



Back-UPS[®] VS 500 User's Manual

990-2106B 2/02

Installation

1 Unpack, Inspect, Place or Mount

1. Unpack and inspect the Back-UPS for damage. Report any damage to APC Customer Service.
2. Inspect the contents of the box for the following items:

- Back-UPS VS 500
- Software CD-ROM
- USB Cable (RJ-45 to USB)
- Telephone Cable (with RJ-11 connectors)
- This manual.
- Warranty Registration Card

3. Place the UPS to avoid:

- Direct sunlight
- Excessive heat
- Excessive humidity or contact with fluids
- Excessive dust.

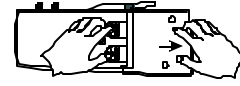


4. Mount the UPS on a wall (optional) or other surface as defined in *Wall Mounting of UPS* on the back page.

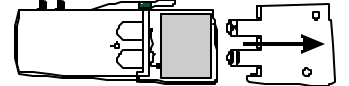
2 Connect Battery

In compliance with Department of Transportation (DOT) regulations, the Uninterruptible Power Supply (UPS) is shipped with one battery wire **disconnected**. *The UPS will not operate until the wire is connected to the battery.* To connect the battery, proceed as follows:

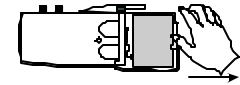
Note: Small sparks may occur during battery connection. This is normal.



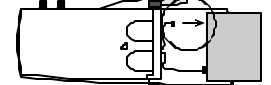
1. Press in the two tabs on the UPS bottom.



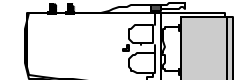
2. Slide the plastic cover off of the UPS.



3. Flex the battery retainer to the right so that the battery can be lifted out of the housing.



4. Connect the battery wire solidly to the connector on the battery.



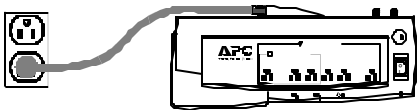
5. Insert the battery (left side first) into the battery compartment



6. Slide the plastic cover to the left until the locking tabs are in place.

3 Power / Check Building Wiring Fault Indicator

1. Plug the UPS directly into the power outlet: **not into a surge protector or power strip.** Additionally, the UPS may not work with all fuel powered generators.



2. If the red Building Wiring Fault indicator is lit, the building wiring presents a potential shock hazard that should be corrected by a qualified electrician.

Note: Improper building wiring will not prevent the UPS from operating, but will limit its protection capability. It may also result in equipment damage not covered by APC (see APC's Equipment Protection Policy).

5 Connect USB Cable and Install Software (optional)

Note: The Back-UPS software CD-ROM provides data reporting and unattended shutdown of computers connected to the device. The User's Guide contains additional information about the Back-UPS software. The User's Guide is contained in the main folder on the software CD-ROM.

For other Microsoft® Windows® or Macintosh® operating systems, please follow the steps below, as appropriate:

Windows® 98 and Windows® Me Users

Please insert the APC PowerChute Personal Edition Software CD-ROM included with your Back-UPS into the CD-ROM drive of your computer. The installation program will load automatically. Please follow the on-screen instructions to install the software.

Windows® 2000 Users

The APC PowerChute Personal Edition Software CD-ROM included with your UPS contains a "wizard" that optimizes your system's power settings for operation with your Back-UPS. It does this by changing various settings in Power Options Properties in the Control Panel.

APC strongly advises you to reconfigure your system by running this wizard.

1. Insert the APC PowerChute Personal Edition Software CD-ROM into the computer's CD-ROM drive.

2. Choose "Start" and then the "Run" option. Type: <CD-ROM drive letter>:\setup.exe. Click "OK" and follow the instructions.

Microsoft® Windows® XP Users

Please visit the APC website at www.apc.com/windowsxp for updates on the availability of Windows XP software.

Mac OS 9 (9.0.4/9.1 or higher) Users

APC PowerChute Personal Edition Software has been designed specifically to work with Mac OS 9 (9.0.4/9.1 or higher). There are builds of Mac OS prior to Mac OS 9.0.4/9.1 with power drivers that have known problems, so please make sure that you have the most up to date version of Mac OS 9 (9.0.4/9.1 or higher).

Insert the APC PowerChute Personal Edition Software CD-ROM into the CD-ROM drive. An icon called "APC Shutdown Manager v1.0.1" will appear on your desktop. Open the folder and

double-click the "ReadMe" file. Make sure your hardware matches the requirements stated in the ReadMe file. Double-click on "APC Shutdown Manager v1.0.1" to begin the installation of the software. At the first dialog, click on "Continue". Read the displayed license agreement and click "Accept" if you agree to the terms. Click on "Install" to begin. After installation, click on the "Restart" dialog button to restart your computer.

All Other Users

The software is designed for the Windows and Macintosh operating systems mentioned in this section. If you do not have one of these operating systems, your unit will still provide these primary features:

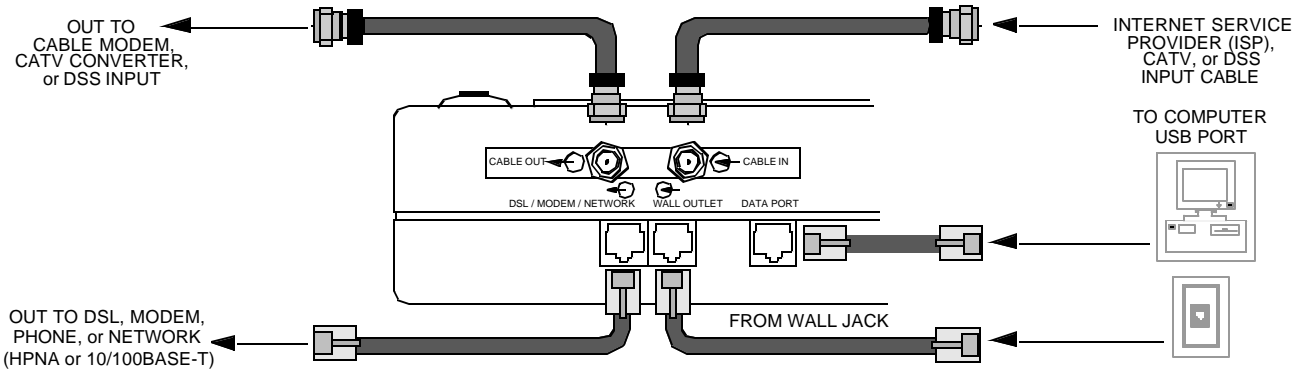
- Battery backup, surge protection, and telephone line protection to protect your entire desktop from lightning and power surges.
- Runtime needed for you to work through brief power disturbances: this gives you time to manually save your data and shut down safely.

Installation of the APC PowerChute Personal Edition Software is not mandatory. However, other features provided by the software include unattended automatic operating system shutdown, as well as application data saving. To activate these features, install the software as previously discussed.

4 Connect Modem / Phone / DSL / Fax / 10/100Base-T / HPNA / Cable Modem / CATV or DSS to Surge Protection

The Back-UPS protects a single line (2-wire) phone (including Digital Subscriber Line - DSL), Home Phoneline Networking Association (HPNA) type equipment, modem, 10/100Base-T Ethernet, or fax machines from surges when connected through the UPS as shown in the drawing on the right.

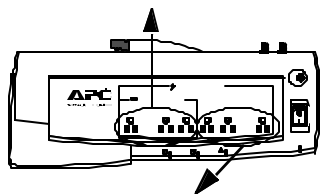
The UPS also protects a cable modem, CATV converter, or DSS receiver from surges when it is connected through the UPS coaxial connectors as shown in the drawing on the right.



6 Connect other Equipment to the UPS

Battery Power Supplied Outlets

These three outlets are powered whenever the UPS is switched On. During power outage or other utility problems (brownouts, over-voltages), these outlets will be powered for a limited time by the battery in the UPS. **Plug a PC, monitor, and one other data-sensitive device (Zip drive or modem for example) into these outlets.**

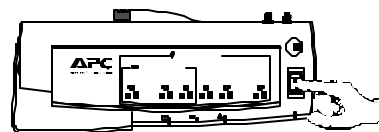


Full-Time Surge Protection Outlets

All outlets provide surge protection. These 3 outlets are powered whenever utility power is available - regardless of whether the UPS power switch is On or Off. **Plug a printer, fax machine, scanner or other peripherals that do not need battery power during an outage, into these outlets.**

7 Switch On and Test the UPS

Press the On/Off switch to power the unit.



A lit On Line (green) indicator confirms the UPS is On and utility power is available. All outlets are now powered.

Self Test - The UPS has a Self-Test capability to verify that the UPS is fully prepared for a utility outage. A UPS Self-Test is performed whenever the unit is switched On and every two weeks of continuous operation. Details about Self-Test are provided in the *Self-Test* section.

Battery Charging - The UPS charges the battery whenever it is connected to utility power, whether the UPS is turned On or Off. See the APC website for estimated battery runtime based on the computer system plugged into the UPS.

Self Test

The Self Test is designed to determine:

- If the battery is healthy or if it needs to be replaced.
- If the Battery Power Supplied outlets are overloaded.

The Self Test can be initiated at any time and is performed automatically every two weeks of continuous operation. A Self Test should be performed whenever a device is first connected to a Battery Power Supplied Outlet, to confirm that a new device will not overload the UPS.

Procedure:

1. Perform steps 1 and 2 of the *Manual Computer Shutdown* procedure. Do not switch Off the computer or any connected device.
2. Switch the UPS Off and then On.
3. Watch the visual indicators and listen for any audible indicators during the test, to note possible fault indications. See the *Indicators* section for an explanation of all visual and audible indications associated with the operation of the UPS.

Manual Computer Shutdown

When the On Battery indicator is lit, follow this procedure to shut down the computer, UPS and any equipment connected to the Battery Power Supplied outlets:

1. Save any open files and close all applications.
2. Perform an orderly shut down of the operating system.
3. Switch off all equipment connected to the UPS.
4. Switch Off the UPS to maintain battery capacity.

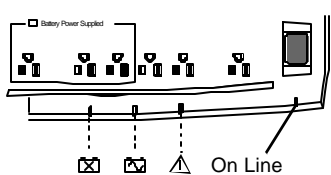
Note: This procedure needs to be completed before the battery is fully discharged. Loss of data or corruption of the operating system is possible if this procedure is not completed before the battery is fully discharged.

Order Replacement Battery

Replacement batteries can be ordered from local retailers (a valid credit card may be required), APC or the APC website (<http://www.apc.com>). When ordering, please specify part number RBC21.

Indicators

The information on the right defines the visual and associated audible indicators used to determine the status of the UPS. See the Troubleshooting section for additional information.



On Line (green)

The UPS is switched On and is supplying utility power to the Battery Power Supplied outlets.

Building Wiring Fault (red)

The building wiring is faulty.

On Battery (yellow)

Utility power is outside acceptable limits. The battery is powering only the Battery Power Supplied outlets.



Single Beep - A brief power loss has occurred (UPS is on battery).

4 Beeps / 30 Seconds - Utility power is unacceptable. The battery is supplying power.

Continuous Beeping - Battery capacity is low. Connected devices will lose power shortly.



Flashing On Battery (yellow)

Continuous Tone - Battery Power Supplied outlets are overloaded.



Replace Battery (Red)

See the audible indication below.



Continuous Short Beeps for 1 minute, repeats every 5 hours. The battery may need to be replaced.



Flashing Replace Battery (Red)

A UPS internal battery charger fault has occurred. See the *Troubleshooting* section.

Battery Replacement

Battery replacement is a safe procedure, isolated from electrical hazards.

Do not replace the battery when the UPS is On-Battery.

Please refer to the diagrams in the "Connect Battery" section during this procedure.

Procedure:

1. Switch "Off" and unplug all equipment from the UPS.
2. Switch "Off" the UPS and unplug it from the wall outlet.
3. Refer to the Step 1 in the "Connect Battery" section of the manual for instructions on how to open the battery compartment.
4. Disconnect the battery wires one at a time; grasp each wire connector and pull straight back. Take care not to pull the wires.
5. Remove the old battery.

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

6. Connect the red wire to the positive (+) battery terminal of the replacement battery. Connect the black wire to the negative (-) battery terminal.
7. Tip the new battery, terminal side first, into the battery compartment. Press the battery gently until the retaining clip snaps into place.
8. Slide the battery compartment cover back into place. The UPS needs to be connected to utility power for at least 4 hours before full runtime can be expected.

Note: The spent battery must be recycled. Deliver the battery to an appropriate recycling facility or return it (in the new battery's packing material) to APC. See the new battery instructions for additional recycling information.

Storage

Before storing, charge the UPS for at least 12 hours. Store the UPS covered and upright in a cool, dry location. Refer to the table below for charging and storage information. Please contact APC Technical Support to troubleshoot a faulty unit before returning it to APC.

Storage Temperature	Recharge Frequency	Charging Duration
5 to 86°F (-15 to 30°C)	Every 6 months	12 hours
86 to 113°F (30 to 45°C)	Every month	12 hours

Specifications

Acceptable Input Voltage	0-150 Vac, Single Phase
Input Voltage (on line)	98-139 Vac
Output Voltage	106-124 Vac
Frequency Limits (on line)	47 - 63 Hz
Max. Load - Battery Power Supplied Outlets	500 VA, 325 W
Max. Load - Surge Protected Only Outlets	10 A
Maximum Branch Circuit Overcurrent Protection Requirement	20 A Caution: To reduce the risk of fire, connect only to a circuit provided with 20 amp maximum branch circuit overcurrent protection in accordance with National Electrical Code ANSI/NFPA.
Operating / Storage Temperature	32 to 104°F (0 to 40°C) / 5 to 113°F (-15 to 45°C)
Operating and Storage Relative Humidity	0 to 95%, non-condensing
Operating Elevation / Storage Elevation	0 - +10,000 ft. (0 - 3,000 m) / 0 - +50,000 ft (0 - +15,000 m)
UPS Size (H x W x D) excluding power cord	2.7 in. x 17.0 in. x 7.0 in.
UPS Weight	8.6 lb. (3.9 kg)
Shipping Weight	9.1 lb. (4.2 kg)
EMI Classification	FCC/DOC Class B
On-Battery Runtime - Typical Desktop Computer and 15" Monitor (110 watts)	17 Minutes

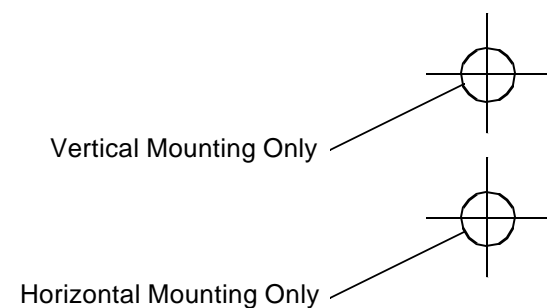
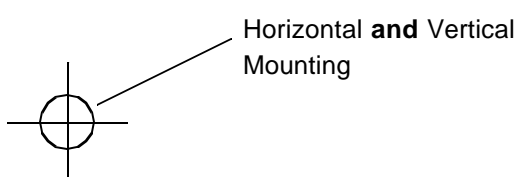
Warranty

The standard warranty is 2 years from the date of purchase. APC's standard procedure is to replace the original unit with a factory reconditioned unit. Customers who must have the original unit back due to assigned asset tags and set depreciation schedules must declare such a need at first contact with APC Technical Support. APC will ship the replacement unit once the defective unit is received by the repair department or cross-ship upon the provision of a valid credit card number. The customer pays for shipping to APC, and APC pays ground freight transportation costs back to the customer.

Wall Mount of UPS


The UPS can be mounted vertically or horizontally to a wall surface. Use the template below to position the securing fasteners (not supplied).

Note: Position the On/Off switch to the right for horizontal mounting, and to the top for vertical mounting.



1. Hold this page against the wall in the desired mounting location.
2. Use thumbtacks or tape to hold this page in place. Make sure the template circles line up where the mounting fasteners are to be installed. Use a sharp nail or pin to puncture the center of each appropriate template circle to mark the wall.
3. Install fasteners at the marked locations. Leave the head of both fasteners 5/16" (8 mm) out from the surface of the wall. Fasteners must be able to support 15 lb (6.8 kg).
4. Mount the UPS by positioning the key-hole slots over the fastener heads. For vertical mounting, slide the unit down into place. For horizontal mounting, turn it slightly counterclockwise until it is securely in place.

Troubleshooting

Symptom	Possible Cause	Solution
Replace Battery indicator is lit.	The battery wire is not connected.	Connect the battery wire as shown in Step 1 of the <i>Installation</i> section (front page).
	Battery has reduced capacity due to frequent or long outages, or needs to be replaced.	Charge the UPS overnight. Then, switch the UPS Off and then On. If the Replace Battery indicator is still lit, the battery needs to be replaced. If the UPS is under warranty, contact APC Technical Support. If the UPS is not under warranty, see <i>Order Replacement Battery</i> on the front page.
Circuit breaker popped up (tripped).	The outlets are severely overloaded.	Unplug one (or more) device from the UPS and reset the circuit breaker by pressing it fully inward. 
UPS does not provide expected runtime.	The battery is not fully charged, or is depleted by frequent power outages.	The UPS battery becomes discharged during power outages. Keep the battery charging (by keeping the UPS plugged into utility power) for up to 20 hours after a power outage. Recharge may occur in less time - depending on the battery capacity.
	The battery is near the end of its useful life.	Consider the purchase of a replacement battery.
Flashing On Battery indicator and constant tone.	The Battery Power Supplied outlets are overloaded.	<ol style="list-style-type: none"> 1. Perform a Manual Shutdown (see front page). 2. Switch the UPS Off. 3. Unplug one device from the Battery Power Supplied outlets. 4. Switch the UPS On. <p>If the overload indication disappears, the problem is solved. Repeat the procedure if the overload condition persists.</p>
Flashing Replace Battery indicator and continuous tone.	A UPS internal battery charger fault has occurred.	Switch the UPS Off and then On. If the same symptoms appear, disconnect the UPS from utility power to prevent possible battery damage and contact APC Technical Support.

Service

Please, Do Not Return the Unit to the Place of Purchase Under any Circumstances!

1. Consult the Troubleshooting section to eliminate common problems.
2. Verify the battery is connected as shown in the Battery Replacement section on this page and that the circuit breaker is not tripped (see Troubleshooting section).
If you still have problems or questions, please contact APC via the Internet or at one of the phone numbers listed at the bottom of the page.
3. Before contacting APC, please be sure to record the date purchased, UPS model, and serial number (on bottom of UPS).
4. Be prepared to troubleshoot the problem over the telephone with a Technical Support Representative. If this is not successful, the Technical Support Representative will issue a Return Merchandise Authorization Number (RMA#) and a shipping address.
5. Pack the UPS in its original packaging. If the original packing is not available, ask APC Technical Support 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 (insuring the package for full value is recommended).
6. Write the RMA# on the outside of the package.
7. Return the UPS by insured, prepaid carrier to the address **given to you by APC** Technical Support.

APC Contact Information



USA/Canada	1.800.800.4272
Mexico	292.0253 / 292.0255
Brazil	0800.12.72.1
Worldwide	1.401.789.5735
Internet	http://www.apc.com
Technical Support	http://www.apc.com/support