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User's Manual **English**

APC Smart-UPS®

2U Rack and Stack
External Battery Pack

990-1022, Revision 2 2/01

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1: SAFETY INFORMATION

American Power Conversion Corporation (APC) is the leading national and international manufacturer of state-of-the-art uninterruptible power supplies, redundant switches, power management software, and related equipment. APC products protect hardware, software, and data from the threat of power disturbances in business and government offices throughout the world.

The APC 2U Rack and Stack Battery Pack is designed to connect to an APC Uninterruptible Power Supply (UPS) to prevent blackouts, brownouts, sags and surges from reaching your computer and other valuable electronic equipment. The external battery pack also provides protection while the batteries in the UPS are being replaced.

Refer to the UPS Installation Manual for information on the number of external battery packs supported by your UPS.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the warranty.

HANDLING SAFETY

The Battery Pack is heavy. To lighten the pack, you may remove the batteries while you position or mount it in the rack. Refer to *Removing the Battery,* for instructions on how to remove the batteries.

<18 kg (<40 lb)

32–55 kg (70–120 lb)

18–32 kg (40–70 lb)

>55 kg (>120 lb)

- Equipment with casters is built to move on a smooth surface without any obstacles.
- Do not use a ramp incline of more than 10°.
- This equipment is intended for installation in a temperature-controlled indoor area free of conductive contaminants. Refer to Specifications at the APC web site for the actual temperature range.

BATTERY SAFETY

- This equipment contains potentially hazardous voltages. Do not attempt to disassemble the unit. The only exception is for equipment containing batteries. Battery replacement using the procedures below is permissible. Except for the battery, the unit contains no user serviceable parts. Repairs are to be performed only by factory trained service personnel.
- Do not dispose of batteries in a fire. The batteries may explode.
- Do not open or mutilate batteries. They contain an electrolyte that is toxic and harmful to the skin and eyes.
- To avoid personal injury due to energy hazard, remove wristwatches and jewelry such as rings when replacing the batteries. Use tools with insulated handles.
- Replace batteries with the same number and type of batteries as originally installed in the equipment.

BATTERY REPLACEMENT AND RECYCLING

See your dealer or the APC web site, www.apcccom/support/contact for information on replacement battery kits and battery recycling.

Batteries must be recycled. Deliver the battery to an appropriate recycling facility or ship it to the supplier in the new battery's packing material. See the new battery instructions for more information.

2: INSTALLATION

The External Battery Pack has a "rack and stack" design that provides two mounting options. The Battery Pack can be mounted in a 19-inch equipment rack or stacked one on top of another. Hardware is provided for either option.

UNPACKING

1. Inspect the External Battery Pack upon receipt. APC designed robust packaging for your product. However, accidents and damage may occur during shipment. Notify the carrier and dealer if there is damage. The packaging is recyclable; save it for reuse or dispose of it properly.
2. Check the package contents. The shipping package contains the battery pack, its front bezel, mounting brackets, a literature kit containing product documentation, and a rail kit containing mounting rails, mounting cleats, and a hardware packet (necessary for rack mounting the battery pack), and rail installation instructions.

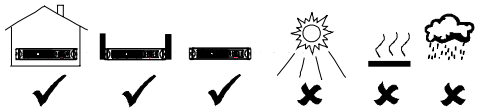
POSITIONING THE EXTERNAL BATTERY PACK

Place the rack and the battery pack(s) where they will be used for either stacking or rack mounting. (Both procedures are detailed on the next page). **The battery pack is heavy. Select a location sturdy enough to handle the weight.**

Consider that you install the battery pack in a protected area that is free of excessive dust and has adequate airflow. Ensure the air vents on the front and rear of the UPS are not blocked.

Do not operate the UPS where the temperature and humidity are outside the specified limits. Refer to Specifications at the APC web site www.apcc.com

PLACEMENT



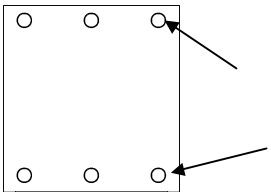
INSTALLING THE SMART-UPS

To install one or multiple battery packs, follow these basic steps. Each step is described in detail on the following pages.

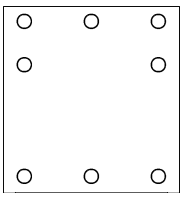
1. Stack the battery pack(s) *or* install the mounting rails in the rack (four-post rack installation only). Place the battery pack(s) in the rack. **Install the battery pack(s) at or near the bottom of the rack.**
2. Attach the front bezel.
3. Connect the battery pack(s) to the UPS or to another battery pack.

STACKING THE BATTERY PACK

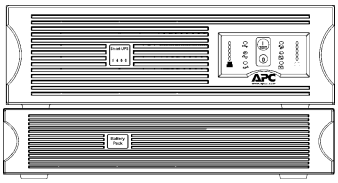
Note: For rack mounting, proceed to *Mounting the Battery Pack in the Rack.*



1. Unpack the six mounting feet shipped in the literature kit.
2. Turn the battery pack on its side so the bottom surface is accessible.
3. Locate the indentations on the bottom of the battery pack that mark the feet positions (indicated by arrows in the figure at left).
4. Peel away the protective film on the back of one foot, align the adhesive side with an indentation on the battery pack, and press hard to affix the foot to the battery pack. Repeat this step for all feet.



5. The battery pack cover has indentations to accommodate the feet on the bottom of the battery pack.



6. Turn the battery pack right side up and place it either on the floor on another battery pack or stacked with a UPS (shown).
7. Continue with *Connecting the Battery and Attaching the Front Bezel*, to complete the installation.

Do not step on the UPS. The UPS chassis is not designed to support additional weight.

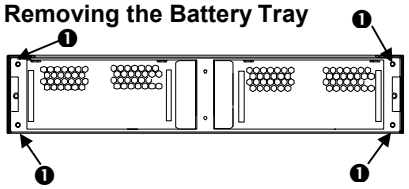
If you are stacking the external battery pack with the UPS, position the UPS on top of the 2U battery pack. The top of the battery pack has indentations for the feet on the bottom of the UPS or another battery pack.

MOUNTING THE BATTERY PACK IN A RACK

The battery pack comes with standard 19-inch (46.5 cm) rack mounting rails, cleats, and brackets. The rack can have any of the common types of equipment mounting holes (square, round-threaded, or round-non-threaded). All necessary hardware is provided.

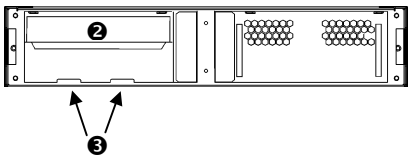
The battery pack is heavy. To lighten it, you may remove the batteries before mounting the unit in the rack. If you do not want to remove the batteries, continue with *Mounting the battery pack in a Rack* (next page).

Removing the Battery Tray



There are two batteries in each pack. They are accessible from the front of the battery pack. This procedure requires a Phillips head screwdriver.

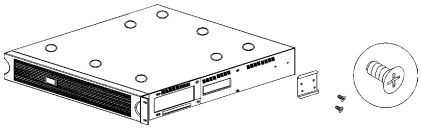
1. Use a screwdriver to remove the two screws ❶ in each of the two battery compartment doors and open the doors (panels hinged in the center).
2. To disconnect the battery, take out the white cord that is tucked into the space above the battery. This cord serves as a handle for the connector. Grasp the cord and pull firmly toward you.



3. Be careful during this step—the battery is heavy.

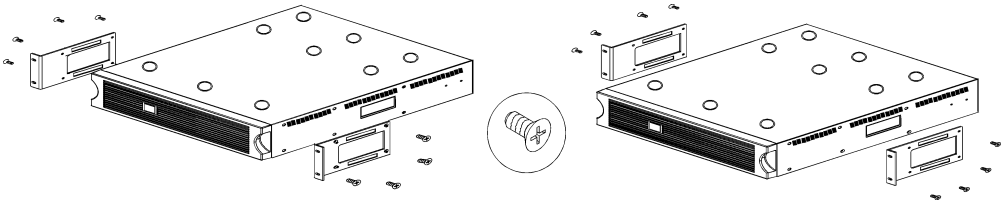
   Use the battery tray handle ❷ to slide the tray out most of the way (when all four batteries are visible). Then support the tray and lift the back of the tray over the stops ❸.
4. Hold the new tray on the sides, align it with the opening, and lift it slightly to clear the stops ❸. Then level the battery tray and slide it into the unit.

Mounting the UPS in a Rack



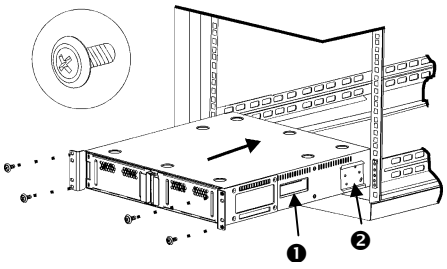
1. Install the mounting rails in the rack (required for four-post racks only). Directions are included with the rail kit.
2. For a four-post rack, attach a mounting cleat to each side of the battery pack.
3. Attach the mounting brackets to the battery pack before mounting the pack in your rack, (below). Each mounting bracket attaches to the battery pack with four screws (included). Two sets of bracket holes are located on the sides of the battery pack.

   If you are using a four-post rack, attach the mounting brackets in the forward position. For two post rack mounting attach the brackets at the mid-point position.



Four-Post Rack
Bracket Position

Two-Post Rack
Bracket Position



4. Use the handles ❶ on the side of the battery pack to support the unit.

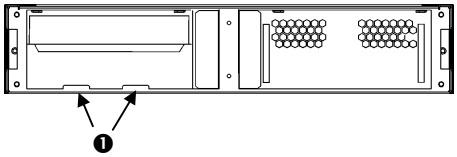
   Due to the weight of the battery pack, two people are required to install it in the rack.

5. In four-post mounting each side of the battery pack has a cleat ❷ that must slide into the groove on the rails. Slide the battery pack into position.

6. Use the four ornamental screws supplied with the battery pack to attach the mounting brackets to the rack post in both two and four post mounting.

Check the rack to make sure it will not tip after loading the battery pack into the rack.

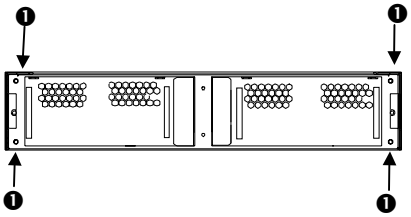
Reinstalling the Battery



If you removed the battery tray(s) before mounting the battery pack in the rack, follow this step to reinstall it.

Supporting the battery tray on the bottom, align it with the battery door opening. Tip the battery tray slightly so that it clears the stops ❶ at the compartment opening. Once the battery tray is over the stops, level it and slide it into the compartment.

CONNECTING THE BATTERY AND ATTACHING THE FRONT BEZEL



The battery is accessible from the front of the UPS. This procedure requires a Phillips head screwdriver.

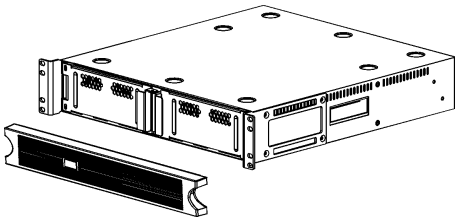
1. Use a screwdriver to remove the two screws ❶ in each of the two battery compartment doors and open the doors (panels hinged in the center).

2. Locate the battery connector jack to the side of the battery tray.

3. To connect the battery cable plug to the battery jack, push the plug into the jack so the metal pieces inside each part are touching. Press firmly to ensure a tight connection. You will hear a "snap" when the connector is seated properly.

4. Tuck the white cord and the battery cables into the space above the battery tray.

5. Close the battery door and replace the screws.



6. Unpack the bezel. Align the tabs on each end of the bezel with the slots on the front of the battery pack and gently snap it into place.

CONNECTING THE BATTERY PACK(S) TO THE UPS

Battery pack connectors are color coded and keyed to prevent improper connection. The color of the connector on the UPS must match the color of the battery pack connector.

The battery pack charges when it is connected to utility power. Allow the battery pack to charge for 24 hours. ***Do not*** expect full run time during this initial charge period.

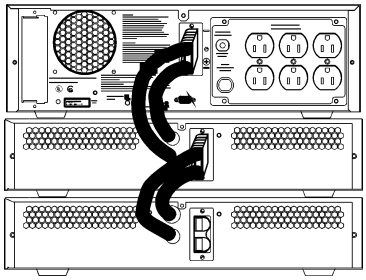
Refer to the *Installation Manual* for the UPS to determine the maximum number of external battery packs that can be supported by your UPS model.

Locate the connector jack covered by a connector clamp, on the rear panel of the UPS. Use a Phillips head screwdriver to remove the screws attaching the clamp to the UPS.

Turn the clamp around and loosely attach one end to the edge of the connector jack opening on the UPS.

To connect the battery cable plug to the UPS jack, hold the clamp aside and push the plug into the jack so the metal pieces inside each part are touching. Press firmly to ensure a tight connection. You will hear a "snap" when the connector is seated properly.

Secure the connector clamp to the UPS.



Multiple external battery packs can be connected to the UPS in a daisy-chain manner. The connectors are color coded to prevent an external battery pack from being connected to an incompatible UPS.

Refer to the UPS Installation Manual for information on the number of external battery packs supported by your UPS.

3: PROGRAMMING THE UPS FOR EXTERNAL BATTERY PACK(S)

UPS models cannot determine how many external battery packs are connected to them. You must program the UPS to recognize the appropriate number of external battery packs in one of four ways.

It is important to follow these instructions. The number of batteries affects the run time calculations that the UPS performs when it is running on battery power.

UPS BATTERY PACK UTILITY (BATTPACK)

This program can be used with DOS or a Microsoft® Windows DOS prompt.

BATTPACK cannot be used with a DOS emulator or VDM (virtual DOS machine) like those in Windows 95, Windows 98, Windows 2000, or Windows NT.

The APC UPS Link cable must be used to communicate to the UPS. There are two black cables that can be used; part numbers 940-0024C or 940-1524C.

At the DOS prompt, type: **battpack com[X] [Y]** where:

[X] represents the available serial port that Battery Pack Utility uses to access the UPS.

[Y] represents the number of external battery packs.

For example: C:> **battpack com1 4**

The black cable is attached to communication port 1. There are four external battery packs.The program confirms that the update is successful.

Use PowerChute® *plus* Version 5.x for Windows 95, Windows 98, Windows 2000, Windows NT

PowerChute *plus* 5.x for Windows NT is compatible with NT 3.5.1 SP5, NT 4.0 Workstation (at least SP1), or NT 4.0 Server (at least SP1).

Install the software per the instructions on the CD. After rebooting the computer, access the **PowerChute *plus*** graphical user interface.

1. Click on Configuration.
2. Click on UPS Operating Parameters.
3. Adjust the External Battery Pack field to the appropriate number of external battery packs.
4. Click OK.

TERMINAL PROGRAM

The Terminal Program is used to change the number of external battery packs when using Windows 3.1x, Windows for Workgroups, and Windows NT 3.51.

1. **EXIT** out of the PowerChute plus Server. In the case of Windows NT, the UPS Service must be stopped.
2. Go to: **Program Manager > Accessories > Terminal**. Double-click on the **Terminal** icon.
3. Select the COM port to which the black interface cable is attached as the Connector.
4. The COM port settings are **2400 baud, 8 data bits, 1 stop bit, no parity, flow control is Xon/Xoff**.
5. Click **OK**.

Continue with the table below.

HYPERTERMINAL PROGRAM

The HyperTerminal Program is used to change the number of external battery packs when using Windows 95, Windows 98, Windows 2000, and Windows NT4.0.

1. EXIT out of the PowerChute *plus* Server. In the case of Windows NT, the UPS service must be stopped.
2. From the Desktop, go to: **Start** => **Programs** => **Accessories** => **HyperTerminal**. Double-click on the **HyperTerminal** icon.
3. You are prompted to choose a name and select an icon. Give any name and then click **OK**. If a message appears which reads "...must install a modem," disregard it and continue.
4. The port settings are 2400 baud, 8 data bits, 1 stop bit, no parity, flow control is Xon/Xoff.
5. Click on **Advanced** and ensure the box labeled **FIFO buffer** is NOT checked.
6. Click **OK** twice.

Once the terminal/hyperterminal window is open, follow these steps:

STEP NUMBER	COMMAND	RESPONSE
1	Y	SM
2	>	To see the number of external packs. (A new unit will display **000**.)
3	+	To see the number of external packs. (A new unit will display **000**.)
4	>	To see the change in number of external battery packs.
5	-	Subtracts a battery pack.
6	>	To see the change in number of external battery packs.

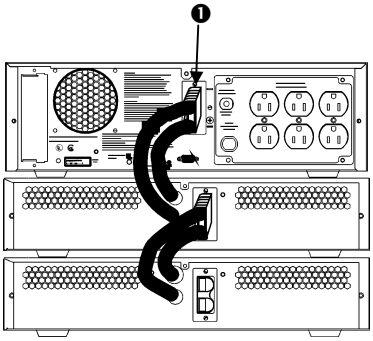
4: TRANSPORTING YOUR EXTERNAL BATTERY PACK(S)

The external battery pack(s) may be transported in or out of the rack. In either case the battery must be disconnected from the UPS!

Always DISCONNECT THE BATTERY from the UPS before shipping to avoid damage during transport. (U.S. Federal Regulation *requires* that batteries are disconnected during shipment.)

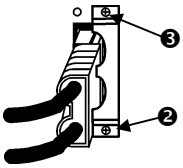
This requirement applies whether the UPS is shipped alone or installed in an equipment rack or system.

DISCONNECTING THE BATTERY

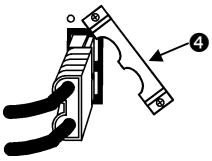


The battery pack connector is accessible from the rear of the battery pack. This procedure requires a Phillips head screwdriver.

1. Shut down any equipment attached to the UPS.
2. Disconnect the UPS from the power supply.
3. Locate the connector plug for the battery pack on the back of the UPS ❶.



4. Use a screwdriver to remove the bottom screw from the connector clamp ❷ and loosen the top screw ❸.



5. Hold the clamp aside ❹ and pull the battery pack connector plug out of the UPS connector jack.
6. Allow the clamp to return to its former position and replace the bottom screw.

REMOVING THE EXTERNAL BATTERY PACK(S) FROM THE RACK

If your external battery pack(s) is mounted in a rack and you are removing it from the rack for transport:

- Remove the four ornamental screws that secure the unit to the rack.
- Grasp the handle located on the front of the battery pack and pull the unit halfway out of the rack.
- Use the handles on the sides of the unit for additional support and slide the unit out of the rack.

5: STORAGE AND MAINTENANCE

STORAGE CONDITIONS

Store the battery pack covered and flat (rack mount orientation) in a cool, dry location, with the batteries fully charged. Disconnect any cables connected to the UPS to avoid unnecessary battery drainage.

EXTENDED STORAGE

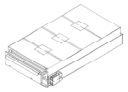
At -15 to +30 °C (+5 to +86 °F), charge the batteries every six months.

At +30 to +45 °C (+86 to +113 °F), charge the batteries every three months.

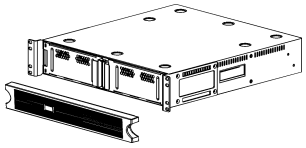
REPLACING THE BATTERY

The 2U battery pack and UPS models use *different* replacement battery cartridges. The battery cartridges are NOT interchangeable.

This battery pack consists of two easy to replace hot-swappable battery trays. Battery replacement is a safe procedure, isolated from electrical hazards. You may leave the battery pack connected to the UPS and the protected equipment on for the following procedure. See your dealer or refer to the APC web site see Contacting APC, page 16 for information on replacement battery cartridges.

UNIT	REPLACEMENT	APPEARANCE
External battery pack SU24RMXLBP2U	RBC26	

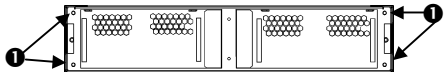
BATTERY REPLACEMENT PROCEDURE



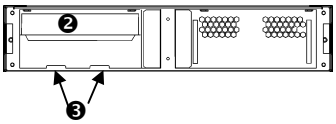
There are two batteries in each pack. They are accessible from the front of the battery pack. This procedure requires a Phillips head screwdriver.

1. Face the front of the UPS to remove the bezel. Use both hands and grasp the finger clips on either side of the bezel. Pull toward you. The bezel will unsnap.

Set the bezel aside.



2. Use a screwdriver to remove the two screws ❶ in each of the two battery compartment doors and open the doors (panels hinged in the center).



3. To disconnect the battery, take out the white cord that is tucked into the space above the battery. This cord serves as a handle for the connector. Grasp the cord and pull firmly toward you.

Be careful during this step—the battery is heavy.

4. Use the battery tray handle ❷ to slide the tray out most of the way (when all four batteries are visible). Then support the tray and lift the back of the tray over the stops ❸.
5. Hold the new tray on the sides, align it with the opening, and lift it slightly to clear the stops ❸. Then level the battery tray and slide it into the unit. To disconnect the battery, take out the white cord that is tucked into the space above the battery. This cord serves as a handle for the connector.
6. Locate the battery connector jack to the side of the battery tray.
7. To connect the battery cable plug to the battery jack, push the plug into the jack so the metal pieces inside each part are touching. Press firmly to ensure a tight connection. You will hear a "snap" when the connector is seated properly.
8. Tuck the white cord and the battery cables into the space above the battery tray.
9. Close the battery door and replace the screws.
10. Repeat steps 3 through 9 to replace the second battery tray.
11. Align the tabs on each end of the bezel with the slots on the front of the battery pack and gently snap it into place.

Batteries must be recycled. Deliver the battery to an appropriate recycling facility or ship it to the supplier in the new battery's packing material. See the new battery instructions for more information.

SERVICE

If the battery pack requires service do not return it to the dealer. Instead follow these steps:

1. Verify that no circuit breakers are tripped. A tripped circuit breaker is the most common Battery Pack problem.
2. If the problem persists, refer to Contacting APC, page 16.
   - Note the model number of the battery pack, the serial number, and the date purchased. If you call Customer Service a technician will ask you to describe the problem and try to solve it over the phone, if possible. If this is not possible the technician will issue a Returned Material Authorization Number (RMA#).
   - If the battery pack is under warranty, repairs are free. If not, there is a repair charge.
3. Pack the battery pack in its original packaging. If the original packing is not available, ask customer service about obtaining a new set.

   Pack the battery pack properly to avoid damage in transit. Never use Styrofoam beads for packaging. Damage sustained in transit is not covered under warranty.
4. Mark the RMA# on the outside of the package.
5. Return the battery pack by insured, prepaid carrier to the address given to you by Customer Service.

5: CONTACT, REGULATORY, AND WARRANTY INFORMATION

CONTACTING APC

Refer to the information provided at the APC Internet site:

http://www.apcc.com/support/contact

LIMITED WARRANTY

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