



# APC CS350 Uninterruptible Power Supply User Manual

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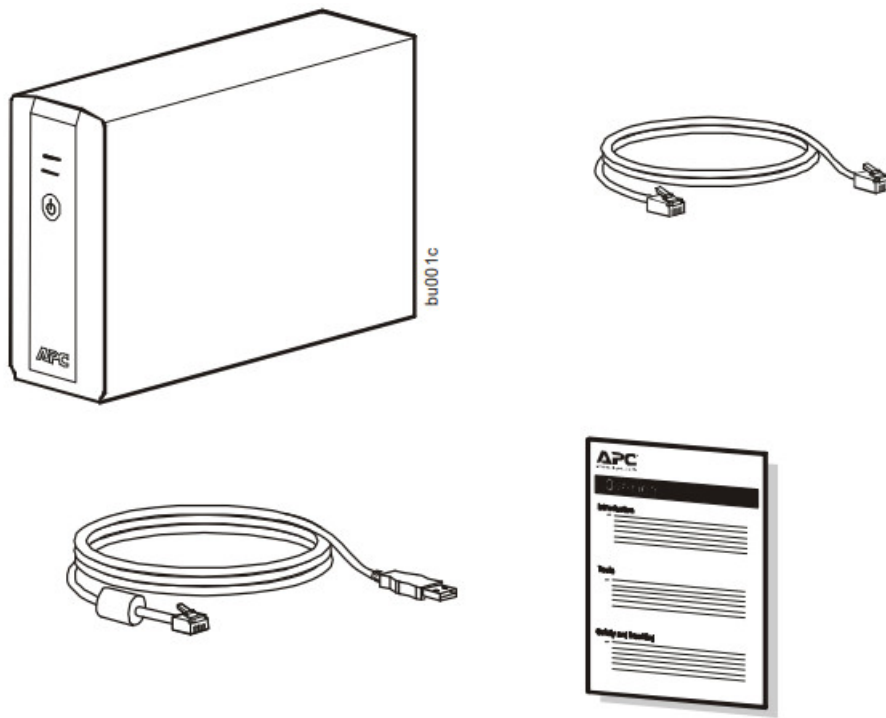


## CS350 Uninterruptible Power Supply User Manual

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### Inventory



## Important Safety Instructions

SAVE THESE INSTRUCTIONS – This manual contains important instructions that should be followed during installation and maintenance of the UPS and batteries.

- This up is intended for indoor use only.
- Connect the UPS power cable directly to a wall outlet. Do not use surge protectors or extension cords
- When grounding cannot be verified, disconnect the equipment from the AC power outlet before installing or connecting it to other equipment. Reconnect the power cord after all connections are made.



## RISK OF HYDROGEN SULPHIDE GAS AND EXCESSIVE SMOKE

- Replace the battery at least every 5 years or at the end of its service life, whichever is earlier.
- Replace the battery immediately when the UPS indicates battery replacement is necessary.
- Replace batteries with the same number and type of batteries as originally installed in the equipment.
- Replace the battery immediately when the UPS indicates a battery over-temperature condition, or when there is evidence of electrolyte leakage. Power off the UPS, unplug it from the AC input and disconnect the batteries. Do not operate the UPS until the batteries have been replaced.

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

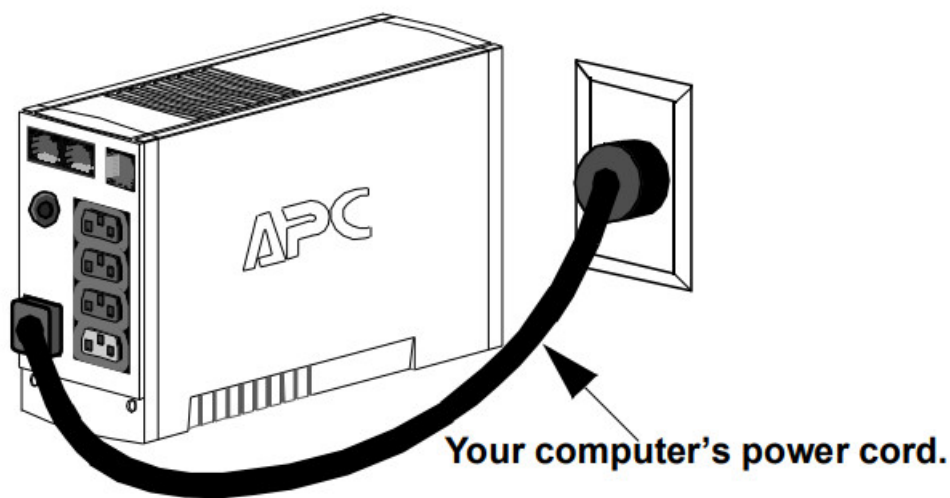
- CAUTION: Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and the required precautions.
- CAUTION: Do not dispose of batteries in a fire. The batteries may explode.
- CAUTION: Do not open or mutilate batteries. Released material is harmful to the skin and eyes. It may be toxic.
- CAUTION: Before replacing batteries, remove conductive jewelry such as chains, wristwatches, and rings. High

energy through conductive materials could cause severe burns.

- CAUTION: Failed batteries can reach temperatures that exceed the burn thresholds for touchable surfaces.
- CAUTION: A battery can present a risk of electrical shock and high short-circuit current. The following precautions should be observed when working on batteries:
  - Disconnect the charging source prior to connecting or disconnecting battery terminals.
  - Do not wear any metal objects including watches and rings.
  - Do not lay tools or metal parts on top of batteries.
  - Use tools with insulated handles.
  - Wear rubber gloves and boots.
  - Determine if the battery is either intentionally or inadvertently grounded. Contact with any part of a grounded battery can result in electric shock and burns by high short-circuit current. The risk of such hazards can be reduced if grounds are removed during installation and maintenance by a skilled person. This manual can be downloaded from APC by Schneider Electric Website [www.apc.com](http://www.apc.com).

## Placement / Power

- Do not operate this UPS in direct sunlight, in contact with fluids, or where there is excessive dust or humidity.
- Be sure the air vents on the UPS are not blocked. Allow adequate space for proper ventilation.
- The battery typically lasts for three to five years. Environmental factors impact battery life. Elevated ambient temperatures, poor-quality AC power, and frequent short-duration discharges will shorten battery life.
- Plug the Back-UPS into a wall outlet, as shown.
- The Back-UPS charges the internal battery any time it is connected to a wall outlet.



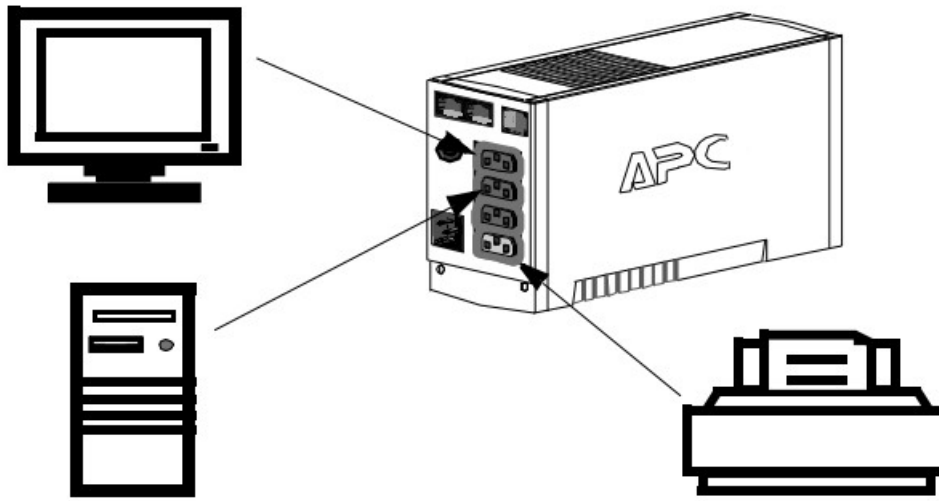
## Connect Equipment to the Back-UPS

The rear panel of the Back-UPS consists of the following elements:

Battery Back-Up Outlets (qty. of 3). These outlets provide battery backup, surge protection, and Electro-magnetic Interference (EMI) filtering. In case of a power outage, battery power is automatically provided to these outlets. Power (utility or battery) is not supplied to these outlets when the Back-UPS is switched Off.

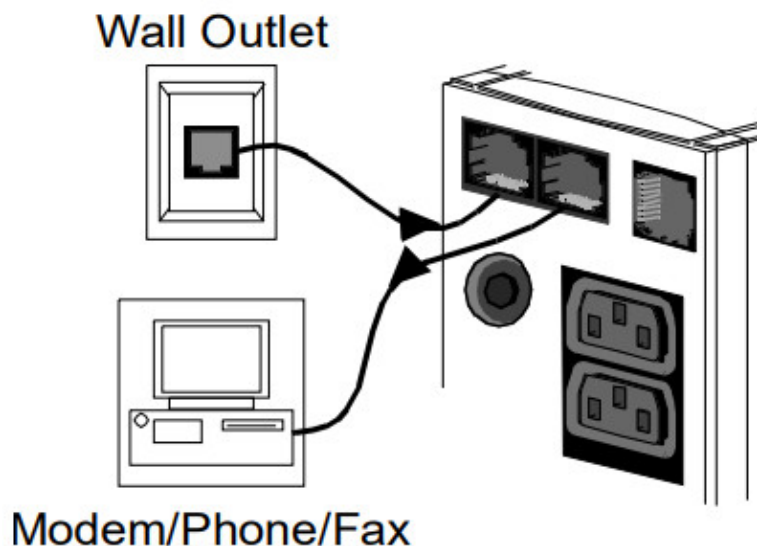
Connect a computer, monitor, and external disk or CD-ROM drive to these outlets.

Surge Only Outlet. This outlet is always On (when utility power is available) and is not controlled by the On/Off switch. This outlet does not provide power during a power outage. Connect a printer, fax machine, or scanner to this outlet.



## Connect the Phone Line to Surge Protection

The telephone ports provide lightning surge protection for any device connected to the telephone line (computer, modem, fax or telephone). The telephone ports are compatible with Home Phoneline Networking Alliance (HPNA) and Digital Subscriber Line (DSL) standards, as well as all modem data rates. Connect as shown.



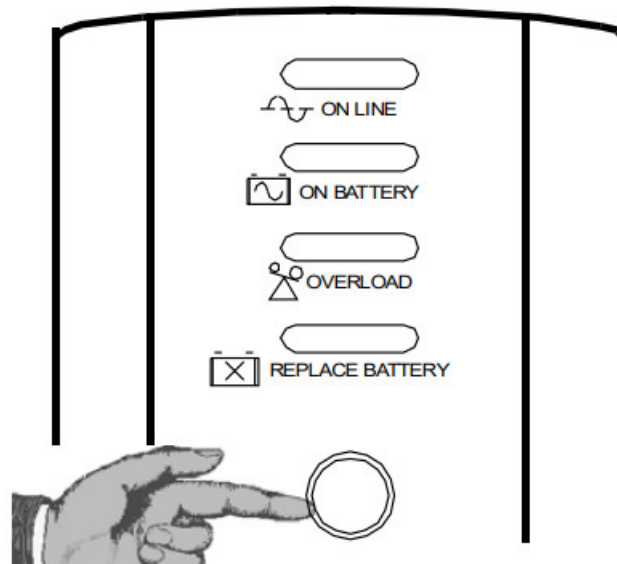
## Switch on the Back-UPS

**NOTE:** Allow the Back-UPS to charge for a full eight hours prior to use.

Press the PUSH button on the front panel of the Back-UPS.

Observe that the following events occur after pressing and releasing the PUSH button:

1. The green On-Line indicator flashes.
2. The yellow On Battery indicator lights while the Self-Test is being performed.
3. When Self-Test has successfully completed, only the green On Line indicator will be lit.
4. If the internal battery is not connected, (see Step 1 above) the green On Line indicator and red Replace the Battery indicator will light. The Back-UPS will also emit a chirping sound.



### Connect USB Cable and Install Software (optional)

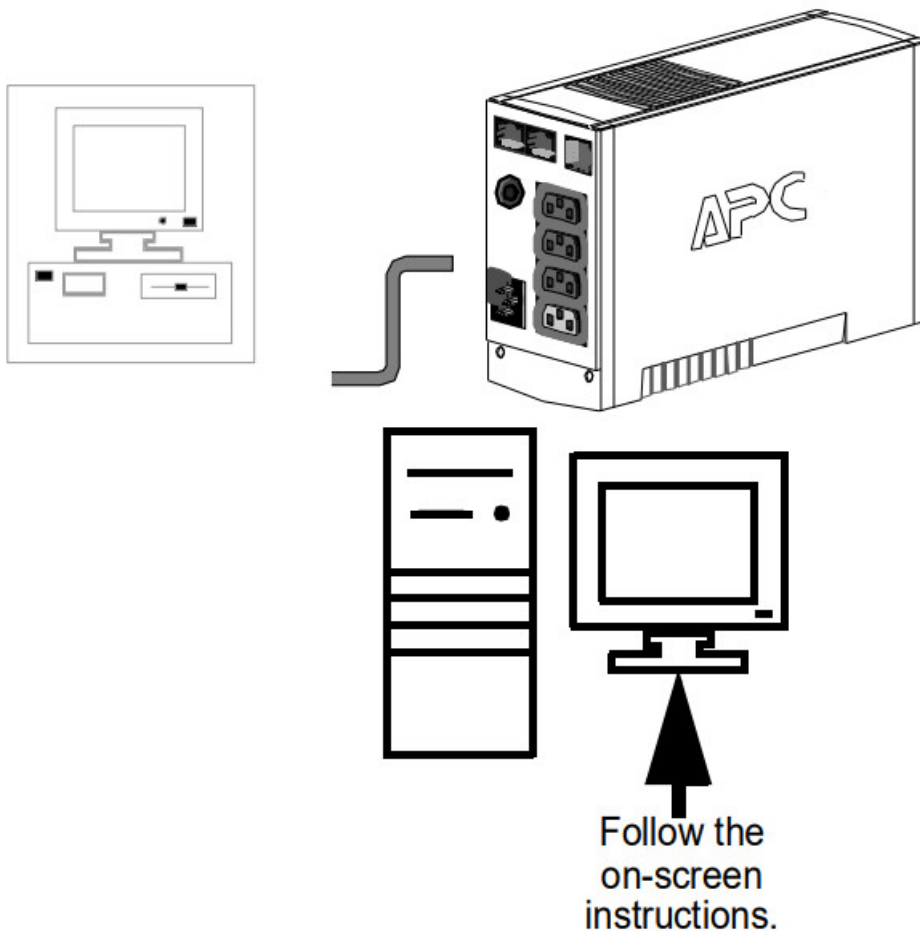
**NOTE:** Macintosh Users – for full USB performance, use Mac OS 10.1.5 or higher.

If autoplay is not enabled on the computer, proceed as follows:

Use the USB cable to connect the Data port on the UPS to the USB port on your computer. Download PowerChute Personal Edition Software from [www.apc.com/pcpe](http://www.apc.com/pcpe). Select the appropriate operating system and follow

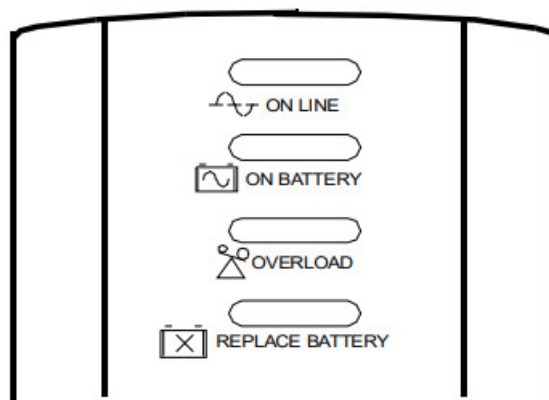
the directions to download the software. APC PowerChute is compatible with Windows operating system only.

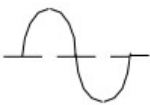
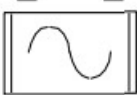
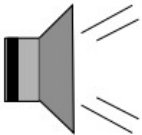
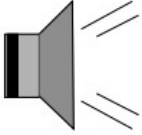

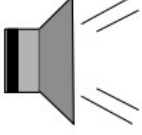

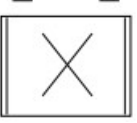
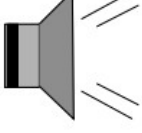
Visit <http://www.apc.com/wp/?um=300> for OS compatibility list.



### Status Indicators and Alarms

There are four status indicators (lights) on the front panel of the Back-UPS (On Line, On Battery, Overload, and Replace Battery).

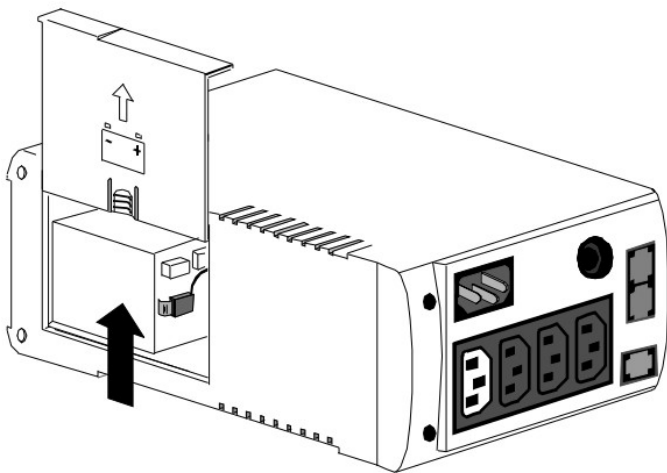
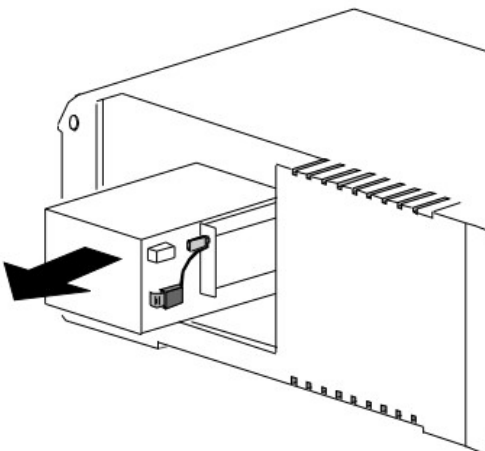
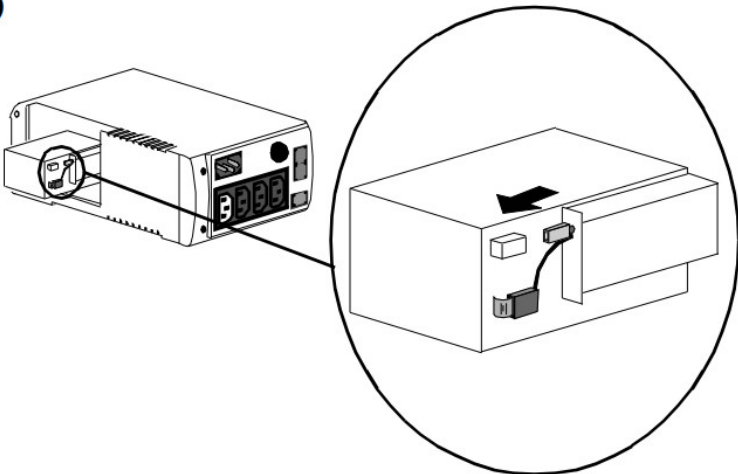
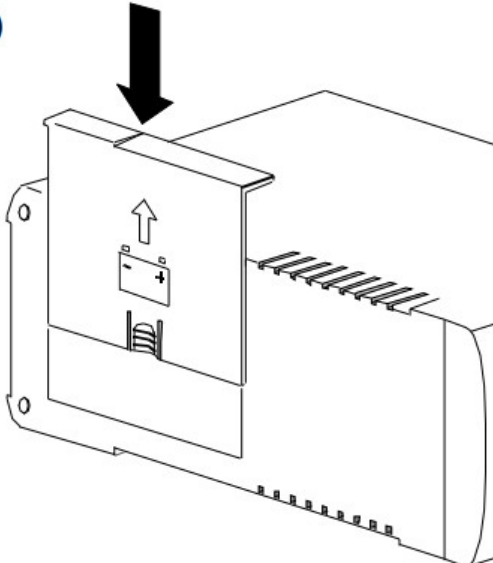


	On-Line (green) – is lit whenever AC power is powering the Battery Backup outlets
	On Battery (yellow) – is lit whenever the battery of the Back-UPS is powering equipment connected to the Battery Backup Outlets.
	Four Beeps Every 30 Seconds – this alarm is sounded whenever the Back-UPS is running On B attery. Consider saving work in progress.
	Continuous Beeping – this alarm is sounded whenever a low battery condition is reached. Battery run-time is very low. Promptly save any work in progress and exit all open applications. Shutdown the operating system, computer, and the Back-UPS.
	Overload (red) – is lit whenever power demand has exceeded the capacity of the Back-UPS.
	Continuous Tone – this alarm is sounded whenever the Battery Backup outlets are overloaded.
	Circuit Breaker – the CIRCUIT BREAKER button located on the rear panel of the Back-UPS will stick out if an overload condition forces the Back-UPS to disconnect itself from utility power. If the button sticks out, disconnect nonessential equipment. Reset the circuit breaker by pushing the button inward.
	Replace Battery (red) – is lit whenever the battery is near the end of its useful life, or if the battery is not connected (see above). A battery that is near the end of its useful life has insufficient run time and should be replaced.
	Chirps for 1 Minute Every 5 Hours – this alarm is sounded whenever the battery is not able to pass the automatic diagnostic test.

## Replace the internal Battery

To replace the internal battery, proceed as follows:

**NOTE:** Small sparks may occur during the process. This is normal.

	
<p>Place the unit on its side. Slide the battery compartment cover upward and off of the UPS.</p>	<p>Pull the battery out, exposing the battery terminals and wires. Disconnect the wires from the terminals.</p>
	
<p>Slide the new battery into the battery compartment. Connect the battery wires to the terminals as follows: Black wire to Negative (-) terminal Red wire to Positive (+) terminal</p>	<p>Align the battery compartment cover with the UPS. Push the cover down until it locks.</p>

## Order Replacement Battery

The typical battery life is 3-5 years (depending on the number of discharge cycles and operating temperature). A replacement battery can be ordered over the phone from Schneider Electric, or the battery can be ordered online from the APC by the Schneider Electric website (<http://www.apc.com>, a valid credit card is required). When ordering, specify Battery Cartridge RBC2 (Back-UPS 350/500) or RBC17 (Back-UPS 650).

## 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 simple task requiring the use of the front panel PUSH button. To adjust the transfer voltage, proceed as follows:

When ordering, specify Battery Cartridge RBC2 (Back-UPS 350/500) or RBC17 (Back-UPS 650).

1. Plug the Back-UPS into the utility power source. The Back-UPS will be in a Standby Mode (no indicators lit).
2. Press the front panel PUSH button fully inward for 10 seconds. All indicators on the Back-UPS will flash to acknowledge going into Programming Mode.
3. The Back-UPS will then indicate its current Sensitivity Setting, as shown in the following table.

<b>Indicators Flashing</b>	<b>Sensitivity Setting</b>	<b>Input Voltage Range (for utility operation)</b>	<b>Use When</b>
1 (yellow)	Low	160 – 278 Vac	Input voltage is extremely low or high. Not recommended for computer loads.
2 (yellow, and red)	Medium (factory default)	180 – 266 Vac	Back-UPS frequently goes On Battery.
3 (yellow, red, and red)	High	196 – 256 Vac	Connected equipment is sensitive to voltage fluctuations (recommended).

4. To select the Low Sensitivity setting, press the PUSH button until the yellow indicator is flashing.
5. To select the Medium Sensitivity setting, press the PUSH button until the yellow and red indicators (second and third from the top) are flashing.
6. To select the High Sensitivity setting, press the PUSH button until yellow and both red indicators (bottom three) are flashing.
7. To exit without changing the Sensitivity Setting, press the PUSH button until the green indicator is flashing.
8. Once in Programming Mode, if the PUSH button is not pressed within 5 seconds, the Back-UPS will exit Programming Mode; all indicators will extinguish.

## Specifications




Specification	
Input Voltage (on line)	180 – 266 Vac (default setting)
Frequency Limits (on line)	47 – 63 Hz (auto-sensing)
On Battery Waveshape	Stepped Sine Wave
Maximum Load	350VA/210W 500 VA/300W 650VA/400W
Typical Recharge Time	8 Hours
Size (H x W x D)	16.5 x 9.2 x 28.5 cm (6.5 x 3.6 x 11.2 inches)
Weight	350 VA – 5.7 kg (12.5 lb) 500 VA – 5.9 kg (12.9 lb) 650 VA – 6.2 kg (13.6 lb.)
Lifting NA eight	350 VA – 6.8 kg (14.9 lb) 500 VA – 7.0 kg (15.3 lb) 650 VA- 7.3 kg (16.1 lb)
On Battery Run-Time	350 VA – 13.2 minutes (typical) – computer and 17" (43.2 cm) monitor. 500 VA – 10.8 minutes (typical) – computer and 21" (53.3 cm) monitor. 650 VA – 17 minutes (typical) – computer and 21" (53.3 cm) monitor.
Operating temperature	0° to 40°C (32° to 104°F)
Storage Temperature	-15° to 45°C (23° to 113°F)
Humidity	0 to 95 % Relative Humidity (non-condensing)
Pollution degree	2
Overvoltage Category	II
International Protection Code	IP20
Applicable power grid power distribution system	TN Power system
Applicable Standard	IEC 62040-1

## Troubleshooting

Use the tables below to solve minor Back-UPS installation and operation problems. Consult Schneider Electric IT (SEIT) On-line Technical Support or call SEIT Technical Support for assistance with problems that cannot be resolved using this document:

### Back-UPS will not switch on

The UPS will shut down to conserve energy if while operating on battery power the UPS detects that connected equipment is using less than 15 W of energy for more than 15 minutes.

Possible Cause	Procedure	
Back-UPS not connected to a utility power source.	Check that the Back-UPS power plug is securely connected to the wall outlet.	
The Back-UPS circuit breaker "tripped".	Disconnect non-essential equipment from the Back-UPS. Reset the circuit breaker (located on the rear panel of the Back-UPS) by pushing the CIRCUIT BREAKER button fully inward until it catches. If the circuit breaker resets, switch the Back-UPS on and reconnect the equipment one at a time. If the circuit breaker trips again, it is likely that one of the connected devices is causing the overload.	
Very low or no utility voltage.	Check the wall outlet that supplies power to the Back-UPS using a table lamp. If the lamp bulb is very dim, have the utility voltage checked by a qualified electrician.	
A portable generator being used to provide input voltage.	Set the Transfer Voltage and Sensitivity setting to Low (see Transfer Voltage and Sensitivity Adjustment). By setting the Back-UPS to Low sensitivity, it can accept a wider range of input voltage.	


#### Back-UPS does not power computer/monitor/external drive during an outage

<b>The internal battery is not connected.</b>	<b>Check the battery connections</b>
The computer, monitor or external disk/CD-ROM drive is plugged into a Surge Only outlet.	Move the computer, monitor, or external drive power cord plug to the Battery Backup outlets.

#### Back-UPS operates on battery although normal utility voltage exists

Back-UPS circuit breaker "tripped".	Disconnect non-essential equipment from the Back-UPS. Reset the circuit breaker (located on the rear panel of the Back-UPS) by pushing the CIRCUIT BREAKER button fully inward until it catches.
The wall outlet that the Back-UPS is connected to does not supply utility power to the unit.	Connect the Back-UPS to another wall outlet or have a qualified electrician check the building wiring.

#### Back-UPS does not power computer/monitor/external drive during an outage

The internal battery is not connected.	Check the battery connections
Computer, monitor or external disk/CD- ROM drive is plugged into a Surge Only outlet.	<p>Move the computer, monitor, or external drive power cord plug to the Battery Backup outlets.</p> 

### Back-UPS does not provide the expected backup time

Back-UPS is excessively loaded.	<p>Unplug non-essential Battery Backup connected equipment, such as printers, and plug them into Surge Only outlets.</p> <p><b>NOTE:</b> Devices that have motors or dimmer switches (laser printers, heaters, fans, lamps, and vacuum cleaners, for example) should not be connected to the Battery Backup outlets.</p>
Back-UPS battery is weak due to recent outage and has not had time to recharge.	<p>Charge the battery. The battery charges whenever the Back-UPS is connected to a wall outlet. Typically, eight hours of charging time are needed to fully charge the battery from total discharge. Back-UPS run-time is reduced until the battery is fully charged.</p>
The battery requires replacement.	<p>Replace the battery (see Order Replacement Battery). Batteries typically last 3-6 years, shorter if subjected to frequent power outages or elevated temperatures.</p>

### A red indicator is lit

The battery is not connected properly.	Check the battery connections
The Overload indicator is lit if equipment connected to the Battery Backup outlets is drawing more power than the Back-UPS can provide.	<p>Move the computer, monitor, or external drive power cord plug to the Battery Backup outlets.</p>
The battery requires replacement.	<p>The battery should be replaced within two weeks (see "Order Replacement Battery").</p> <p>Delay in replacing the battery will result in reduced run time during a power outage.</p>

### Red indicators are flashing

Back-UPS is not working.	Call APC for service.
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### Replace the Battery indicator lit and an alarm sounds when the Back-UPS is turned on

The internal battery is not connected.	Check the battery connections
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## Back-UPS Storage

Before storing, charge the Back-UPS for at least eight hours. Store the Back-UPS covered and upright in a cool, dry location.

During storage, recharge the battery in accordance with the following table:

Storage Temperature	Recharge Frequency	Charging Duration
-5° to 30°C (23° to 86°F)	Every 6 months	8 hours
30° to 45°C (86° to 113°F)	Every 3 months	8 hours

## Service

**NOTE:** If the UPS requires service, do not return it to the dealer. The following steps should be taken:

1. Consult the Troubleshooting section to eliminate common problems.
2. Determine if the circuit breaker is tripped. If the circuit breaker is tripped, reset the breaker and determine if the problem still exists.
3. If the problem persists, consult the APC Worldwide Web site ([www.apc.com](http://www.apc.com)) or call customer service.
  - a. Record the model number of the UPS, the serial number, and the date purchased. Be prepared to troubleshoot the problem over the telephone with a technician. If this is not successful, the technician will issue a Return Merchandise Authorization Number (RMA#) and shipping address.
  - b. 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.
 

**NOTE:** Never use Styrofoam™ beads for packaging. Damage sustained in transit is not covered under warranty (insuring the package for full value is recommended).
5. Write the RMA# on the outside of the package.
6. Return the UPS by the insured, prepaid carrier to the address provided by customer service.

## Warranty

The standard warranty is two (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 the assignment of asset tags and set depreciation schedules must declare such a need at first contact with an APC Technical Support representative. APC will ship the replacement unit once the defective unit has been received by the repair department or cross-ship it upon the receipt of a valid credit card number. The customer pays for shipping the unit to APC. APC pays ground freight transportation costs to ship the replacement unit to the customer.

## EMI Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a

residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.


Locate the label on the bottom of this device that contains, among other information, the FCC registration number [US: 1XH-USA-25572-XP-N]] and ringer equivalence number (REN) for this device. If requested, this information must be provided to the telephone company. If you experience trouble with this equipment, you disconnect it from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning. The ringer equivalence number (REN) is used to determine how many devices can be connected to your telephone line. In most areas, the sum of the RENs of all devices on any one line should not exceed five (5.0). If too many devices are attached, they may not ring properly.

### APC by Schneider Electric IT Customer Support

For country-specific customer support, go to the Schneider Electric Web site, [www.apc.com](http://www.apc.com).

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## Documents / Resources

	<p><a href="#">APC CS350 Uninterruptible Power Supply</a> [pdf] User Manual CS350, CS500, CS650, Uninterruptible Power Supply, Power Supply, Uninterruptible Supply, Supply, CS350</p>
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## References

- [APC, a flagship brand of Schneider Electric - APC USA](#)
- [APC apc.com/wp/?um=300](http://apc.com/wp/?um=300)