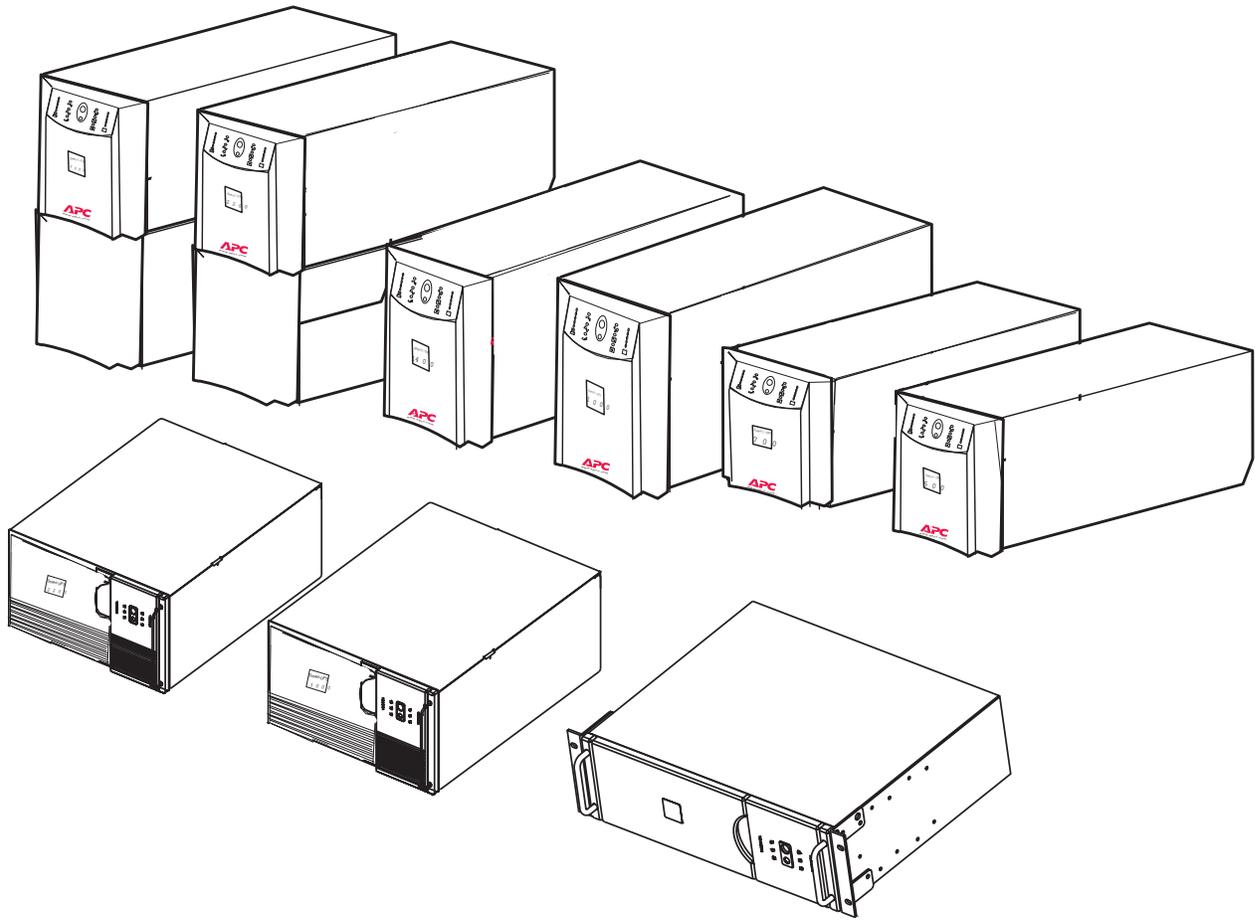


APC Smart-UPS Uninterruptible Power Supply 100 VAC User's Manual



APC
www.apcc.com

Troubleshooting

Use the chart below to solve minor UPS installation problems. Contact APC Technical Support Staff for assistance with complex UPS problems. See the *User's Manual* for a location near you.

About Your New UPS

This Uninterruptible Power Supply (UPS) is designed to prevent blackouts, brownouts, sags and surges from reaching your computer and other valuable electronic equipment. This UPS also filters out small utility line fluctuations and isolates your equipment from large disturbances by internally disconnecting from the utility line, while supplying power from its internal batteries until the utility line returns to safe levels.

While running on battery, an internal alarm will sound (periodic beeps). The TEST/ALARM DISABLE button may be pressed to silence the UPS alarm.

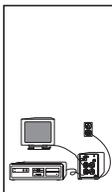
If the utility power does not return, the UPS will continue supplying power to the connected equipment until exhausted. A continuous beeping will sound two minutes before the UPS's final low battery shutdown. If using a computer, you must manually save your files and power down before the UPS turns itself off, unless you are using PowerChute interface software that provides automatic, unattended shutdown.

Installation and Setup



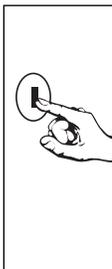
1. Install UPS

- Before plugging in the unit, install any SmartSlot accessories. Follow the installation instructions that come with the accessory.
- Plug the power cord attached to the UPS into the power supply.



2. Connect Equipment

- Do not power laser printers through the UPS.
- Use your equipment's power cords to connect to the UPS.
- Install PowerChute® black communication cable between UPS and computer.
- Turn on all connected equipment.



3. Turn on UPS

- Press the UPS's ON switch to turn on your UPS. This will power-up connected equipment.
- The unit performs a self-test automatically when turned on, and every two weeks thereafter.
- The UPS charges its battery whenever it is connected to utility power. The battery charges fully during the first 4 hours of normal operation. Do not expect full runtime during this initial charge period.



4. Install PowerChute®

- For additional computer system security, install PowerChute® UPS monitoring software. It provides automatic unattended shutdown capabilities on most major network operating systems. See the **Software Installation: Instruction Sheet** for details.

Problem and Possible Cause	Solution
UPS will not turn on.	
<ul style="list-style-type: none"> • ON button not pushed. • UPS not connected to AC power supply. • UPS input circuit breaker tripped. • Very low or no utility voltage. • Battery not connected properly. 	<ul style="list-style-type: none"> Press the ON button once to power the UPS and the load. Check that the power cable from the UPS to the power supply is securely connected at both ends. Reduce the load on the UPS by unplugging equipment and reset the circuit breaker (on back of UPS) by pressing the plunger back in. Check the AC power supply to the UPS with a table lamp. If very dim, have the utility voltage checked. Confirm the battery connections.
UPS will not turn off.	
<ul style="list-style-type: none"> • Internal UPS fault. 	<ul style="list-style-type: none"> Do not attempt to use the UPS. Unplug the UPS and have it serviced immediately.
UPS operates on-battery although normal line voltage exists.	
<ul style="list-style-type: none"> • UPS's input circuit breaker tripped. • Very high, low, or distorted line voltage. Inexpensive fuel powered generators can distort the voltage. 	<ul style="list-style-type: none"> Reduce the load on the UPS by unplugging equipment and reset the circuit breaker (on back of UPS) by pressing the plunger back in. Move the UPS to a different outlet on a different circuit. Test the input voltage with the utility voltage display. If acceptable to the load, reduce the UPS's sensitivity. See <i>User's Manual</i> for procedures.
UPS beeps occasionally.	
<ul style="list-style-type: none"> • Normal UPS operation. 	<ul style="list-style-type: none"> None. The UPS is protecting the load.
UPS does not provide expected backup time.	
<ul style="list-style-type: none"> • The UPS's battery is weak due to recent outage or is near the end of its service life. • The UPS is overloaded. 	<ul style="list-style-type: none"> Charge the battery. Batteries require recharging after extended outages. Also, they wear faster when put into service often or when operated at elevated temperatures. If the battery is near the end of its service life, consider replacing the battery even if the replace battery indicator is not yet lit. Check the UPS's load display. Unplug less needed equipment, such as printers.
Front panel indicators flash sequentially.	
<ul style="list-style-type: none"> • The UPS has been shut down by remote control. 	<ul style="list-style-type: none"> None. The UPS will restart automatically when utility power returns.
All indicators are lit and UPS emits a constant beeping.	
<ul style="list-style-type: none"> • Internal UPS fault. 	<ul style="list-style-type: none"> Do not attempt to use the UPS. Turn the UPS off and have it serviced immediately.
All indicators are off and UPS is plugged into wall outlet.	
<ul style="list-style-type: none"> • The UPS is shut down and the battery is discharged from an extended outage. 	<ul style="list-style-type: none"> None. The UPS will return to normal operation when the power is restored and the battery has a sufficient charge.
The replace battery light is lit.	
<ul style="list-style-type: none"> • Weak batteries. • Replacement batteries not connected properly. 	<ul style="list-style-type: none"> Do another self test to see if it clears. Confirm the battery connections.

Safety

This Safety Guide contains important instructions that should be followed during installation and maintenance of the APC equipment and batteries. It is intended for APC customers who setup, install, relocate, or maintain APC equipment.

Handling Safety

- Be careful. Do not lift heavy loads without assistance.



- Equipment with casters is built to move on a smooth surface without any obstacles.
- Do not use a ramp inclined at more than 10°.
- This equipment is intended for installation in a temperature-controlled indoor area (see the *User's Manual* for exact temperature range), free of conductive contaminants.

Electrical Safety

- Do not work alone under hazardous conditions.
- High short circuit current through conductive materials could cause severe burns.
- A licensed electrician is required to install permanently wired equipment.
- Check that the power cord(s), plug(s), and sockets are in good condition.
- To reduce the risk of electric shock when grounding cannot be verified, disconnect the equipment from the AC power outlet before installing or connecting to other equipment. Reconnect the power cord only after all connections are made.
- Do not handle any kind of metallic connector before the power has been removed.
- Use one hand, whenever possible, to connect or disconnect signal cables to avoid a possible shock from touching two surfaces with different electrical grounds.
- Connect the equipment to a three wire AC outlet (two poles plus ground). The receptacle must be connected to appropriate branch circuit/mains protection (fuse or circuit breaker). Connection to any other type of receptacle may result in a shock hazard.



CAUTION! Deenergizing Safety

- If the equipment has an internal energy source (the battery), the output may be energized when the unit is not connected to an AC power outlet.
- To deenergize **pluggable equipment**: first press the Off button for more than one second to switch the equipment off. Next disconnect the equipment from the AC power outlet. Finally, disconnect the battery.
- To deenergize **permanently wired** equipment: set the power switch to standby . Next set the AC circuit breaker to standby . Then disconnect the batteries (including any expansion units). Finally, disconnect the AC power from the building power supply.
- Pluggable equipment includes a protective earth conductor which carries the leakage current from the load devices (computer equipment). Total leakage current must not exceed 3.5 mA.
- Use of this equipment in life support applications where failure of this equipment can reasonably be expected to cause the failure of the life support equipment or to significantly effect its safety or effectiveness is not recommended.



WARNING! 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 performed only by factory trained service personnel.



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.

- Do not dispose of batteries in a fire. The batteries may explode.
- Do not open or mutilate batteries. They contain an electrolyte which is toxic and harmful to the skin and eyes.
- To avoid personal injury due to energy hazard, remove wrist watches 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.

Replacement and Recycling of Batteries

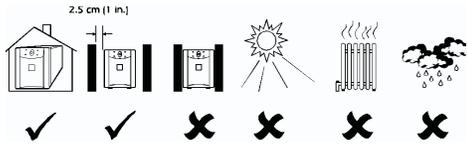
See your dealer or the *User Manual* for information on replacement battery kits and battery recycling.

Initial Startup

Inspection

Inspect the UPS upon receipt. Notify the carrier and dealer if there is damage. The packaging is recyclable; save it for reuse or dispose of it properly.

Placement



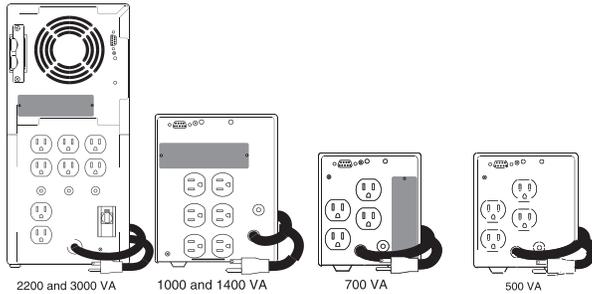
Install the UPS in a protected area that is free of excessive dust and has adequate air flow. Do not operate the UPS where the temperature and humidity are outside the specified limits.

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

Installation

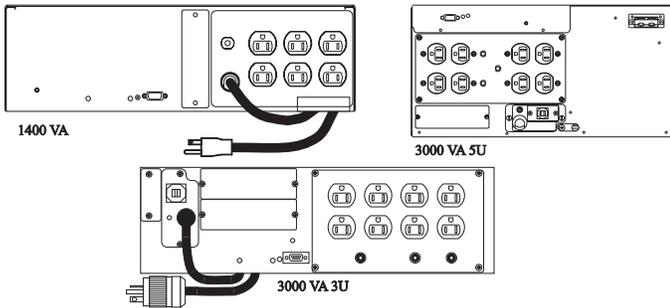
To install this UPS, please follow the installation instructions in the *Smart-UPS Quick Reference Guide*.
If this UPS is equipped with a SmartSlot for accessories, see the APC Website (www.apc.co.jp) for available accessories.

Rear Views Tower Units



Note: The SU2200J does not have the battery expansion slot.

Rear Views Rack Mount Units



⊗ Connect Ground Leads to TVSS Connector (Optional)

The UPS features a TVSS connector for connecting the ground lead on transient voltage surge-suppression (TVSS) devices such as telephone and network line protectors. The TVSS connector provides grounding through the UPS's power cord ground conductor. To make a connection to the TVSS connector, loosen the screw and connect the surge suppression device's ground lead. Tighten the screw to secure the lead.

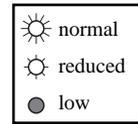
Charge the battery

The UPS charges its battery whenever it is connected to utility power. For best results, charge the battery for 2.5 hours before use. It is acceptable to use the UPS without first charging the battery, but on-battery run time may be reduced until the battery charges.

Voltage Sensitivity

The UPS detects line voltage distortions such as spikes, notches, dips, and swells, as well as distortions caused by operation with inexpensive fuel-powered generators. By default, the UPS reacts to distortions by transferring to on-battery operation to protect the loads. Where power quality is poor, the UPS may frequently transfer to on-battery operation. If the loads can operate normally under such conditions, battery capacity and service life may be conserved by reducing the sensitivity of the UPS.

● To reduce UPS sensitivity, press the Sensitivity button on the rear panel. Use a pointed object such as a pen to press the button. Press it once to set the UPS's sensitivity to **reduced**. Press it again to set the sensitivity to **low**. Press the button a third time to reset **normal** sensitivity.

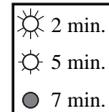


When the UPS is set to normal sensitivity, the LED is brightly lit. When it is set to reduced sensitivity, the LED is dimly lit. When it is set to low sensitivity, the LED is off.

Low Battery Warning Interval

By default, the low battery warning occurs when there are approximately two minutes of on-battery run time remaining. This may not be enough time to gracefully shut down some protected computer systems.

● To change the warning interval, press the rear panel Sensitivity button while pressing and holding the front-panel on/test button. Use a pointed object such as a pen to press the configuration button.



Press the Sensitivity button once to set the low battery warning interval to approximately five minutes. Press it again to set the interval to approximately seven minutes. Press the button a third time to reset the interval to two minutes.

Battery Pack Connector (3000 VA tower and 3000RM5U models only)

Use the battery pack connector to connect the optional external battery pack.

2200VA and 3000VA Input Power Connectors

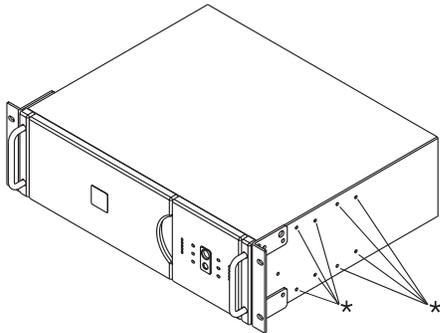
Model	Standard input power connector	Maximum output power with standard connector	Available input power connectors	Maximum power with available connector
2200 VA	30 Amp	2200 VA / 1600 W	20 Amp	1500 VA / 1500 W
			30 Amp	2200 VA / 1600 W
3000 VA	30 Amp	2250 VA / 2250 W	30 Amp	2250 VA / 2250 W
			Hard wired	3000 VA / 2250 W

Rack Mount Installation

Installation Tips for Rack Mount Units

Please observe the following items when installing the Rack Mount UPS:

- The UPS comes with standard 19" (46.5 cm) rack mount brackets installed.
- The 3000 VA model of the UPS is supplied with L channel supports. These supports may be used with this model to ease installation for a 19" rack. The L channel supports are available as an accessory for the 1400 VA model. Contact your dealer or the factory at the number listed under *Service* for more information.
- **Caution:** The 3000 VA model requires two or more people to install due to its weight.
- The UPS is not supplied with screws to attach the mounting bracket (ears) to the rack, as the size of screw varies according to the type of rack used.
- UPSs are heavy. Select a rack location sturdy enough to handle the weight. Try to mount the UPS near the bottom of the rack.
- Select a rack location with adequate air flow that is free from excessive dust. Ensure that the air vents on the sides of the UPS are not blocked. Do not operate the UPS where temperature or humidity are outside the limits listed under *Specifications*.
- **Caution:** Remove the UPS before moving the rack.
- Two additional sets of bracket holes, shown below at asterisks (*), are located on the sides of the UPS. These holes allow mounting the brackets with a three inch or six inch setback. Move the mounting brackets back if desired to optimize the esthetic or physical requirements of the rack.
- **Caution:** Check the rack to make sure it won't tip after moving the mounting brackets.



Rack Mount Options

Accessory receptacle plates are available for the 3000 VA model. These plates offer different receptacle configurations and hard wire installation. Contact your dealer or the factory at the number listed below in *Service*.

Installing the L Channel Supports on Rack Mount Units

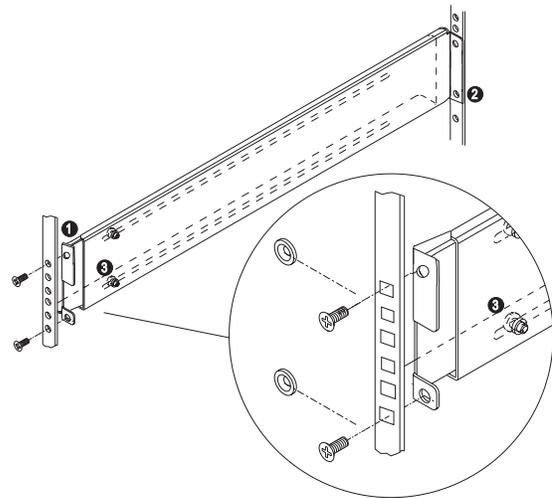
1. Verify the contents of the kit. It contains: two adjustable-length L-channel supports included with the 3000 VA model only, four clip nuts, eight 10-32 x 1/2" flat-head screws, and eight washers. The washers are for use with square rack holes only.
2. If the rack's rails have threaded holes, drill out the appropriate front rail rack holes with a 7/32" drill bit.

Note: The mounting rails do not require clips. The threaded insert is part of the actual rail.

3. Secure the front of the support to the front cabinet rack using two 10-32 x 1/2" flat-head screws (shown in blow-up below). Note that the front ear of the L-channel support has a square cutout on the mounting ear ❶, and the rear ear has no cutout ❷. For cabinets with square rack holes, use a washer under the head of each screw.
4. Loosen the two 10-32 x 5/16" pan-head screws that lock together the two halves of the L-channel support ❸. Slide the outer half of the support to the rear until it contacts the rear rack of the cabinet. If the rack uses threaded holes, drill out the appropriate rear rail rack holes with a 7/32" drill bit (see Step 2).
5. Secure the rear of the support to the rear cabinet rack using two 10-32 x 1/2" flat-head screws (see full picture below). For cabinets with square rack holes, use a washer under the head of each screw (see blow-up below).
6. Securely tighten the two 10-32 x 5/16" pan-head screws that lock together the halves of the L-channel support ❹.
7. Repeat steps 2 through 5 to install the other L-channel support.



8. Mounting clips are required for the mounting ears on the UPS. Use the enclosed template (990-0195) to install the clips for the UPS ears.
9. Slide the UPS onto the L-channel supports and use rack hardware to secure the UPS mounting ears to the rack rails.



Input Hardwire Instructions

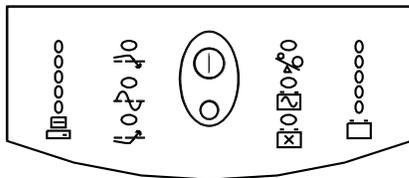
Note:

This function must be performed by qualified personnel only

1. Disconnect and remove the input plug.
2. Remove additional length of outer jacket from cable to ease wire installation.
3. Install cable into electrical box that supplies 30 Amps at 100 Volts. Use a suitable cable clamp.
4. Connect black and white wires to 100V source. (White is connected to neutral - if one of the connectors is identified as neutral.)
5. Connect green wire to ground wire (if present). Otherwise, connect to the metal electrical box.

Operating Instructions

Switch On — Switch Off



① With the UPS plugged in, press and release the large upper on/test button to supply power to the loads. The loads are immediately powered while the UPS beeps and performs a self-test.

○ Press and release the small, lower off button to turn off power to the loads. It may be convenient to use the UPS as a master on/off switch for the protected equipment.

Note: Whenever the UPS is plugged in and utility voltage is present, the charger maintains battery charge.

 The on-line LED illuminates when the UPS is supplying utility power to the loads.

On Battery

During on-battery operation, the on-battery LED illuminates and the UPS sounds an audible alarm consisting of four beeps every 30 seconds. The alarm stops when the UPS returns to on-line operation.



Battery Charge Bar Graph

The 5-LED display on the right of the front panel shows the present charge of the UPS's battery as a percentage of the battery's capacity. When all five LEDs light, the battery is fully charged. The top LED goes out whenever the battery is not 100% charged. When the lowest LED is flashing, the battery can supply less than two minutes of run time for the load.

Shutdown Mode

In shutdown mode the UPS stops supplying power to the load, waiting for the return of utility power. If there is no utility power present, external devices (e.g., servers) connected to the computer interface or the accessory slot can command the UPS to shut down. This is normally done to preserve battery capacity after the graceful shutdown of protected servers. The UPS will scroll the front panel indicators sequentially in shutdown mode.

Replace Battery

If the battery fails a self-test, the UPS emits short beeps for one minute and the replace battery LED illuminates. The UPS repeats the alarm every five hours. Perform the self-test procedure to confirm replace battery conditions. The alarm stops when the battery passes the self-test.



Load Bar Graph

The 5-LED display on the left of the front panel represents the power drawn from the UPS as a percentage of total capacity. For example, if three LEDs are lit, the load is drawing between 50% and 67% of the UPS's capacity. If all five LEDs light, thoroughly test your complete system to make sure that the UPS will not become overloaded.

Overload

When the UPS is overloaded (when the connected loads exceed the maximum specified in the "maximum load" section under *Specifications*), the overload LED comes on and the UPS emits a sustained tone. The alarm remains on until the overload is removed. Disconnect nonessential load equipment from the UPS to eliminate the overload.

Self-test

The UPS performs a self-test automatically when turned on, and every two weeks thereafter (by default). Automatic self-test eases maintenance requirements by eliminating the need for periodic manual self-tests.

During the self-test, the UPS briefly operates the loads on-battery. If the UPS passes the self-test, it returns to on-line operation.

 If the UPS fails the self-test it immediately returns to on-line operation and lights the replace battery LED.

The loads are not affected by a failed test. Recharge the battery overnight and perform the self-test again. If the replace battery LED is still on, replace the battery using the *Replacing the Battery* procedure.

SmartTrim

The SmartTrim LED comes on to indicate that the UPS is compensating for a high voltage.

SmartBoost

The SmartBoost LED comes on to indicate that the UPS is compensating for a low voltage.

Low Battery

When the UPS is operating on-battery and the energy reserve of the battery runs low, the UPS beeps continuously until the UPS shuts down from battery exhaustion or returns to on-line operation.

Cold Start

When the UPS is off and there is no utility power, use the cold start feature to apply power to the loads from the UPS's battery.

Note: Cold start is not a normal condition.

- ① Press and hold the on/test button until the UPS beeps.
- Release the on/test button during the beep and the loads are powered within 4 seconds.



Utility Voltage Bar Graph

This UPS has a diagnostic feature that displays the utility voltage. With the UPS plugged into the normal utility power, press and hold the on/test button to see the utility voltage bar graph display. After approximately four seconds the 5-LED display on the right of the front panel shows the utility input voltage. Refer to the figure below for the voltage reading.

The display indicates that the voltage is between the displayed value from the list and the next higher value. For example, with three LEDs lit, the input voltage is between 101 and 109 VAC.

If no LEDs come on and the UPS is plugged into a working AC power outlet, the line voltage is extremely low.

If all five LEDs come on, the line voltage is extremely high and should be checked by an electrician.

**Note: The UPS starts a self-test as a part of this procedure.
The self-test does not affect the voltage display.
The utility voltage bar graph has a margin of error of ± 4%.**

Storage

Storage Conditions

Store the UPS covered and upright in a cool, dry location, with its battery fully charged. Before storing, charge the UPS for at least 2 hours. Remove any accessories in the accessory slot and disconnect any cables connected to the computer interface port to avoid unnecessarily draining the battery.

Extended storage

At -15 to +30 °C (+5 to +86 °F), charge the UPS's battery every 6 months.
At +30 to +45 °C (+86 to +113 °F), charge the UPS's battery every 3 months.

Replacing the Battery

This UPS has an easy to replace hot-swappable battery. Battery replacement is a safe procedure, isolated from electrical hazards. You may leave the UPS and loads on for the following procedure. See your dealer or call the number in this manual for information on replacement battery cartridges.

Note: Please read the cautions in the APC Safety Guide.
Once the battery is disconnected, the loads are not protected from power outages.

Model #	Replacement Battery Cartridge (RBC) #
500	RBC20
700	RBC5
1000	RBC6
1400	RBC7
2200	RBC11
3000	RBC11
1400RM	RBC8
3000RM (3U)	RBC12
3000RM (5U)	RBC11

Battery Replacement Procedure — 2200 - 3000 VA Tower Units

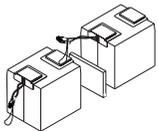
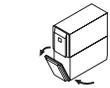
1. Grasp the top edge of the bottom front cover and **tilt** it out.
2. **Unhook** the bottom section of the front cover from the chassis and set it aside.
3. Use a flat-blade screwdriver or a coin to **remove** the two battery door screws and **open** the door.
4. Notice the red and black wires at the top of the battery housing. Gently but firmly pull the wires to disconnect the gray connector plug from the UPS.
5. Pull the front battery out of the UPS. Remove the foam spacer and set it aside.

Note: Be careful removing the batteries — they are heavy.

6. Disconnect and remove the battery pack by repeating steps 4 and 5.
7. Replace the back battery. Reconnect the battery by pressing the gray connector into the plug at the top of the battery housing. Replace the foam spacer. Replace the front battery into the UPS and reconnect.

Note: Small sparks at the battery connectors are normal during connection.

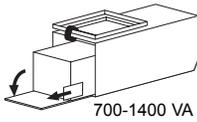
8. Close the battery door, replace the screws, and replace the lower front cover.
9. **Batteries must be recycled.** Deliver the battery to an appropriate recycling facility or ship it to the supplier in the new battery's packing material. See the new battery instructions for more information.



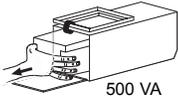
Battery Replacement Procedure – 500 - 1400 VA Tower Units



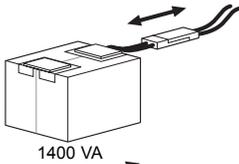
1. Grasp the top of the front cover and tilt it out and down.



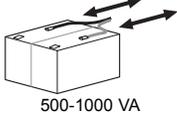
2. Unhook the bottom of the cover from the chassis and lift it upward to expose the battery door. Be careful not to strain the ribbon cable. Do not touch the exposed printed circuit board.
3. Fold the front cover on top of the UPS as shown.



4. Use a flat-blade screwdriver or a coin to remove the two battery door screws and open the door.
5. For the 700 through 1400 models, grasp the tab and gently pull the battery out of the UPS. For the 500 model, grasp the sides of the battery and gently pull the battery out of the UPS.



6. Disconnect the battery leads.
 - For the 500 through 1000 VA models, loosen the connectors by gently wiggling them while pulling straight back from the battery connector.
 - For the 1400 VA model, pull the two gray couplers apart to disconnect the battery.
7. Connect the battery leads to the new battery.



Note: Small sparks at the battery connectors are normal during connection.

- For the 500 through 1000 VA models, connect the red wire to the positive (+) terminal and the black wire to the negative (-) terminal.
- For the 1400 VA model, connect the gray battery coupler to the UPS's coupler, slide the battery into the UPS, close the battery door, replace the battery compartment screws, and replace the front cover.

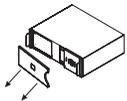
8. **Batteries must be recycled.** Deliver the battery to an appropriate recycling facility or ship it to the supplier in the new battery's packing material. See the new battery instructions for more information.



Battery Replacement Procedure – 1400 VA Rack Mount Units



1. Reach into the finger pull and open the front cover. Swing the cover open as shown.



2. Unhook the side of the cover from the chassis and lift it away to expose the battery door.



3. Use a flat-blade or Phillips screwdriver or a coin to remove the two battery door screws and open the door.
4. Grasp the tab and gently pull the battery out of the UPS.



5. Disconnect the battery leads. Loosen the connectors by gently wiggling them while pulling straight back from the battery connector.
6. Connect the battery leads to the new battery. Connect the red wire to the positive (+) terminal and the black wire to the negative (-) terminal.
7. Slide the battery into the UPS.
8. Close the battery door, replace the battery compartment screws, and replace the front cover.

Notes:

Be careful removing the batteries – they are heavy.

Small sparks at the battery connectors are normal during connection.

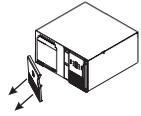


9. **Batteries must be recycled.** Deliver the battery to an appropriate recycling facility or ship it to the supplier in the new battery's packing material. See the new battery instructions for more information.

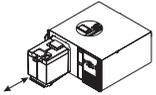
Battery Replacement Procedure – 3000 VA Rack Mount Unit



1. Reach into the finger pull and open the front cover. Swing the cover open as shown.

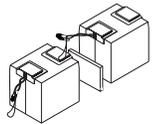


2. Unhook the side of the cover from the chassis and lift it away to expose the battery door.



3. Use a flat-blade screwdriver or a coin to remove the two battery door screws and open the door.

4. Grip the white cord on the front set of batteries and pull firmly to disconnect the connector from the battery compartment and remove the batteries.



5. Set aside the foam spacer located between the batteries, if there is one.

6. Reach into the battery compartment and grasp the white cord on the other battery connector. Pull firmly to disconnect the connector and remove the rear set of batteries.

7. Slide the rear set of new batteries into the unit. Hold the connector down below the top of the batteries and toward the door, otherwise the assembly will not fit. Guide the connector over the top of the batteries and press firmly to connect it to the rear connector of the battery compartment.

8. Set the foam spacer against the rear batteries to prevent the wires from being pinched.

9. Slide the front set of batteries in, then guide the connector over the batteries and press firmly to connect it to the front connector of the battery compartment.

10. Close the battery door, replace the screws, and replace the front cover.

11. **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.



User Configuration Items

Note: Setting these items requires optional software or hardware.			
Function	Factory Default	User Selectable Choices	Description
Automatic Self-Test	Every 14 days (336 hours)	Every 7 days (168 hours), On Startup Only, No Self-Test	Sets the interval at which the UPS will execute a self-test.
UPS ID	UPS_IDEN	Up to eight characters to define the UPS.	Use this field to uniquely identify the UPS for network management purposes.
Date of Last Battery Replacement	Manufacture Date	Date of Battery Replacement	Reset this date on battery replacement.
Minimum Capacity Before Return from Shutdown	0 percent	15, 50, 90 percent	The UPS will charge its batteries to the specified percentage before return from a shutdown.
Sensitivity	Normal	Reduced, Low	Set lower than normal sensitivity to avoid lowered battery capacity and service life in situations where the load can tolerate minor power disturbances.
Duration of Low Battery Warning	2 minutes	5, 7, 10 minutes	Sets the time before shutdown at which the UPS issues a low battery warning. Set higher than the default only if the OS needs the time for graceful shutdown.
Alarm Delay After Line Fail	5 second delay	30 second delay, At Low Battery Condition, No Alarm	To avoid alarms for minor power glitches, set the alarm delay.
Shutdown Delay	20 seconds	180, 300, 600 seconds	Sets the interval between when the UPS receives a shutdown command and when shutdown occurs.
Synchronized Turn-on Delay	0 seconds	60, 180, 300 seconds	To avoid branch circuit overload, the UPS will wait the specified time after the return of utility power before turn-on.
High Transfer Point	110 Vac	108, 112, 114 Vac	To avoid unnecessary battery usage, set the High Transfer Point higher if the utility voltage is chronically high and the load is known to work well under this condition.
Low Transfer Point	90 Vac	81, 85, 92 Vac	Set the Low Transfer Point lower if the utility voltage is chronically low and the load can tolerate this condition.

How to Determine On-Battery Run Time

Note:

UPS battery life differs based on usage and environment. It is recommended that the battery/batteries be changed once every two years.

Typical On-Battery Run Time Versus Load, In Minutes										
	Model	500	700	1000	1400	1400RM	2200	3000	3000 w/ext. batt.	3000RM
30W	50 VA	110	140	150	251	192	366	297	640	297
45W	75 VA	85	113	125	199	152	309	258	557	258
60W	100 VA	60	85	100	163	125	268	228	491	228
95W	150 VA	36	55	75	118	90	209	183	394	183
125W	200 VA	23	38	58	90	69	170	152	328	152
155W	250 VA	17	26	44	71	54	142	128	281	128
185W	300 VA	15	20	36	57	44	121	110	245	110
215W	350 VA	11	17	28	47	36	104	96	216	96
250W	400 VA	9	14	24	39	30	91	84	193	84
280W	450 VA	8	11	20	33	25	80	75	174	75
320W	500 VA	7	9	18	29	22	71	67	157	67
350W	550 VA	-	8	15	25	19	64	60	143	60
385W	600 VA	-	6	13	21	16	57	54	131	54
450W	700 VA	-	5	11	18	13	46	44	112	44
515W	800 VA	-	-	9	15	11	38	36	96	36
580W	900 VA	-	-	7	12	9	32	31	84	31
670W	1000 VA	-	-	6	11	8	27	26	73	26
830W	1200 VA	-	-	-	8	6	21	20	58	20
950W	1400 VA	-	-	-	7	5	17	16	46	16
1170W	1600 VA	-	-	-	-	-	14	13	37	13
1460W	2000 VA	-	-	-	-	-	10	10	26	10
1600W	2200 VA	-	-	-	-	-	8	8	22	8
1850W	2500 VA	-	-	-	-	-	-	7	18	7
2250W	3000 VA	-	-	-	-	-	-	5	13	5

Specifications

	SU500J	SU700J	SU1000J	SU1400J	SU1400RMJ	SU2200J	SU3000J	SU3000RMJ (3U)	SU3000RMJ (5U)	
Acceptable input voltage	0 - 160 VAC									
Output voltage	90-110 VAC									
Input Protection	Resettable circuit breaker									
Frequency limits (on-line operation)	50 or 60 Hz, ± 5%									
Transfer time	2 ms typical, 4 ms maximum									
Maximum load*	500 VA 320 W	700 VA 450 W	1000 VA 670 W	1400 VA 950 W	1400 VA 950 W	2200 VA 1600 W	3000 VA 2250 W			
On-battery output voltage	100 VAC									
On-battery frequency	50 or 60 Hz, ±0.1 Hz; unless synchronized to utility during brownout.									
On-battery waveshape	Low-distortion sine wave									
Protection	Overcurrent and short-circuit protected, latching shutdown on overload.									
Noise Filter	Normal and common mode EMI/RFI suppression, 100 kHz to 10 MHz									
Battery type	Spill proof, maintenance free, sealed lead-acid									
Typical battery life	Life varies; typical 3-6 years, depending on number of discharge cycles and ambient temperature									
Typical recharge time	2 to 5 hours from total discharge									
Operating temperature	0 to +40 °C (+32 to +104 °F)									
Storage temperature	-15 to +45 °C (+5 to +113 °F)									
Operating and storage relative humidity	50 to 95%, non-condensing									
Operating elevation	0 to +3,000 m (0 to +10,000 ft)									
Storage elevation	0 to +15,000 m (0 to +50,000 ft)									
Electromagnetic immunity	IEC 801-2 level IV, 801-3 level III, 801-4 level IV									
Audible noise in dBA at 1 m (3 ft)	<41			<45			<53			
Size (H x W x D)	15.8 x 13.7 x 35.8 cm (6.2 x 5.4 x 14.1 in.)		21.6 x 17 x 43.9 cm (8.5 x 6.7 x 17.3 in.)		13 x 48.3 x 38.1 cm (5.22 x 19 x 15 in)		43.2 x 19.6 x 54.6 cm (17.0 x 7.7 x 21.5 in.)		13 x 48.3 x 66 cm (5.22 x 19 x 26 inches)	22.2 x 48.3 x 50.8 cm (8.72 x 19 x 20 inches)
Weight - net (shipping)	11.6 (12.9) kg 25.5 (28.5) lb.	13.1 (14.5) kg 29 (32) lb.	18 (20.8) kg 41.5 (46) lb.	24.1 (26.1) kg 53 (57.5) lb.	25 (27.6) kg 55 (61) lb.	51 (60) kg 112.3 (132.3) lb.	55.8 (64.4) kg 123 (142)lb.	50.9 (60) kg 112 (132) lb.	58.5 (65.8) kg 129 (145) lb.	
Safety approvals	Listed to UL 1778									
EMC verification	VCCI Class 2					VCCI Class 1				

- Maximum load refers to either maximum VA or maximum W values as listed.

Service

If the UPS requires service do not return it to the dealer!

Follow these steps:

1. Use the *Troubleshooting* section of the *Quick Reference Guide* to eliminate common problems.
2. Verify that no circuit breakers are tripped. A tripped circuit breaker is the most common UPS problem!
3. If the problem persists, call customer service or visit the APC Internet Website (www.apc.co.jp).
 - Note the model number of the UPS, the serial number, and the date purchased. 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 Return Merchandise Authorization Number (RMA#).
 - If the UPS is under warranty, repairs are free. If not, there is a repair charge.
4. Pack the UPS in its original packaging. If the original packing is not available, ask customer service about obtaining a new set.
 - Pack the UPS properly to avoid damage in transit. Never use Styrofoam beads for packaging. Damage sustained in transit is not covered under warranty.
 - Include a letter with your name, RMA#, address, copy of the sales receipt, description of the trouble, your daytime phone number, and a check (if necessary).
5. Mark the RMA# on the outside of the package.
6. Return the UPS by insured, prepaid carrier to the address given to you by Customer Service.

APC Japan Contact Information



Internet and
Customer
Support

Japan.....03-5434-2021

<http://www.apc.co.jp>

E-mail: jsupport@apcc.com

Address:

APC Japan, Inc.
BR Gotanda Bldg. 7F
2-30-4 Nishi-gotanda, Shinagawa-ku
Tokyo 141-0031

Limited Warranty

American Power Conversion (APC) warrants its products to be free from defects in materials and workmanship for a period of two years from the date of purchase. Its obligation under this warranty is limited to repairing or replacing, at its own sole option, any such defective products. To obtain service under warranty you must obtain a Returned Material Authorization (RMA) number from customer support (see the *Service* section of the *User's Manual*). 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. This warranty does not apply to equipment which has been damaged by accident, negligence, or misapplication or has been altered or modified in any way. This warranty applies only to the original purchaser who must have properly registered the product within 10 days of purchase.

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