# APC®
## www.apc.com

**Back-UPS®**

**BX1300LCD-CN / BX1500LCD-CN**

**User Manual**

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## ❶ CONTENTS



RJ-11    RJ-11
USB    RJ-45
Coax    Coax
APC

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## ❷ CONNECT BATTERY CARTRIDGE*



**Note: This diagram is also used for battery cartridge replacement.**

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## ❸ OPERATING ENVIRONMENT



32 - 104°F (0 - 40°C)

30 cm

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## ❹ CONNECT EQUIPMENT / POWER



FAX

Printer or Scanner

External Disk or CD / DVD Drive

Computer

Monitor

To 120 VAC Wall Outlet

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## ❺ CHECK BUILDING WIRING FAULT INDICATOR

If the rear panel **Building Wiring Fault** (red) indicator is lit, a potential shock hazard exists due to one of the following conditions:

- Open or high resistance ground
- Hot and Neutral polarities are reversed
- Overloaded neutral circuit

**Improper building wiring should be corrected by a qualified electrician. Do not use the Back-UPS until the condition that caused the fault is corrected.**

**Note**: Improper building wiring will not prevent the Back-UPS from operating, but it will limit its protection capability.



CABLE IN
CABLE OUT
Building Wiring Fault Indicator

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## ❻ CONNECT MODEM/PHONE/Network and TVSS Ground

**If needed, the Back-UPS features a TVSS ground screw for connecting the ground lead of any additional standalone surge suppression devices, such as an APC ProtectNet product; or any electronic device with an external ground connection.**



From standalone data line surge suppressor or electronic device

RJ-45/RJ-11    RJ-45/RJ-11

RJ-45/RJ-11    RJ-45/RJ-11

Phone Jack    Computer Modem Port    Phone or Fax

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## ❼ CONNECT COAXIAL CABLES



Coaxial Cable    From Cable Provider

To Cable Modem

Coxial Cable

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## ❽ CONNECT DATA LINE AND INSTALL SOFTWARE ON COMPUTER (Optional)



To USB Port    USB    RJ-45    CABLE IN    CABLE OUT
To USB Port

1. Insert CD into computer, and on-screen instructions should appear automatically. Follow instructions to complete the installation.
   **Note**: if the on-screen instructions do not appear automatically (Autoplay is disabled), then perform steps 2 and 3 below.
2. On the computer desktop of the display, double-click on My Computer.
3. Double-click on the CD-ROM drive icon, and follow the on-screen instructions.

Installation of the supplied software is the only way to take advantage of the auto shutdown capabilities that Back-UPS offers.

Follow the on-screen instructions.

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## ❾ TURN ON THE BACK-UPS

**Note:** Allow the Back-UPS to charge for a full 16 hours prior to using it.

Press the front panel Power ON/OFF pushbutton, and observe that the following events occur after you press and release the switch:

- The LCD illuminates (is backlit)
- The ONLINE indicator flashes.
- The ON BATT indicator lights and flashes while self-test is being performed.
- When self-test has successfully completed, only the ONLINE indicator will be lit.
- If the internal battery cartridge is not connected (see **Step 2** above), the ON BATT indicator will flash. The Back-UPS will also emit a chirping sound.



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## LCD INDICATORS and CONTROLS SUMMARY

The red, backlit liquid crystal display (LCD) on the front panel of the Back-UPS displays realtime *system status messages*, *system faults* and *warnings*, *Load Capacity*, and *Battery Charge* level. Two pushbuttons are provided on the front panel, the *Power On/Off* pushbutton on the left, and the Display/Hold to Mute pushbutton on the right.



Event
IN
OUT

Min
Hz
kW
%
kVA

Runtime in Minutes
Frequency
Watts
Percentage
Volt-Amps

AVR

**Power On/Off button** - is used to turn input power on and off. It is also used to initiate *self-test*, to go into *Sensitivity mode*, and it is used with the *Display/Hold to Mute* pushbutton to reset the *Event Counter*.

**Display/Hold to Mute button** - is used to display status messages, system faults and warnings, and to perform various operations, such as alarm *mute mode*, *AVR* (automatic voltage regulation), and *full time display mode*. The various messages, warnings, system faults, and operations are described in greater detail on Page 2.

**ONLINE** - is lit whenever utility power is supplied to power the equipment connected to the Back-UPS.

**ON BATT** - the On Battery symbol is lit whenever battery backup power is used to power equipment connected to the Back-UPS.

**Four Beeps Every 30 Seconds** - this alarm sounds whenever the Back-UPS is running on battery (**ON BATT**). You should consider saving any work in progress.

**Continuous Beeping** - this alarm sounds whenever a low battery condition occurs, and battery run-time is very low. Promptly save any work in progress, exit all open applications, and shut down the operating system, computer, and Back-UPS.

**Load Capacity** - this indicator consists of a bar containing five blocks. When only one or two of the blocks are filled (lit), the unit load is at less than half capacity.

However, when all five blocks are filled, the load is at full capacity. If the load exceeds the unit's rated capacity, the Overload symbol on the bottom of the display will flash off and on.

**Battery Charge** - this indicator consists of a bar with five blocks. When all five blocks are filled, the battery is fully charged. When only one block is filled (lit) the battery charge is low.

**Overload** - is lit whenever power demand exceeds the capacity of the Back-UPS. It is displayed in both **ONLINE** mode, and **ON BATT** mode.

**Continuous tone** - this alarm sounds whenever the battery backup outputs are overloaded. Overload mode is covered in greater detail on Page 2.

**AVR** When lit, it indicates automatic voltage regulation (AVR) is in "AVR Mode". The **AVR** is covered in greater detail on Page 2.

**Replace battery** - this is lit whenever the battery is near the end of its useful life, or if the battery is not connected. A battery nearing the end of its life should be replaced.

**Chirps for 1 Minute every 5 hours** - this alarm sounds whenever the battery fails the automatic diagnostic test.

**Mute mode** - the audible alarm (beeper) can be muted (turned off), which is indicated by a line through the beeper symbol. Mute mode is covered in greater detail on Page 2.

**System Faults** - when a fault occurs, this symbol and the fault number (F01 - F09) will flash off and on. The nine fault messages are described further on Page 2.

**Sensitivity mode** - this allows you to go into sensitivity programming mode, and using the **Display/Hold to Mute** button you can select either the **LO**, **MID** or **HIGH** sensitivity range. Sensitivity mode is covered in greater detail on Page 2.

**Full Time Display mode** - this mode allows you to set the LCD to full time display mode using the **Display/Hold to Mute** button. This mode is covered in greater detail on Page 2.

**Reset switch** - this switch is located on the rear of the Back-UPS, just above the fans, as shown in the figure in Step ❷

**Self-Test mode** - can be run at any time when in **ONLINE** mode. Self-test is covered in greater detail on Page 2.
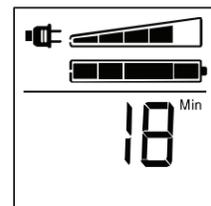
## ONLINE MODE Display Selection

When you are in ONLINE mode, and press the Display/Hold to Mute button, you will rotate through the following six groups of displays and messages.

When you press the Display/Hold to Mute button the *first time*, the LCD is backlit and the input voltage *default screen* is displayed. In this example 110 V is displayed as the input voltage.
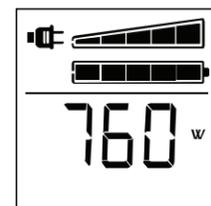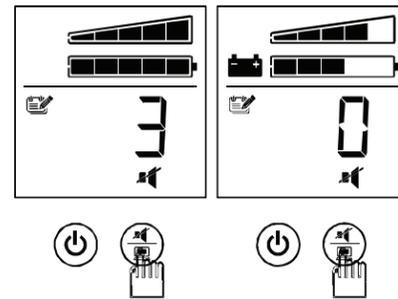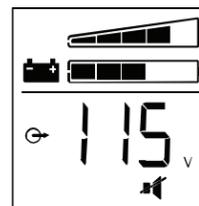
When you press the Display/Hold to Mute button a *second time*, the *Power Event Counter* is displayed, as shown below. To reset the counter, press and hold the Display/Hold to Mute button, and press the Power On/Off button.
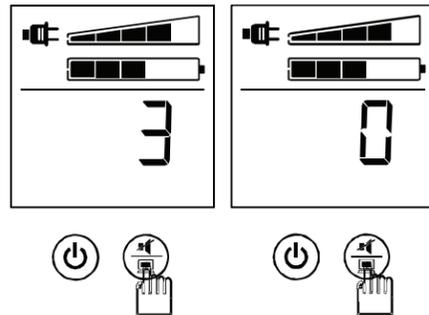
When you press the Display/Hold to Mute button the *third time*, the *estimated run time in minutes* (MIN) is displayed. In this example, the value is 18 minutes.

When you press the Display/Hold to Mute button a *fourth time* in ONLINE mode, the *load in Watts* (W) is displayed, in this example 760 W is displayed.

Pressing the Display/Hold to Mute button a *fifth time* displays the ONLINE output voltage (V), in this example 110 V is displayed.
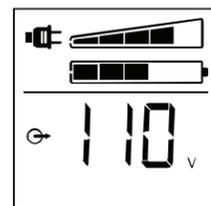
When you press the Display/Hold to Mute button a *sixth time* the ONLINE *output frequency* (Hz) is displayed.
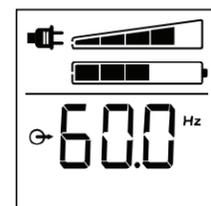
## BATTERY MODE Display Selection

When you are in ON BATT mode, and you press the Display/Hold to Mute button, you will rotate through the following six groups of displays and messages.

When you press the Display/Hold to Mute button the *first time*, the LCD is backlit, and the default screen (the *estimated runtime in minutes*) is displayed, in this case it is 18 minutes.

When you press the Display/Hold to Mute button a *second time*, the *Power Event Counter* is displayed, as shown below. To reset the counter, press and hold the Display/Hold to Mute button, and press the Power ON/OFF button.

When you press the Display/Hold to Mute button a *third time* the battery backup (ON BATT) output voltage (V) is displayed, in this example it is 115 V.
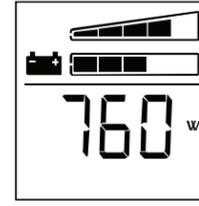
When you press the Display/Hold to Mute button a *fourth time* the ON BATT *input voltage* is displayed.

The first example shows an *overvoltage* condition at 149 V. The second example shows a *blackout*, or less than 10 Vac.
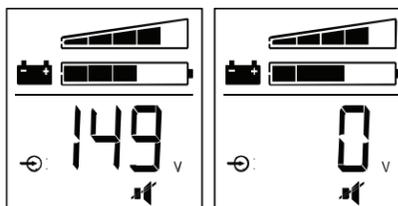
When you press the Display/Hold to Mute button a *fifth time* the ON BATT *input load in Watts* (W) is displayed, in this example 760 W is displayed.
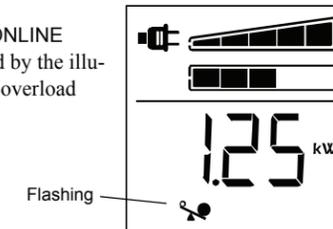
When you press the Display/Hold to Mute button a *sixth time* the ONLINE *output frequency* is displayed, in this example it is 60.0 Hz.
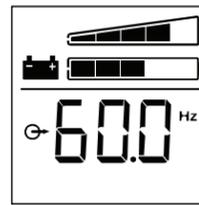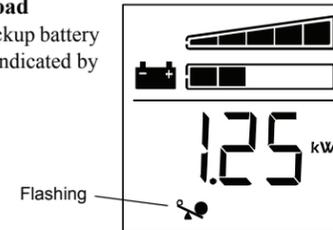
## WARNINGS

**Warning 1 - Online Overload**
This warning indicates that there is an ONLINE overload condition at 1.25 kW, indicated by the illuminated ONLINE icon, and the flashing overload icon.
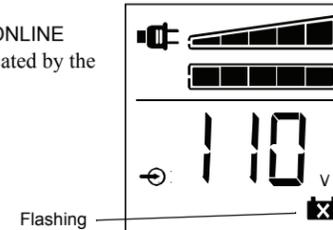
Flashing

**Warning 2 - Battery Backup Overload**
This warning indicates that there is a backup battery (ONBATT) overload condition. This is indicated by the flashing overload icon.
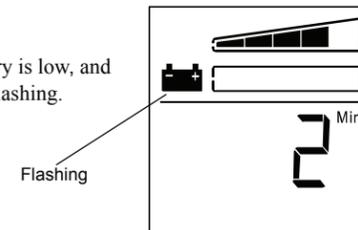
Flashing

**Warning 3 - Online Bad Battery**
This warning indicates that you are in ONLINE mode, and you have a bad battery, indicated by the flashing bad battery icon.

Flashing

**Warning 4 - Battery Backup Low Battery**
This warning indicates that the battery is low, and the *Battery Charge indicator* bar is flashing.

Flashing

## SYSTEM FAULTS

Up to nine system faults can be displayed (F01 - F09). A *System Faults icon* is provided just below the system fault number. The system faults include:

**F01** - On-Battery Overload    **F06** - Relay Welding
**F02** - On-Battery Output Short    **F07** - Temperature
**F03** - On-Battery XCap Overload    **F08** - Fan Fault
**F04** - Clamp Short    **F09** - Internal Fault
**F05** - Charger Fault

Flashing
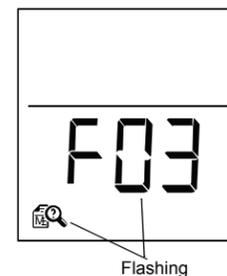
## OTHER STATUS INDICATORS

**Mute**
This feature allows you to mute the audible alarm (the beeper) for a *single display and message*. To mute the audible alarm, the unit should be *on battery*, or the "speaker" symbol is displayed. Press the Display/Hold to Mute button for **ONE** second, the alarm (beeper) is toggled, and the "speaker-NOT" symbol (speaker with a line drawn through it) is displayed.

To enable an audible alarm that has been muted, perform the same steps that were used for muting the alarm.

The alarm (beeper) can also be muted all the time. With the speaker or speaker-NOT icon displayed, press and hold the Display/Hold to Mute button for **FIVE** seconds until the speaker-NOT icon flashes off and on. The unit will mute the alarm all the time except for faults.

**AVR**
When AVR is illuminated on the LCD, it indicates that the automatic voltage regulation (AVR) circuitry is in *AVR Mode*. AVR compensates for excessively low or high voltage conditions without going on battery. In this example, 90 V is displayed.

**Sensitivity**
A typical condition where sensitivity adjustments would be appropriate is with an AC line input, and with the UPS off.

Press and hold the power ON/OFF pushbutton in for 10 seconds. The unit will go into "sensitivity programming mode". Use the ON/OFF button to select the LO (one block), MID (three blocks)or HIGH (five blocks) range. Sensitivity programming mode is also discussed on Page 3.

Low   Mid   High

**LCD Full Time Display Mode**
The LCD can be set to *full time* display mode by performing the following steps:
1. Ensure the unit is connected to utility input power, and the power on/off switch is turned off (no power is supplied to the output connectors).
2. Press the Display/Hold to Mute pushbutton, and hold it in for 10 seconds. All five blocks in the Battery Capacity bar will flash off and on, which

   indicates the unit is in *pushbutton programming mode*.

   **Note:** A rotating selection method is used that allows you to step through the display modes using the Display/Hold to Mute button until you select the display mode you want. For example, in *Power Save mode* none of the blocks are lit. If all five of the blocks are lit, it indicates the LCD is in *full time mode*, and will remain on full time.
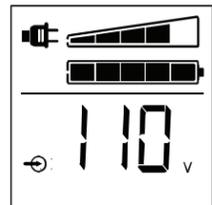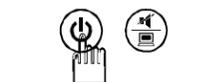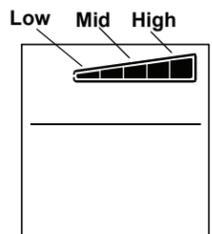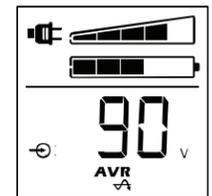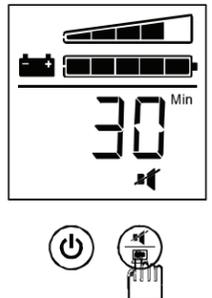3. When you rotate through the selections and reach the display mode you want, press and release the Display/Hold to Mute button to select the display mode.

   **Note:** If no buttons are pushed, and no operations occur for five seconds, the unit automatically exits pushbutton programming mode.
4. Once you have selected the desired display mode, continue with normal

**Self-Test**
To initiate self-test mode, press the power ON/OFF button, and hold it in for **ONE** second. The AC plug symbol (ONLINE) flashes off and on during self-test mode.

## TROUBLESHOOTING

| Problem | Possible Cause | Corrective Action |
|---|---|---|
| Back-UPS will not switch on. | Back-UPS is not connected to the AC power source. | Ensure the Back-UPS is securely connected to an AC outlet. |
| | Back-UPS circuit breaker "tripped". | Disconnect non-essential equipment from the Back-UPS. Reset the circuit breaker. Switch on the Back-UPS, and plug in devices one at a time. If the circuit breaker trips again, disconnect the device that caused the breaker to trip. |
| | Internal battery is not connected. | Connect the battery cartridge (see *Connect Battery Cartridge*). |
| | Utility input voltage quality is out of range. | Consider adjusting the transfer voltage and sensitivity. See *Transfer Voltage and Sensitivity Adjustment.* |
| Back-UPS does not power essential equipment during an outage. | Equipment is plugged into a 'Surge Only' outlet. | Unplug the device from the 'Surge Only' outlet, and move to a 'Battery Backup' outlet. |
| Back-UPS operates on battery although utility power is provided. | The UPS's plug has partially pulled out of the wall outlet, the wall outlet was turned off, or its circuit breaker tripped. | Verify the Back-UPS's plug is fully inserted into the wall, and power is present at the wall outlet by plugging in a known good device. |
| | Unit is performing an automatic self test. | No action is neccessary. |
| | Utility input voltage is out of range, frequency is out of range, or the waveform is distorted. | Consider adjusting the transfer voltage and sensitivity. Reference *Transfer Voltage and Sensitivity Adjustment*. |
| Back-UPS does not provide the expected amount of backup time. | Back-UPS is overloaded. | Unplug non-essential equipment (printers, scanners, etc) from the Battery Backup outlets, and plug them into 'Surge Only' outlets. |
| | Back-UPS battery cartridge discharged due to a recent power outage, and has not had time to recharge. | Charge the battery cartridge for 16 hours. Back-UPS runtime is reduced until the battery cartridge is fully charged. |
| | Battery has reached end of life. | Refer to *Replace Battery Cartridge*, and replace the battery cartridge. |
| Replace Battery indicator is on. | Battery has reached end of life. | Refer to *Replace Battery Cartridge*, and replace the battery cartridge. |
| Overload indicator is on, or flashing. | Connected equipment is drawing more power than the Back-UPS can provide. | Move one or more equipment power plugs from Battery Backup outlets to Surge Only outlets. |
| System Fault indicator is on and all other front panel indicators are flashing. | Internal UPS fault. | One of nine Internal UPS Fault Messages is displayed:<br>F01 - On-Battery Overload     F06 - Relay Welding<br>F02 - On-Battery Output Short    F07 - Temperature<br>F03 - On-Battery XCap Overload   F08 - Fan Fault<br>F04 - Clamp Short              F09 - Internal Fault<br>F05 - Charger Fault<br>Contact APC Technical Support (see *Contact Information*). |

## TRANSFER VOLTAGE and SENSITIVITY ADJUSTMENT

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 using the front panel Power On/Off pushbutton. To adjust the transfer voltage, proceed as follows:

1. Plug the Back-UPS into the utility power source, but do not turn the unit on. The Back-UPS will be in *standby mode* (there are no indicators lit).

2. Press and hold the front panel Power On/Off switch in for 10 seconds, until all the indicators on the Back-UPS flash to acknowledge it has entered *sensitivity programming mode*. Release the Power On/Off button, the blocks in the Back-UPS's Load bar shown on the LCD indicate it's current sensitivity setting, as described in the table below.

   **Note:** The Back-UPS automatically exits programming mode in five seconds if no buttons are pressed, and no operations are run.

3. Reference the table below to determine which sensitivity setting to select.

| Indicators Flashing | Sensitivity Setting | Input Voltage Range (utility operation) | Use When... |
|---|---|---|---|
| One (1) block of the Load Capacity bar | Low | 78 to 142 Vac | Input voltage is extremely low or extremely high. Not recommended for computer loads. |
| Three (3) blocks of the Load Capacity bar | Medium (factory default) | 88 to 139 Vac | The Back-UPS frequently goes on battery (ON BATT). |
| Five (5) blocks of the Load Capacity bar | High | 88 to 136 Vac | The connected equipment is sensitive to voltage fluctuations. |

4. To select the *Low Sensitivity* setting, press and release the Power On/Off switch several times until only the *first block* in the Load Bar is lit and flashing, then release the switch.

5. To select the *Medium Sensitivity* setting (the unit's default), press and release the Power On/Off switch until the first *three blocks* in the Load Bar are lit and flashing, then release the switch.

6. To select the *High Sensitivity* setting, press and release the Power On/Off switch until all *five blocks* of the Load Bar are lit and flashing, and then release the switch.

7. If there are no operations for five seconds, the Back-UPS will automatically exit sensitivity programming mode, and the Back-UPS is ready for normal operation.

## SPECIFICATIONS

| Item | 1300/1500 VA |
|---|---|
| Online Input Voltage Range (default settings) | 88 to 139 Vac |
| Automatic Voltage Regulation (AVR) | +12% (Boost mode only) |
| Online Frequency Range | 57 to 63 Hz (Autosensing) |
| On-battery Waveshape | Stepped Sine Wave |
| Maximum Load | 1300 VA: 780 W/1500 VA 865 W |
| Typical Recharge Time | 16 Hours |
| Operating Temperature | 32° to 104°F<br>0° to 40°C |
| Storage Temperature | 23° to 113°F<br>-5° to 45°C |
| Operating / Storage Relative Humidity | 0 to 95% non-condensing |
| Size (H x W x D) | 8.7 inch x 5.1 inch x 13.8 inch<br>(220 mm x 130 mm x 350 mm) |
| Weight | 1300 VA: 29.7 lbs (13.5 kg)<br>1500 VA: 30.7 lbs (14 kg) |
| Shipping Weight | 1300 VA: 33.2 lbs (15.1 kg)<br>1500 VA: 34.2 lbs (15.6 kg) |
| EMI Classification | FCC / DOC Class B Certified |
| On Battery Run-Time | Go to: http://www.apc.com/product |
| Approvals | cTUVus, NOM |

**Notice**: This device complies with Parts 68 and 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.

There is a label on the bottom of this equipment that contains, among other information, the *FCC registration number* and *ringer equivalence number (REN)* for this equipment. If requested, this information must be provided to the telephone company.

## ORDER REPLACEMENT BATTERY

The battery cartridge typically lasts 3 to 6 years, a shorter period if subjected to frequent outages or elevated temperatures. For the BX1300/1500LCD-CN order part **APCRBC109**. Please recycle spent battery cartridges.

## WARRANTY

The standard warranty is three (3) 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 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.

## SERVICE

**If the Back-UPS arrived damaged, notify the carrier.**

**If the Back-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. If the problem persists, go to http://www.apc.com/support/.
3. If the problem still persists, contact APC Technical Support.
   - Have the Back-UPS model number, serial number and date of purchase available. Be prepared to troubleshoot the problem with an APC Technical Support representative. If this is not successful, APC will issue a Return Merchandise Authorization (RMA) number and a shipping address.

## CONTACT INFORMATION

| | |
|---|---|
| **Technical Support** | www.apc.com |
| **USA / Canada** | 1.800.800.4272 |
| **Mexico** | 292.0253 / 292.0255 |
| **Worldwide** | +1.401.789.5735 |