worldwide Customer Support to determine the age of the installed battery packs.

Note: Servicing of battery modules should be performed or supervised by personnel knowledgeable about batteries and required precautions.

- The battery typically lasts for eight to ten years. Environmental factors impact battery life. Elevated ambient temperatures, frequent discharge due to poor quality power will shorten battery life. Follow the battery manufacturer recommendations.
- For longest battery performance, the ambient temperature should be maintained between 68 and 77 °F (20 and 25 °C).
- APC by Schneider Electric uses Maintenance-free Lithium-Ion batteries. Under normal use and handling, there is no contact with the internal components of the battery.
- Do not drive nails into the battery pack.
- Do not strike the battery pack with a hammer.
- Do not stand on the battery pack.
- Do not short circuit battery pack.
- Do not place or use the battery pack near heat or fire.
- Do not use a dropped, damaged or deformed battery pack.
- Do not use the battery pack to power other equipment.
- Do not attempt to disassemble the unit. The unit does not contain any user serviceable parts. Repairs must performed only by factory trained service personnel.
- CAUTION: Failed batteries can reach temperatures that exceed the burn thresholds for touchable surfaces.
- CAUTION: A battery can present a risk of electrical shock and high short-circuit current. The following precautions should be observed when working on batteries:
  - Disconnect the charging source prior to connecting or disconnecting battery terminals.
  - Do not wear any metal objects including watches and rings.
  - Do not lay tools or metal parts on top of batteries.
  - Use tools with insulated handles.
  - Wear rubber gloves and boots.
  - Determine if battery is either intentionally or inadvertently grounded. Contact with any part of a grounded battery can result in electric shock and burns by high short-circuit current. The risk of such hazards can be reduced if grounds are removed during installation and maintenance by a skilled person.
- CAUTION: Before installing or replacing the batteries, remove jewelry such as wristwatches and rings. High short circuit current through conductive materials could cause severe burns.
- CAUTION: Do not dispose of batteries in a fire. The batteries may explode.

- CAUTION: Do not open or tamper with the battery enclosure. Doing so will expose the cell terminals which poses an energy hazard.
- CAUTION: Do not open or mutilate batteries. Released material is harmful to the skin and eyes and may be toxic.
- CAUTION: Failed batteries can reach temperatures that exceed the burn thresholds for touchable surfaces.
- CAUTION: Turn off UPS before replacing battery.

Product Description

The APC by Schneider Electric external battery pack connects to selected APC by Schneider Electric Uninterruptible Power Supply (UPS) models. The UPS and the external battery pack provide extended protection for electronic equipment from utility power blackouts, brownouts, sags, and surges. The external battery pack provides continuous power until utility power returns to normal levels or the batteries are fully discharged. The UPS and the external battery pack are packed separately.

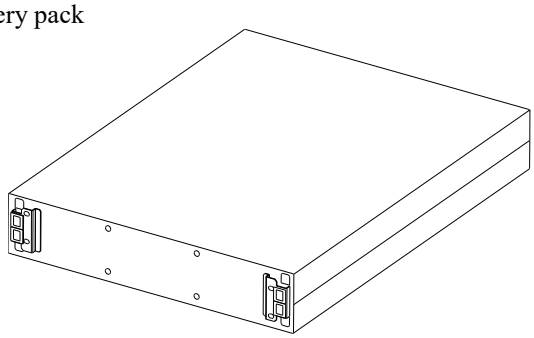
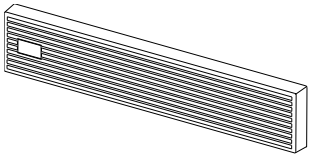
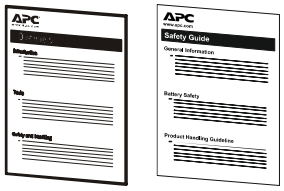
This user manual is available in the package and on the APC by Schneider Electric website, www.apc.com.

Package Contents

Read the Safety Guide before installing the battery pack.

The packaging is recyclable; save it for reuse or dispose of it properly.

Note: The model and serial numbers are located on a small, rear panel label.

<table>
<tr>
<td>Battery pack
  </td>
<td>Front bezel
  </td>
<td>User manual & Safety guide
  </td>
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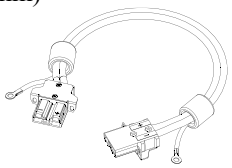
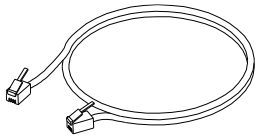
<td>Battery cable (500mm)
  </td>
<td colspan="2">RJ11 cable
  </td>
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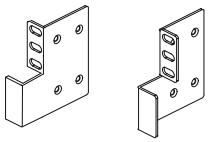
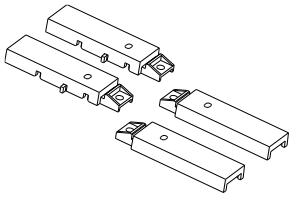
<tr>
<td>Rack-mount bracket
 
Flat head screws x 8
 </td>
<td colspan="2">Extension kits
 
Pan head screws x 4
 </td>
</tr>
</table>

Optional accessories

For optional accessories, refer to the APC by Schneider Electric Website at www.apc.com.

Specifications

Environment Specifications

NOTICE

RISK OF EQUIPMENT DAMAGE

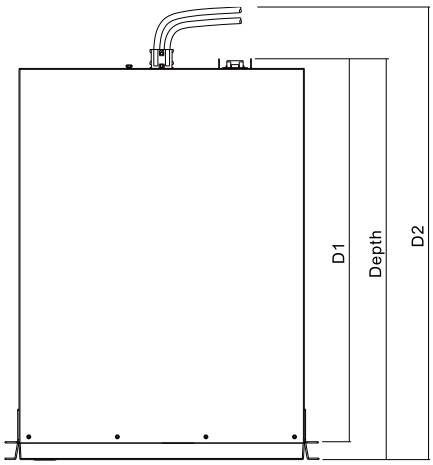
- Battery pack must be used indoors only.
- The installation location should be sturdy to withstand the weight of the battery pack.
- Do not operate battery pack where there is excessive dust or where the temperature or humidity are outside specified limits.

Failure to follow these instructions can result in equipment damage.

		SRVL48RMBP2U
Temperature	**Discharge**	0 to 50 °C
	Recharge	0 to 50 °C
	Storage	-20 to 60 °C During storage, charge the battery every 6 months.
Elevation	**Operating**	0 - 3,000 m
	Storage	0 - 15,000 m
Humidity		0 to 95% relative humidity, non-condensing
International Protection Code		IP20

Physical Specifications

Model	**SRVL48RMBP2U**
Dimensions with package **Height x Width x Depth**	240 x 600 x 800 mm (9.45 x 23.62x 31.50 in)
Dimensions without package **Height x Width x Depth**	86 x 438 x 616 mm (3.39 x 17.24 x 24.25 in) *D1=588 mm, D2=680 mm
Weight with package	33.8 kg (74.5 lb)
Weight without package	28.3 kg (62.4 lb)

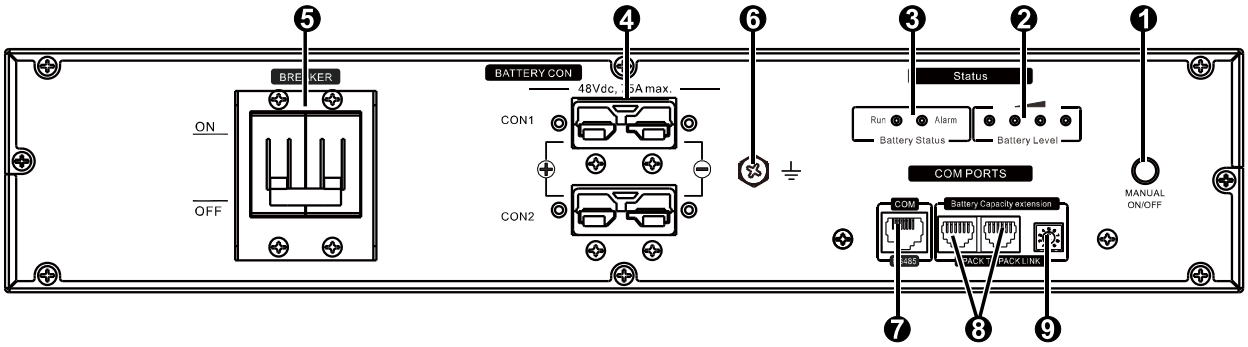


Battery Specifications

Model	**SRVL48RMBP2U**
Typical Capacity	2400 Wh
Cell Positive electrode	Lithium Ion
Nominal Voltage	48 V
Recommend Charge Voltage	52.5 V±0.5%
Fully Discharge Voltage	34.5 V
Recommend Charge Current	10 A (0 ~5 °C) 15 A (5~45 °C) 10 A (45 °C ~)
Maximum Continuous Discharge Current	75 A
Over Current Protection	Circuit Breaker
Communication Port	RS485 (RJ45)
Communication for battery pack connected in parallel	CAN (RJ11)

* Turn off UPS before replacing battery.

Rear Panel Features

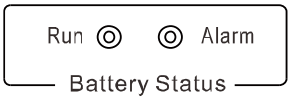
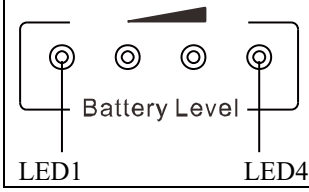


❶	MANUAL ON/OFF button	❻	Ground screw
❷	Battery level LED	❼	Battery Management System (BMS) COM port (RJ45)
❸	Status LED	❽	Extension port (RJ11)
❹	Battery connector	❾	ID switch
❺	Circuit breaker		

Actual XBP may differ in appearance from illustration.

LED Indicators

LED Definitions

Status	Definition	
	**Battery Status:** Two indicators to display battery status.	
	Run	Illuminates Green to indicate that the UPS is on-battery mode.
	Alarm	Illuminates red to indicate that a battery event has been detected.
	**Battery Level:** The battery level is indicated by the number of illuminated LEDs. When all four LED are illuminated, the battery is fully charged. Each LED represents approximately 25% of the battery status of charge.	

LED Behaving

Battery Status			Status LEDs		Battery Level LEDs			
Status		SOC	Run	Alarm	LED1	LED2	LED3	LED4
Normal Mode	Charging	0%~25%	ON	OFF	Flashing	OFF	OFF	OFF
		26%~50%	ON	OFF	ON	Flashing	OFF	OFF
		51%~75%	ON	OFF	ON	ON	Flashing	OFF
		76%~100%	ON	OFF	ON	ON	ON	Flashing
	Discharging	0%~25%	ON	OFF	ON	OFF	OFF	OFF
		26%~50%	ON	OFF	ON	ON	OFF	OFF
		51%~75%	ON	OFF	ON	ON	ON	OFF
		76%~100%	ON	OFF	ON	ON	ON	ON
Alarm Mode	Alert		OFF	Flashing	Status of Battery Level LEDs can be any of the above.			
	Internal fault detected		OFF	ON				
COM cable not connected			OFF	Flashing				
Power Off			OFF	OFF	OFF	OFF	OFF	OFF

Note: The Battery Status LEDs and Battery Level LEDs will be on for 0.75 seconds and off for 0.75 seconds while flashing.

Tower Installation

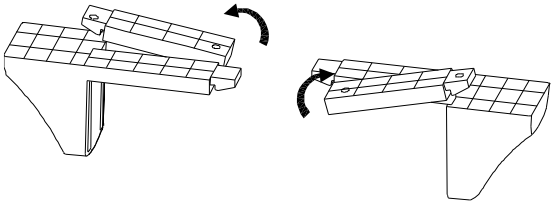
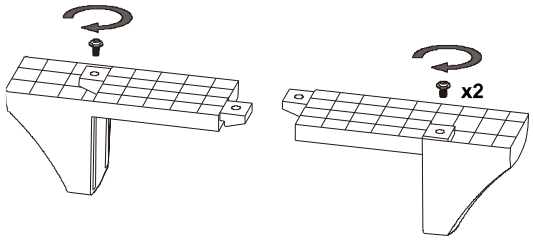
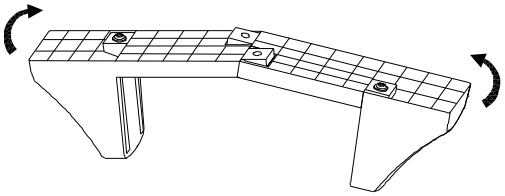
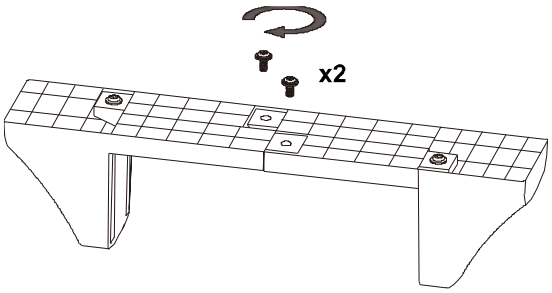
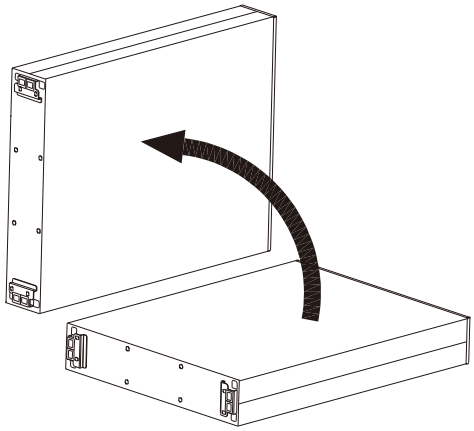
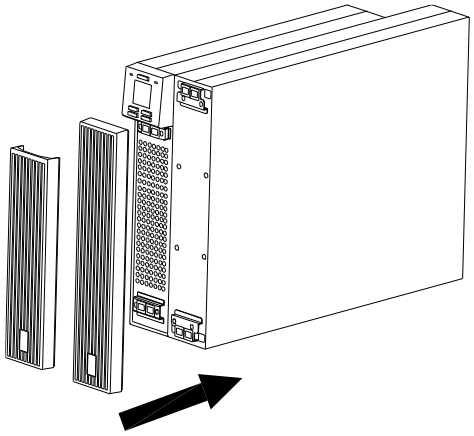
⚠ CAUTION

RISK OF FALLING EQUIPMENT

- The battery pack is heavy. Always practice safe lifting techniques adequate for the weight of the equipment.
- Be sure that the stabilizer brackets are installed along with the battery pack in tower orientation.

Failure to follow these instructions could result in equipment damage and minor or moderate injury.

Installing stabilizer brackets

❶	**Note:** The Stabilizer Bracket of the schematic is from 2U UPS accessories. 	❷	**Note:** Use Pan head screws for assembling Stabilizer brackets and Extension kits. 
❸		❹	
❺		❻	Install the front bezels for UPS and XBP. 

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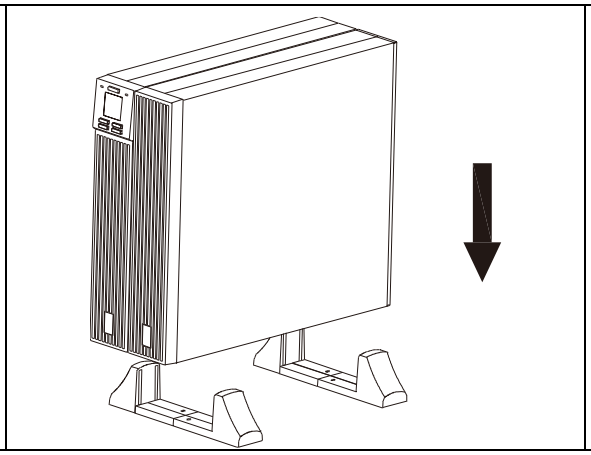

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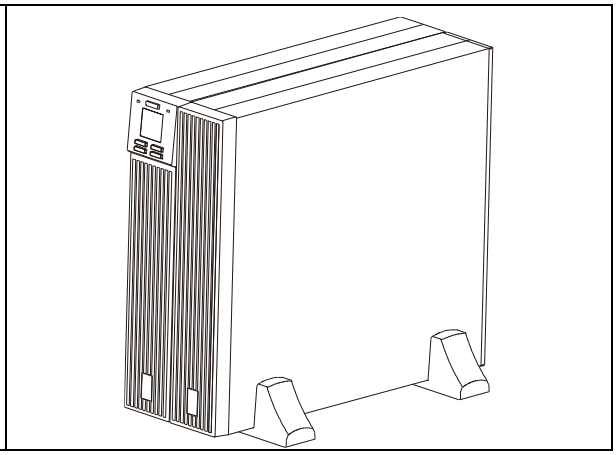
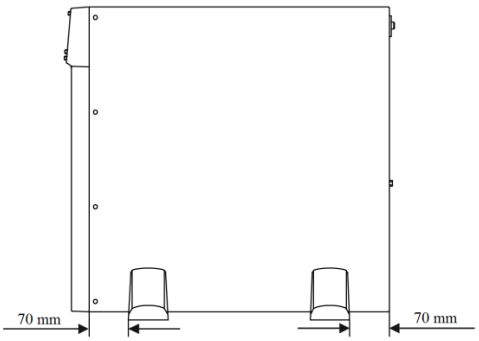


NOTE: Maintain approximately 70 mm distance from the edge of the unit, when installing the stabilizer brackets to the Easy UPS.



Rack-Mount Installation

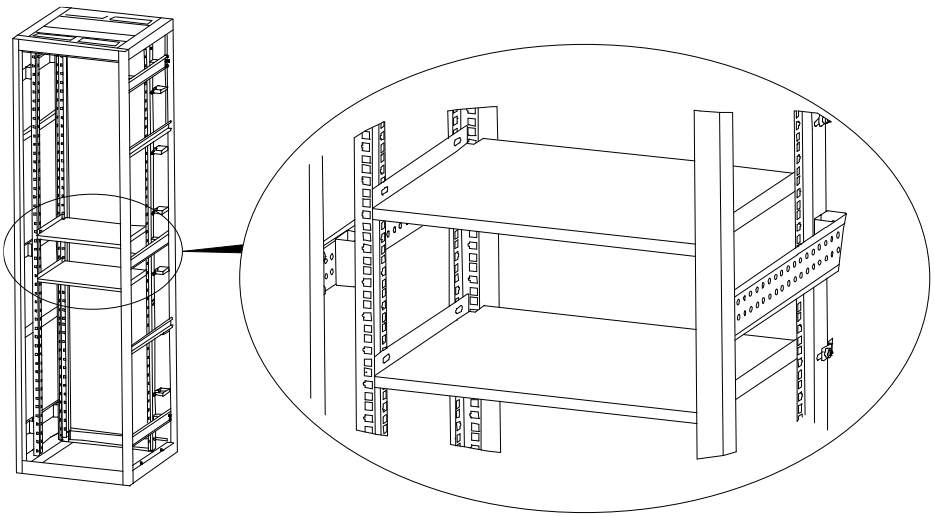
⚠ CAUTION

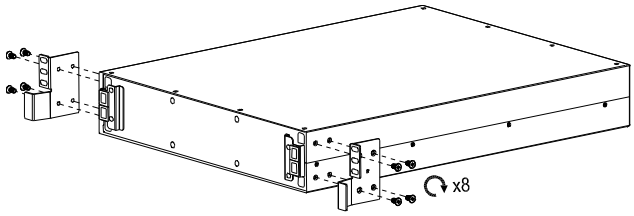
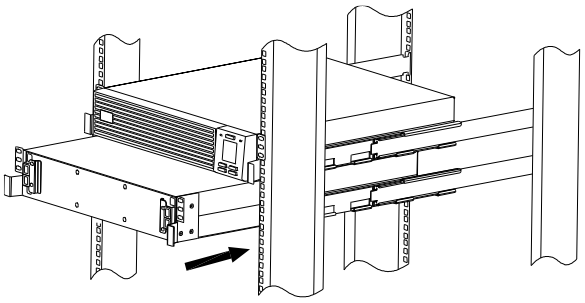
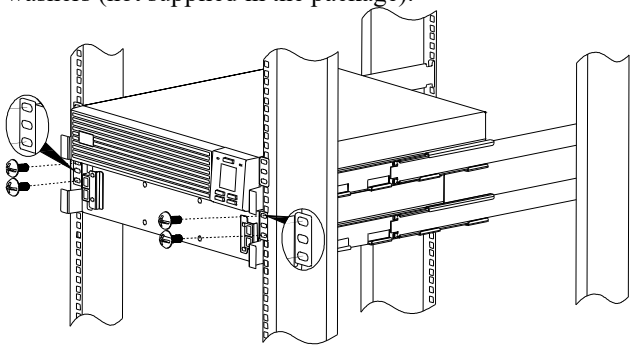
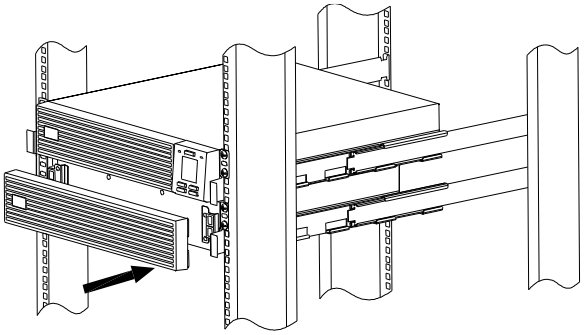
RISK OF FALLING EQUIPMENT

- Practice correct lifting techniques adequate for the weight of the equipment.
- Install battery pack at the bottom of the rack.
- Install the UPS above the battery pack.
- Secure the rack-mount brackets to the unit using all of the screws supplied for this purpose.
- Secure the unit in the rack using all of the screws supplied for this purpose.

Failure to follow these instructions could result in equipment damage and minor or moderate injury.

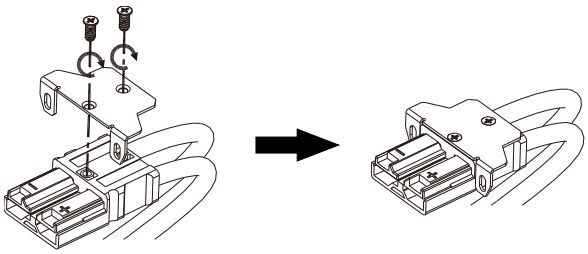
- Before installing the battery pack into the 19 inch rack enclosure, be sure that the rack is already equipped with a shelf.
- Be sure that the installed shelf can withstand the weight of the UPS and/or battery pack. Otherwise, install an optional rail kit accessory (SRVRK1) which can be purchased separately.



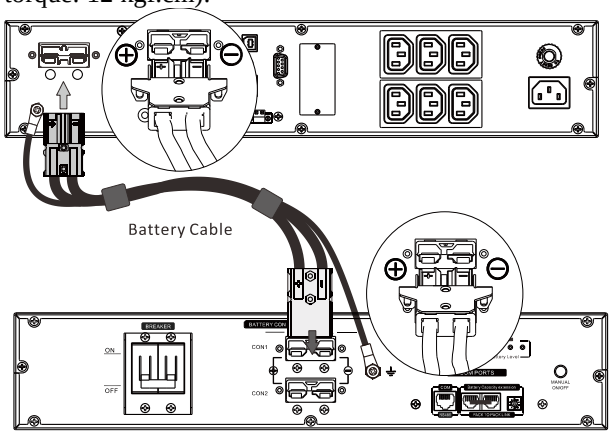
❶	Install the rack-mount brackets using the Flat head screws. 	❷	Lift the battery pack and slide it into rack enclosure. 
❸	Secure the battery pack to the rack with screws, nuts and washers (not supplied in the package). 	❹	Install the front bezel. 

Connect Battery Pack to Easy UPS

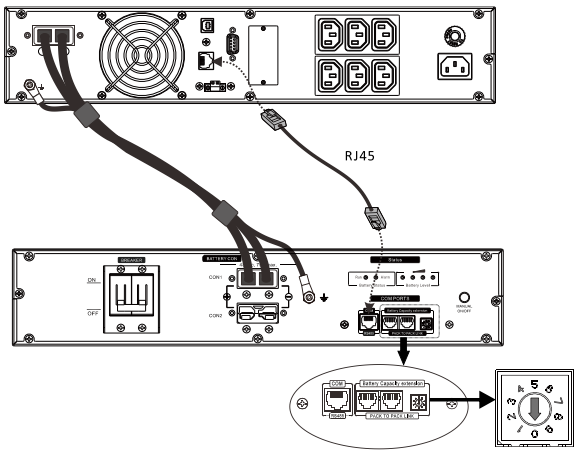
❶ Install the battery connector clamps to the battery connector using the screws supplied.



❷ Connect Easy UPS to Battery Pack (SRVL48RMBP2U) using the battery cable supplied with the battery pack. Use the supplied screws to secure the battery connector clamp to the UPS and the battery pack.
Be sure that the ground screw is tightened fully (tightening torque: 12 kgf.cm).



❸
a. Connect one end of the COM cable (RJ45 cable supplied with the UPS) to the BMS COM port on the battery pack.
b. Connect the other end of the COM cable to the BMS COM port on the UPS.
c. Set the ID switch to "0".



NOTE 1 : SRVL48RMBP2U can only be used with SRVL series, 1000VA, 2000VA and 3000VA Easy UPS.
NOTE 2 : The above illustrations are shown for 1000VA UPS. The same procedures are applicable for both 2000VA and 3000VA UPS.

Operation

Turning ON the battery pack

The battery pack can either be turned ON manually or automatically through the UPS.

Turn ON the battery pack manually

1. Switch ON the circuit breaker on the battery pack.
2. Press and hold the MANUAL ON/OFF switch for 5 seconds to turn ON the battery pack.

Turn ON the battery pack automatically

1. Connect the input utility power to the UPS.
2. Press and hold the POWER ON/OFF button (in the UPS) for 1 second and release the button immediately when a beep is heard. The UPS will start up and the battery pack also gets turned ON automatically.

Turning OFF the battery pack

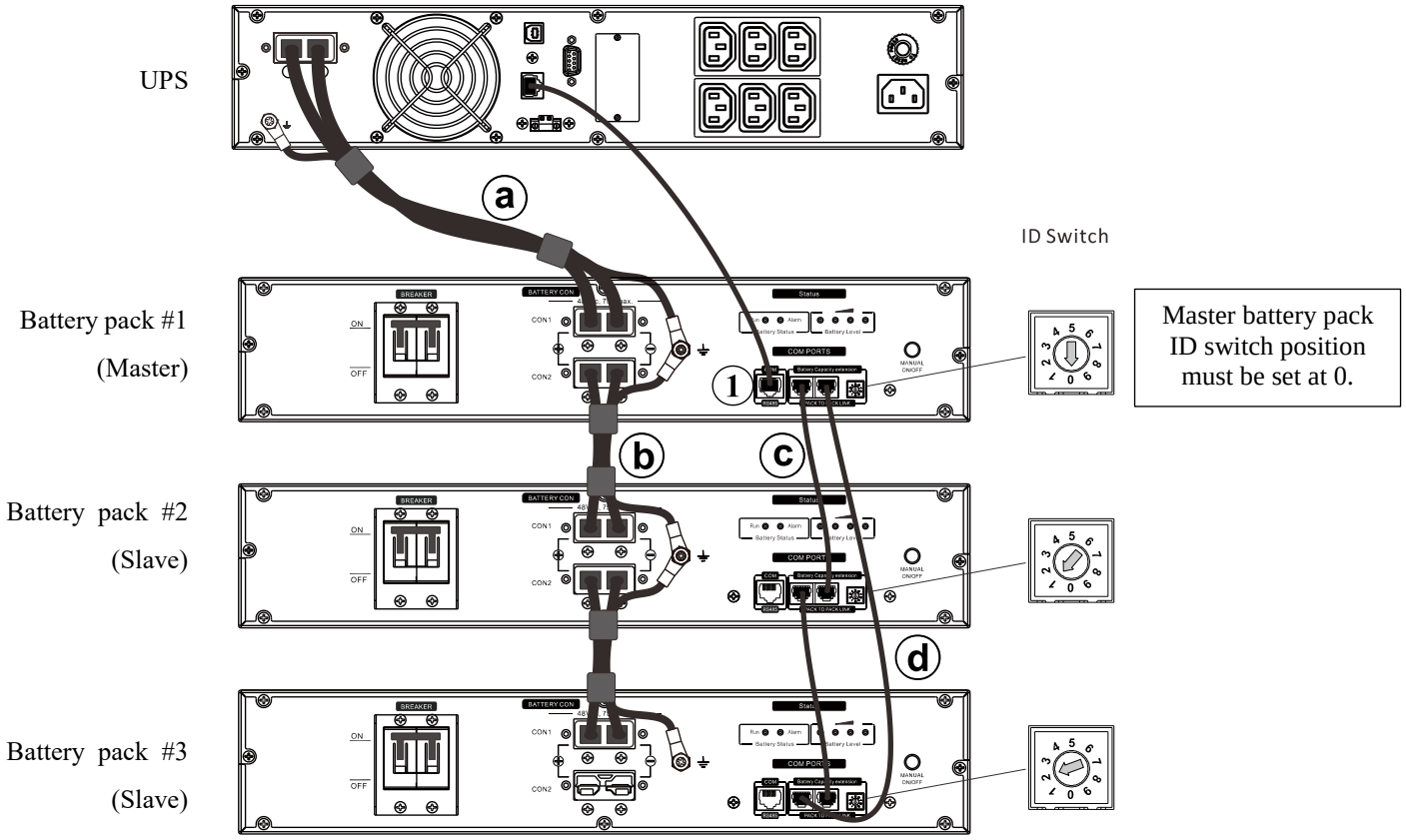
The battery pack should be turned OFF manually.

1. Press and hold the MANUAL ON/OFF switch for 5 seconds to turn OFF the battery pack.
2. Turn OFF the circuit breaker.

NOTE: Shut down the UPS and turn OFF the battery pack circuit breaker if the UPS will not be used for a long period.

Connect Multiple Battery Packs

To extend the runtime, connect additional battery packs.



1. Connect one end of battery cable ⓐ to the battery connector receptacle on the UPS and the other end to the CON 1 receptacle on the battery pack. Be sure to connect the ground terminal securely.
2. Connect one end of the COM cable (RJ45 cable supplied with the UPS) to the COM port ① in Battery pack #1. Connect the other end to BMS communication port on the UPS. Battery pack #1 is also called “master” and directly communicates with the UPS. The remaining battery packs are called “slave” and communicate with the UPS through Battery pack #1.
3. Connect one end of battery cable ⓑ to CON 2 receptacle on Battery pack #1 and the other end to CON 1 receptacle on Battery pack #2. Be sure to connect the ground terminal securely.
4. Connect one end of the RJ11 cable ⓒ (supplied with the battery pack) to the Battery capacity extension port in Battery pack #1 and the other end to Battery capacity extension port in Battery pack #2.
5. Repeat steps 3 and 4 for connecting Battery pack #2 and Battery pack #3.
6. Connect one end of RJ11 cable ⓓ (supplied with Battery pack #3) to Battery capacity extension port in Battery pack #3 and the other end to the Battery capacity extension port in Battery pack #1.
7. Set up the ID code for battery packs by rotating the disc on the ID switch. The ID switch in master battery pack must be set to “0”. Use random numbers from 1 to 9 for setting up the ID of the slave battery packs. It's required to assign a unique ID to each battery pack for paralleling the battery packs.

NOTE 1: Based on the Easy UPS charging capability, a maximum of 3 external battery packs can be connected to the UPS.
NOTE 2: ⓐ and ⓑ are battery cables supplied in the battery package with same specification.
ⓒ and ⓓ are RJ11 cables supplied in the battery package with same specification.
NOTE 3: When a new battery pack is connected in parallel to the master battery pack, the new battery pack will get automatically paralleled when the State of Charge (SOC) of both the master battery pack and the new battery pack is 100%. Until the SOC of both the battery packs reach 100% SOC, the new battery pack will only get charged and will not share the load if the UPS goes into on-battery mode during this period. The paralleling status of the battery packs can be checked through the monitoring software.

Troubleshooting

Use the table below to solve minor installation and operation problems. Refer to the APC by Schneider Electric website, www.apc.com for assistance with complex problems.

Problem and/or Possible Cause	Solution
Easy UPS is not supplying power to the connected equipment while operating in Battery mode.	
Same ID code set in multiple battery packs.	Set different ID codes to each battery pack.
Low battery cut off. Easy UPS may have discharged the battery due to utility power outage and turned the output off due to low battery condition.	Wait for the utility power to be restored and charge the battery.
Battery temperature is not within specifications (cell temperature lesser than -20 °C or greater than 80 °C).	Be sure the air vents on the battery pack are not blocked and adequate space for proper ventilation is available.
The battery pack is experiencing an overload condition.	Disconnect nonessential equipment from the UPS to correct the overload condition.
Battery output terminals are short circuited.	Remove the short circuit at the output terminals of the battery and charge the battery.
An internal error is detected.	Disconnect the UPS from the AC Mains and contact APC by Schneider Electric Customer Support.
UPS is unable to communicate with the external battery packs.	Be sure that all the communication wires are securely connected.
Battery is not getting charged when Easy UPS is working on-line.	
Charging current is higher than specified.	Contact APC by Schneider Electric Customer Support.
Battery temperature is not within specifications (cell temperature lesser than -20 °C or greater than 80 °C).	Be sure the air vents on the battery pack are not blocked and adequate space for proper ventilation is available.
An internal error is detected.	Disconnect the UPS from the AC Mains and contact APC by Schneider Electric Customer Support.
Communication failure is detected.	
Master battery pack is not communicating with the UPS.	Be sure that the RJ45 cable is secured properly at the UPS as well as the master battery pack.
Communication address conflict	Be sure that different IDs are set on each of the battery packs.
An internal error detected.	Shutdown the UPS and contact APC by Schneider Electric Customer Support.

Transport

1. Shut down and disconnect all connected equipment.
2. Disconnect the unit from mains power.
3. Disconnect all internal and external batteries (if applicable).
4. Follow the shipping instructions outlined in the *Service* section of this manual.

Service

If the unit requires service, do not return it to the dealer. Follow these steps:

1. Review the *Troubleshooting* section of the manual to eliminate common problems.
2. If the problem persists, contact APC by Schneider Electric Customer Support through the APC by Schneider Electric website, **www.apc.com**.
   a. Note the model number and serial number and the date of purchase. The model and serial numbers are located on the rear panel of the unit.
   b. Call Customer Support. A technician will attempt to solve the problem over the phone. If this is not possible, the technician will issue a Returned Material Authorization Number (RMA#).
   c. If the unit is under warranty, the repairs are free.
   d. Service procedures and returns may vary internationally. For country specific instructions refer to the APC by Schneider Electric website, **www.apc.com**.
3. Shipment of Lithium Ion Battery is highly regulated and the regulation is evolving. Pack the battery and UPS separately.
4. Always contact Customer Support to get the latest guidance on shipment of Lithium ion battery and UPS.
5. Pack the unit properly to avoid damage in transit. Never use foam beads for packaging.
   Damage sustained in transit is not covered under warranty.
6. Write the RMA# provided by Customer Support on the outside of the package.
7. Return the unit by insured, prepaid carrier to the address provided by Customer Support.

Limited Factory Warranty

Schneider Electric IT Corporation (SEIT), warrants its products to be free from defects in materials and workmanship for a period of five (5) years from the date of purchase. The SEIT obligation under this warranty is limited to repairing or replacing, at its own sole option, any such defective products. Repair or replacement of a defective product or part thereof does not extend the original warranty period.

This warranty applies only to the original purchaser who must have properly registered the product within 10 days of purchase. Products may be registered online at warranty.apc.com.

SEIT shall not be liable under the warranty if its testing and examination disclose that the alleged defect in the product does not exist or was caused by end user or any third person misuse, negligence, improper installation, testing, operation or use of the product contrary to SEIT recommendations of specifications. Further, SEIT shall not be liable for defects resulting from: 1) unauthorized attempts to repair or modify the product, 2) incorrect or inadequate electrical voltage or connection, 3) inappropriate on site operation conditions, 4) Acts of God, 5) exposure to the elements, or 6) theft. In no event shall SEIT have any liability under this warranty for any product where the serial number has been altered, defaced, or removed.

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To obtain service under warranty you must obtain a Returned Material Authorization (RMA) number from customer support. Customers with warranty claims issues may access the SEIT worldwide customer support network through the APC by Schneider Electric website: **www.apc.com**. Select your country from the country selection drop down menu. Open the Support tab at the top of the web page to obtain information for customer support in your region. Products must be returned with transportation charges prepaid and must be accompanied by a brief description of the problem encountered and proof of date and place of purchase.

APC by Schneider Electric Worldwide Customer Support

Customer support for this or any other APC by Schneider Electric product is available at no charge in any of the following ways:

- Visit the APC by Schneider Electric website to access documents in the APC by Schneider Electric Knowledge Base and to submit customer support requests.
  - **www.apc.com** (Corporate Headquarters)
    Connect to localized APC by Schneider Electric websites for specific countries, each of which provides customer support information.
  - **www.apc.com/support/**
    Global support searching APC by Schneider Electric Knowledge Base and using e-support.
- Contact the APC by Schneider Electric Customer Support Center by telephone or e-mail.
  - Local, country specific centers: go to **www.apc.com/support/contact** for contact information.

For information on how to obtain local customer support, contact the APC by Schneider Electric representative or other distributor from whom you purchased your APC by Schneider Electric product.

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