

Thank you for purchasing APC's Back-UPS 650. Please complete and mail the enclosed Warranty Registration Card, or register your purchase at the APC Web site: <http://www.apcc.com>.

1 Inspection, Safety and Placement

Ensure the following items are inside the package:

- User's Manual
- Warranty Registration Card
- Two each IEC power cords

If damage is found, notify the shipping company and APC. Please fill out the Warranty Registration Card and mail it to APC, or fill out the online form at www.apcc.com/in to obtain warranty coverage.

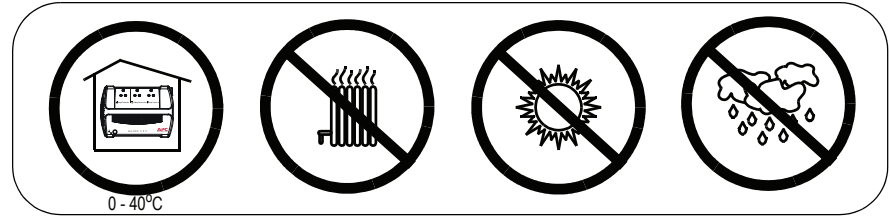
Set the Back-UPS in place and ensure the following:

- At least one inch of clearance is provided at the top and sides to ensure proper air flow.
- Do not install this device during a thunderstorm.
- Do not install this device in a hot or excessively moist location.
- Do not use this device with aquarium equipment.
- This device is designed for indoor use only.

3 Power On

The Back-UPS should be allowed to charge for at least 24 hours to ensure sufficient runtime. The unit is being charged whenever it is connected to utility power, and the unit is turned ON.

Set unit power to ON by pressing the ON/OFF button. Then turn on your attached equipment.



2 Connect Equipment

Battery Backup

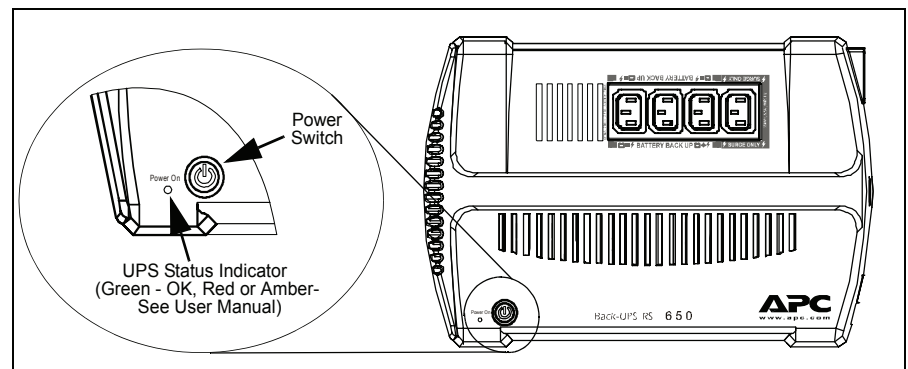
These outlets are powered whenever the unit is switched ON. During a power outage or other utility problems (brownouts, over-voltages), these outlets will be powered for a limited time by the internal battery. Plug your computer and monitor, or other devices, into these outlets to ensure continuous power.

Surge Protection Only

These outlets are powered whenever the unit is connected to the utility power. Plug your printer or fax, or other devices that do not require battery backup power into these outlets.

Connect AC Line Cord

Connect the AC line cord to a 230 Volt outlet.



4 Transfer Voltage and Sensitivity Adjustment (Optional)

In situations where the Back-UPS, or connected equipment, appears too sensitive to the input voltage, it may be necessary to adjust the transfer voltage. This is a very simple task that requires the use of an ON/OFF push button. To adjust the transfer voltage, perform the following steps:

1. Plug the Back-UPS into the utility power source. The Back-UPS will be in "Standby mode" (no indicators are lit).
2. Press the ON/OFF push button fully in for 10 seconds. The Online LED will begin glowing in a cyclical order: GREEN-AMBER-RED, indicating it is going into "Program mode".
3. The Back-UPS will then indicate the current sensitivity, as shown in the *Transfer Voltage and Sensitivity Adjustment* table below.
4. To select the LOW sensitivity setting, press the ON/OFF push button until the LED begins flashing GREEN.
5. To select the MEDIUM sensitivity setting, press the ON/OFF push button until the LED begins flashing RED.
6. To select the HIGH sensitivity setting, press the ON/OFF push button until the LED begins flashing AMBER.
7. To exit Programming mode, once sensitivity is set, wait approximately 5 seconds, and all of the LED indicators will be off (unlit).

Status Indications

The Back-UPS indicates operating status using a combination of multicolor LED visual (green 'Power ON', red "Replace Battery", and amber), and audible indicators, as follows:

Power On LED	Buzzer	Condition
Flashing GREEN	Constant Beeping	Low Battery Warning - The Back-UPS has 1.5 minutes of battery power remaining.
GREEN On	Constant Beeping	On Line Overload - The power drawn by the connected equipment exceeds the power capacity of the Battery Backup.
GREEN On	Short beep every 4 seconds	Low Battery Shutdown - Battery power has been completely exhausted. The Back-UPS is waiting for utility power to return to normal.
Alternating GREEN & RED	Constant tone	Bad Battery Detected - Order and replace battery (see <i>Replace Battery</i>).
Flashing RED	Constant tone	Battery Disconnected - One or both battery wires are disconnected (see <i>Replace Battery</i> to connect the wires).
Flashing RED	Chirp every 2 seconds	Charger Warning -The Back-UPS has experienced an internal problem. Contact APC Technical Support.
Off	Constant Tone	Charger Fault - The Back-UPS has experienced an internal problem. Contact APC Technical Support.
Off	ContinuousTone	On Battery Overload - The connected equipment requires more power than can be provided by the Back-UPS battery.
GREEN On	Off	On-line - Back-UPS is supplying conditioned utility power to the connected equipment.
GREEN On (Off during 4 beeps)	4 beeps repeated every 30 seconds	On-Battery - Back-UPS is supplying battery power to the connected equipment.
Alternating GREEN/AMBER/RED	Off	Button Program Mode - see Section 4 and table below.
GREEN Flashing	Off	Low Sensitivity Mode - see Section 4 and table below.
RED Flashing	Off	Medium Sensitivity Mode - see Section 4 and table below.
AMBER Flashing	Off	High Sensitivity Mode - see Section 4 and table below.

Transfer Voltage and Sensitivity Adjustment

Indicators Flashing	Sensitivity Setting	Input Voltage Range (For Utility Operation)	When to Use
Green Flashing	LOW	155 - 290	Input voltage is extremely low or high. Not recommended for computer loads.
Red Flashing	MEDIUM (factory default)	160 -280	Back-UPS frequently goes on battery.
Amber Flashing	HIGH	165 - 270	Connected equipment is sensitive to voltage fluctuations (recommended).

Troubleshooting

Consult APC Online Technical Support or call APC Technical Support for assistance with problems that cannot be resolved using the table below:

Problem	Probable Cause	Solution
Unit will not turn on in line mode.	Circuit Breaker has tripped. Utility power not available at the wall outlet.	Reduce the amount of equipment plugged into the "Battery Backup + Surge Protection" outlets. Reset the <i>circuit breaker</i> by pushing it back in. Ensure that the fuse or circuit breaker for the wall outlet is okay, and that the wall switch controlling the wall outlet (if any) is in the ON position.
Connected equipment loses power.	The unit is overloaded. The unit has exhausted its available battery power. The equipment connected to the Back-UPS does not accept the step-approximated sine waveform from the unit. The unit may require service.	Ensure the equipment you want to stay powered during a power failure is plugged into the Battery + Surge Protection" outlets of your Back-UPS. Ensure the equipment plugged into the outlets of the unit are not overloading the capacity of the unit. Try disconnecting some of the equipment one device at a time, and see if the problem continues. The unit can only operate on battery power for a limited amount of time. The unit will eventually turn off when the available battery power has been used. Allow the unit to recharge for 24 hours before continuing to use the unit. The output waveform is designed for computers and computer-related equipment. It is not designed for use with motor-type equipment. Contact APC Technical Support for further troubleshooting.
The Power indicator is lit, and the unit is beeping four times every 30 seconds, or it is emitting a constant tone.	The unit is using battery.	The unit is operating normally and using battery power. Once On Battery, you should save your current work, power down your equipment, and turn the unit OFF. Once normal power is restored, you may turn the unit back ON, and power your equipment.
The power on switch flashes once per second, at the same time the unit beeps once per second.	Battery capacity is low (there is about 2 minutes of use remaining).	The unit is about to shut down due to a <i>low battery</i> charge condition! When the unit beeps once every second, the battery has about 2 minutes of power remaining. Immediately power down your computer, and turn the unit OFF. When power returns to normal, the unit will recharge the battery.
Inadequate runtime.	The battery is not fully charged. Battery is near the end of useful life.	Allow the unit to charge by leaving it plugged in, and switched on for 24 hours. As a battery ages, the amount of runtime available will decrease. Batteries also age prematurely if the unit is placed near excessive heat. If the battery will not charge, the Back-UPS is no longer operable, and the battery must be replaced.

Specifications

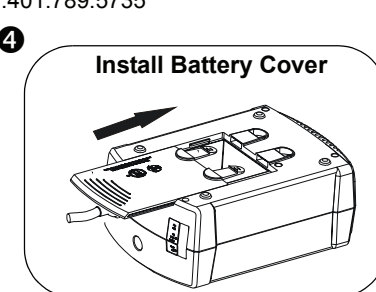
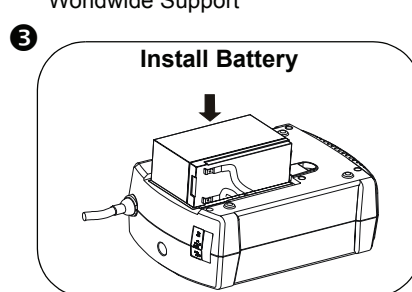
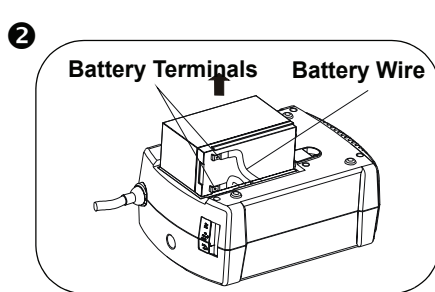
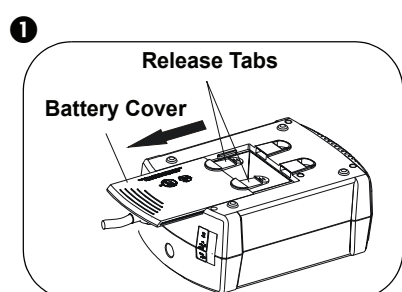
Item	Type	Specification
Input	Voltage	230 Vac, nominal
	Frequency	50 or 60 ± 3 Hz, 50 Hz factory default value
	Brownout Transfer	160 ± 8% Vac, typical
	Over-voltage Transfer	280 Vac, typical
Output	UPS Capacity (total)	650 VA / 390 W
	Voltage - On Battery	230 Vac (step-approximated sine wave)
	Frequency - On Battery	50 Hz ± 1 Hz
	Transfer Time	50Hz: 6ms typical, 10ms maximum 60Hz: 5ms typical, 8ms maximum
Protection and Filter	AC Surge Protection	Full time, 440 joules
	AC Input	Resettable circuit breaker
Battery (lead-acid)	Type (maintenance free)	12V, 28 Watts
	Average Life	2 - 5 years
	Typical Recharge Time	24 hours
Physical	Net Weight	6.7 kg.
	Size	12.3 cm (H) x 30.00cm (W) x 20.4 cm (D)
	Operating Temperature	0°C to 40°C
	Storage Temperature	-15°C to 45°C
	Operating Relative Humidity	0 to 95% non-condensing
	Operating Elevation	0 to 10,000 ft (0 to 3,000m)

Battery Replacement

Warning: Battery replacement must be performed by **qualified service personnel only**, as follows:

Warning: A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries: Remove watches, rings, or other metal objects. Use tools with insulated handles.

- Disconnect all equipment plugged into the Back-UPS.
 - Turn off the Back-UPS and disconnect it from the wall outlet.
 - Lay the Back-UPS on a flat, stable surface with the bottom of the unit facing upward.
 - Press down on the two release tabs, and slide the battery cover straight out of the Back-UPS ❶.
 - Lift the battery out of the Back-UPS far enough to disconnect the red and black wires from the battery ❷.
- Caution:** Do not dispose of the battery in a fire; it could explode. Do not open or damage the battery. Electrolyte may be released that is harmful to the skin and eyes, and may be toxic.
- Recycle or dispose of the old battery in accordance with local regulations, or return it to APC to ensure it is recycled properly.
 - Unpack and inspect the replacement battery. Ensure the replacement battery is not cracked or leaking. If you find the battery is damaged, contact APC Customer Service.
 - Partially insert the replacement battery in to the Back-UPS ❸.
 - Connect the black wire to the negative (-) terminal of the battery ❹.
 - Ensure the black wire is not pinched under the battery.
 - Connect the red wire to the positive (+) terminal of the battery ❸. Slide the battery fully in to the Back-UPS. Ensure the red wire is fully inside the battery enclosure. Install the battery cover ❹.
 - Plug the Back-UPS into the wall outlet, press the power push button on the Back-UPS to turn it on, and allow the battery to charge for 24 hours.
 - Plug equipment to be protected into the Back-UPS and resume normal operation.



Safety

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

This equipment is intended for installation in a temperature-controlled indoor area (see **Specifications** for exact temperature range), free of conductive contaminants.



Electrical Safety

To reduce the risk of fire, connect only to a circuit provided with 20-amp maximum branch circuit over current protection.



CAUTION! De-energizing Safety

The unit has an internal energy source (the battery); the output may be energized when the unit is not connected to an AC power outlet.

To de-energize pluggable equipment: switch the unit off. Disconnect the unit from utility power. Next, disconnect the equipment from the unit.

The unit includes a protective earth conductor which carries the leakage current from the connected devices. Total leakage current must not exceed 3.5 mA.

Use of the unit in life support applications where failure of the unit 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 unit contains no user-serviceable parts. This equipment contains potentially hazardous voltages. Do not attempt to disassemble the unit. Repairs are performed only by factory trained service personnel.



Batteries must be recycled. Deliver the entire Back-UPS to an appropriate recycling facility, or ship it to APC in the original packaging.

- 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.

Service

Please DO NOT RETURN the unit to the place of purchase under any circumstances.

- Consult the Troubleshooting section to eliminate common problems.
- Verify the battery is connected (see *Connect Battery*) 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 below.
- Before contacting APC, please be sure to record the date purchased, model and serial number (on bottom of unit).
- Be prepared to troubleshoot the problem over the telephone with a Technical Support Representative. If this is not successful, and the unit is still under APC warranty, the representative will arrange to allow you to swap the defective unit with APC via one of the following channels:
 - APC certified Back-UPS service stations
 - APC Back-UPS dealers
 - APC Suzhou factory via mailing

Warranty

The standard warranty is 2 years from the date of purchase.

Contact Information

Website
Online Technical Support

APC Asia-Pacific (Phone)
APC China
Russian Federation
Worldwide Support

<http://www.apcc.com>
<http://www.apcc.com/support>
esupport@apcc.com
(+65)(10) 3896 823
(+86)(10) 8529 9888
(8)(800) 200 2722
1.401.789.5735