



by **Schneider** Electric

# User Manual Back-UPS™ Pro BN1050M

## Important Safety Instructions

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



Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol either to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



### **DANGER**

**DANGER** indicates a hazardous situation which, if not avoided, **will result in death or serious injury**.



### **WARNING**

**WARNING** indicates a hazardous situation which, if not avoided, **could result in death or serious injury**.



### **CAUTION**

**CAUTION** indicates a hazardous situation which, if not avoided, **could result in minor or moderate injury**.

### **NOTICE**

**NOTICE** is used to address practices not related to physical injury.

# Product Handling Guidelines



<18 kg  
<40 lb



18-32 kg  
40-70 lb



32-55 kg  
70-120 lb



>55 kg  
>120 lb



## Safety and General Information

Inspect the package contents upon receipt. Notify the carrier and dealer if there is any damage.

- This UPS is for indoor use only.
- Do not operate this UPS in direct sunlight, in contact with fluids, or where there is excessive dust or high humidity.
- Do not operate the UPS near open windows or doors.
- Be sure the air vents on the UPS are not blocked. Allow adequate space for proper ventilation.

**NOTE:** Allow a minimum of 20 cm clearance on both front and rear sides of the UPS.

- Environmental factors impact battery life. Elevated ambient temperatures, poor quality utility power leading to frequent discharges will shorten battery life. Follow the battery manufacturer recommendations.
- Connect the UPS power cable directly to a wall outlet. Do not use surge protectors or extension cords.
- The UPS cord shall be connected to an earthed mains socket outlet for safety reasons.



### CAUTION

#### **RISK OF HYDROGEN SULPHIDE GAS AND EXCESSIVE SMOKE**

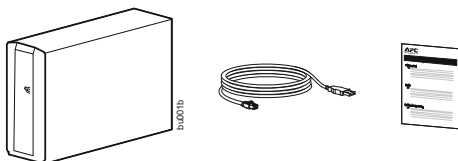
- Replace the battery at least every 5 years or at the end of its service life, whichever is earlier.
- Replace the battery immediately when the UPS indicates battery replacement is necessary.
- Replace batteries with the same number and type of batteries as originally installed in the equipment.
- Replace 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.**

- Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and required precautions. Keep unauthorized personnel away from batteries.
- APC by Schneider Electric uses Sealed Maintenance-Free Lead Acid batteries. Under normal use and handling, there is no contact with the internal components of the batteries. Over charging, over heating or other misuse of batteries can result in leakage of battery electrolyte. Released electrolyte is toxic and may be harmful to the skin and eyes.
- 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 installing or replacing the batteries, remove conductive jewelry such as chains, wrist watches, 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.

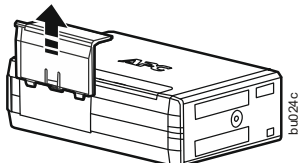
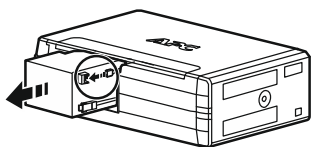
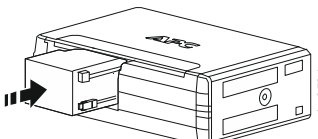
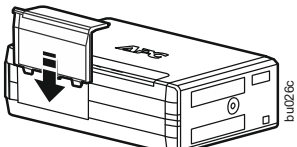
- Wear rubber gloves and boots.
- Determine if battery is either intentionally or inadvertently grounded. Contact with any part of a grounded battery can result in electric shock and burns by high short-circuit current. The risk of such hazards can be reduced if grounds are removed during installation and maintenance by a skilled person.

## Inventory



## Connect the Battery

The UPS is shipped with the battery disconnected.

<b>1</b> Remove the battery door.  <span style="position: absolute; right: 0; bottom: 0;">bu024c</span>	<b>2</b> Remove the battery. Connect the wire.  <span style="position: absolute; right: 0; bottom: 0;">bu025c</span>
<b>3</b> Push the battery into the unit.  <span style="position: absolute; right: 0; bottom: 0;">bu055 1a</span>	<b>4</b> Replace the battery door.  <span style="position: absolute; right: 0; bottom: 0;">bu026c</span>

# PowerChute™ Personal Edition Software

Use PowerChute Personal Edition software to configure the UPS settings. During a power outage, PowerChute will save any open files on your computer and shut it down. When power is restored, it will restart the computer.

**Note:** PowerChute is only compatible with a Windows operating system. If you are using Mac OSX, use the native shutdown feature to protect your system. See the documentation provided with your computer.

## Installation

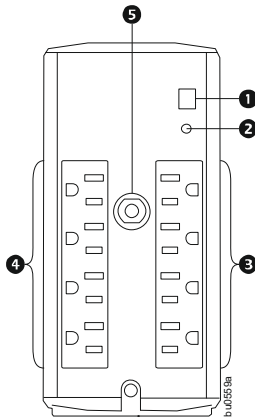
1. Use the cable supplied with the Back-UPS to connect the data port on the Back-UPS to the USB port on your computer.
2. On the computer, go to [www.apc.com](http://www.apc.com).
3. Search for “PowerChute Personal Edition” then click on “View Details” to download the latest version of PCPE software.
4. Click the download link and select Software product.
5. Select the appropriate operating system.
6. Follow directions to download the software.

# Connect the Equipment

## Battery Backup and Surge Protected outlets

When the Back-UPS is receiving mains power, the Battery Backup with Surge Protection outlets will supply mains power to connected equipment. During a power outage or brown out or sags or surges, the Battery Backup outlets will supply battery power to the connected equipment for a limited time.

Connect equipment such as printers, fax machines, scanners, or other peripherals that do not need battery backup power to the Surge Protection Only outlets. These outlets provide full-time protection from surges even if the Back-UPS is switched OFF.



1	<b>USB and Serial Data port</b>	To use PowerChute Personal Edition, connect the supplied USB cable or an optional serial cable (not supplied).
2	<b>Building Wiring Fault indicator</b>	If this indicator is illuminated, there is a problem with the wiring in the building. Contact an electrician immediately and do not use the Back-UPS.
3	<b>Surge Protected outlets</b>	These outlets provide full-time protection from surges, even if the Back-UPS is off. Connect equipment such as printers and scanners that do not require battery backup protection.
4	<b>Battery Backup outlets with Surge Protection</b>	During a power outage or brown out or sags or surges, the Battery Backup outlets receive power for a limited time from the Back-UPS. Connect essential equipment such as desktop computer, computer monitor, modem or other data sensitive devices into these outlets.
5	<b>Circuit Breaker</b>	Use to reset the system after an overload condition has occurred causing the circuit breaker to trip.

# Operation

## Power Saving Display

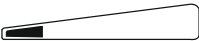


The display interface can be configured to be continuously illuminated, or to save energy, it can be configured to darken after a period of inactivity.

1. Full Time Mode: Press and hold DISPLAY button for two seconds. The display will illuminate and the Back-UPS will beep to confirm the Full Time mode.
2. Power Saving Mode: Press and hold DISPLAY button for two seconds. The display illumination will turn off and the Back-UPS will beep to confirm the Power Saving mode. While in Power Saving Mode, the display will illuminate if a button is pressed and turns off after 60 seconds of inactivity.

## Unit sensitivity

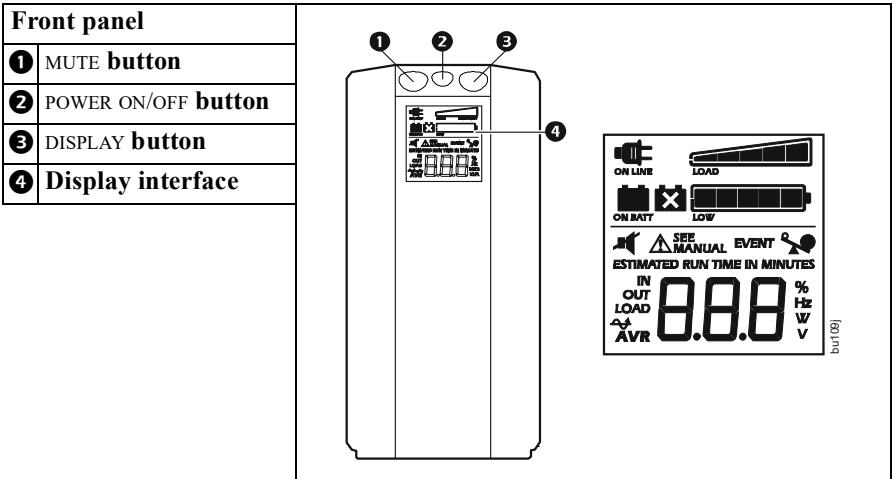
Adjust the sensitivity of the Back-UPS to control when it will switch to battery power; the higher the sensitivity, the more often the Back-UPS will switch to battery power.

1. Be sure that the Back-UPS is connected to mains power, but is turned OFF.
2. Press and hold the POWER ON/OFF button for six seconds. The *Load Capacity* bar will flash on and off, indicating that the Back-UPS is in programming mode.
3. Press POWER ON/OFF button again to navigate through the menu options. Select the appropriate sensitivity. The Back-UPS will beep to confirm the selection.

Generator Sensitivity	Default	Sensitive Loads
		
Low sensitivity 78-142 Vac <i>Input voltage is extremely low or high. (Not recommended for computer loads.)</i>	Medium sensitivity (Default) 88-139 Vac <i>The Back-UPS frequently switches to battery power.</i>	High sensitivity 88-136 Vac <i>The connected equipment is sensitive to voltage fluctuations.</i>





# Front Panel Buttons and Display Interface

Use the three buttons on the front panel of the Back-UPS and the display interface to configure the Back-UPS.



# Alarms and System Errors

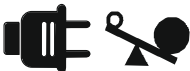



	<b>On Line:</b> The Back-UPS is supplying conditioned mains power to connected equipment
	<b>Load Capacity:</b> The load is indicated by the number of sections illuminated, one to five. Each bar represents 20% of the load.
	<b>Battery Charge:</b> The battery charge level is indicated by the number of sections illuminated. When all five blocks are illuminated, the Back-UPS is at full charge. When one block is filled, the Back-UPS is near the end of its battery capacity, the indicator will flash and the Back-UPS will beep continuously.
	<b>Overload:</b> The power demand from the load has exceeded the capacity of the Back-UPS.
<b>EVENT</b>	<b>Event:</b> The event counter shows the number of events that occurred that caused the Back-UPS to switch to on-battery operation.
	<b>Automatic Voltage Regulation:</b> The Back-UPS can compensate for low input voltage. When illuminated, the Back-UPS is compensating for low input voltage

<b>IN OUT</b>	<b>IN:</b> Input voltage. <b>OUT:</b> Output voltage.
 <b>SEE MANUAL</b>	<b>System Error Detected:</b> The system has an error. The error number will illuminate on the display interface. See “System Errors” on page 7.
	<b>Mute:</b> If the line through the speaker icon is illuminated, the audible alarm has been turned off.
	<b>Replace Battery:</b> The battery is nearing the end of its useful life. Replace the battery as early as possible.
	<b>On Battery:</b> The Back-UPS is supplying battery backup power to the connected equipment, it will beep four times every 30 seconds.

## Audible Indicators

<b>Four Beeps Every 30 Seconds</b>	Back-UPS is running on battery. You should consider saving any work in progress.
<b>Continuous Beeping</b>	Low battery condition and battery run-time is very low. Promptly save any work in progress, exit all open applications, and shut down the operating system.
<b>Continuous tone</b>	Battery Backup outputs are overloaded.
<b>Chirps every 2 Seconds with the Load Capacity Bar flashing</b>	Battery is disconnected.
<b>Continuous chirping with the Load Capacity Bar and Replace Battery icon alternately flashing</b>	Battery did not pass the automatic diagnostic test and should be replaced as early as possible. Pressing the MUTE button pauses the chirping.

## Status Icons

If these icons are illuminated...	This may be the problem
	The Back-UPS is operating on mains power, but is overloaded. Disconnect a non-essential equipment. If the overload icon stops flashing, the Back-UPS is no longer overloaded and will continue to operate normally.
	The Back-UPS is operating on battery power, but is overloaded. Disconnect a non-essential equipment. If the overload icon stops flashing, the Back-UPS is no longer overloaded and will continue to operate normally.
	The Back-UPS is operating on mains power, but the battery is not functioning properly. Contact Schneider Electric IT (SEIT) Customer Service to order a replacement battery. See <i>"Replacement Battery"</i> on page 16.
	The Back-UPS is operating on battery power and the battery power is getting low. Shut down all connected equipment to avoid losing an unsaved data. When possible, connect the Back-UPS to mains power to recharge the battery.






# System Errors






The Back-UPS will display these error messages. Except for errors F01 and F02, contact SEIT Technical Support.



b.008a	F01	On-Battery Overload	Turn OFF the Back-UPS. Disconnect non-essential equipment from the Battery Backup outlets and the turn ON the Back-UPS.
	F02	On-Battery Output Short	Turn OFF the Back-UPS. Disconnect all equipment from the Battery Backup outlets and the turn ON the Back-UPS. Re-connect equipment one item at a time. If the circuit breaker trips again, disconnect the equipment that caused the error.
	F03	On-Battery Xcap Overload	Errors F03-F09 cannot be corrected by the user, contact SEIT Technical Support for assistance.
	F04	Clamp Short	
	F05	Charge Error	
	F06	Relay Welding	
	F07	Temperature	
	F09	Internal Error	

## Function Button Quick Reference

Function	Button	Timing (seconds)	UPS Status	Description
<b>Power</b>				
<b>Power On</b>		0.2	Off	Press POWER ON/OFF button to start receiving input mains power. If input mains power is not available, the Back-UPS will run on battery power.
<b>Power Off</b>		2	On	The Back-UPS is not receiving input mains power, but is providing surge protection.
<b>Display</b>				
<b>Status Inquiry</b>		0.2	On	Verify the status or condition of the Back-UPS. The LCD will illuminate for 60 seconds. Press the button the toggle into various information.
<b>Full-Time/ Power-Saving mode</b>		2	On	The display will illuminate and the Back-UPS will beep to confirm the Full Time mode. The display illumination will turn off and the Back-UPS will beep to confirm the Power Saving mode. While in Power-Saving Mode, the display will illuminate if a button is pressed and turn off darkens after 60 seconds of inactivity.
<b>Mute</b>				
<b>General Status Enable/ Disable</b>		2	On	Enable or disable the audible alarms. The Mute icon will illuminate and the Back-UPS will beep one time. The Mute function will not activate unless the Back-UPS is operating on battery power.

Function	Button	Timing (seconds)	UPS Status	Description
Sensitivity		6	Off	The Load Capacity icon will blink, indicating that the Back-UPS is in programming mode. Use the POWER ON/OFF button to scroll through Low, Medium, and High, stop at selected sensitivity. The Back-UPS will beep to confirm selection. See <i>"Unit sensitivity"</i> for details.
Self-Test (manual)		6	On	The Back-UPS will perform a test of the internal battery. <b>NOTE:</b> This will happen automatically when the Back-UPS is turned ON or when the Back-UPS previously detected a bad battery.
Event Reset	 	0.2	On	When the Event screen is visible, press and hold DISPLAY button, then press POWER ON/OFF button, to clear the detected error event counter.
Error Reset		2	Error	After an error has been identified, press POWER ON/OFF button to remove the visual indication and return to standby status.

# Troubleshooting

Problem and Possible Cause	Corrective Action
<b>Back-UPS will not switch on.</b>	
The Back-UPS is not connected to mains power.	Ensure that the Back-UPS is securely connected to an AC outlet.
The circuit breaker has been tripped.	Disconnect non-essential equipment from the Back-UPS. Reset the circuit breaker. Re-connect equipment one item at a time. If the circuit breaker is tripped again, disconnect the device that caused the trip.
The internal battery is not connected.	Connect the battery.
The AC input voltage is out of range.	Adjust the transfer voltage and sensitivity range.
<b>Back-UPS does not provide power during power outage.</b>	
Ensure that essential equipment is <b>not</b> plugged into a <i>Surge Only</i> outlet.	Disconnect equipment from the <i>Surge Only</i> outlet and re-connect to a Battery Backup outlet.
<b>Back-UPS is operating on battery power, while connected to mains power.</b>	
The plug has partially pulled out of the wall outlet, the wall outlet is no longer receiving mains power, or the circuit breaker has been tripped.	Be sure that the plug is fully inserted into the wall outlet. Be sure that the wall outlet is receiving mains power by checking it with another device.
The Back-UPS is performing an automatic self test.	No action is necessary.
The AC input voltage is out of range, the frequency is out of range, or the waveform is distorted.	Adjust the transfer voltage and sensitivity range.
<b>Back-UPS does not provide the expected amount of backup time.</b>	
Battery Backup outlets may be fully or improperly loaded.	Disconnect non-essential equipment from the Battery Backup outlets and connect the equipment to <i>surge</i> outlets.
The battery was recently discharged due to a power outage and has not fully recharged.	Charge the battery cartridge for 16 hours.
The battery has reached the end of its useful life.	Replace the battery.

Problem and Possible Cause	Corrective Action
<b>The <i>Replace Battery</i> indicator is illuminated.</b>	
The battery has reached the end of its useful life.	Replace the battery as early as possible.
<b>The <i>Overload</i> indicator is illuminated.</b>	
The equipment connected to the Back-UPS is drawing more power than the Back-UPS can provide.	Disconnect non-essential equipment from the Battery Backup outlets and connect the equipment to <i>surge</i> outlets.
<b>The <i>System Error</i> indicator is illuminated, all the front panel indicators are flashing.</b>	
There is an internal error.	Determine which internal error message is displayed by matching the number displayed on the LCD with the corresponding Error Message (see " <i>System Errors</i> ") and contact SEIT Technical Support.

# Specifications

Model	BN1050M
VA	1050 VA
Maximum Load	600 W
Nominal Input Voltage	120 Vac
Online Input Voltage Range	88 - 139 Vac
Automatic Voltage Regulation	(88-107) +11.2% (to compensate for low input voltage)
Frequency Range	60 Hz $\pm$ 1 Hz
Battery Type	Lead acid, 12V with 1 battery
On-battery Waveshape	Step-approximated sine-wave
Typical Recharge Time	12 hours
Transfer Time	8 ms (typical), 10 ms (maximum)
On Battery Runtime	Go to: <a href="http://www.apc.com">www.apc.com</a>
Interface	USB
Operating Temperature	0 to 40 °C (32 to 104 °F)
Storage Temperature	-5 to 45 °C (23 to 113 °F)
Unit Dimensions	19 x 9.1 x 31 cm (7.5 x 3.6 x 12.2 in)
Unit Weight	7.2 kg (15.9 lbs)

## Replacement Battery

The battery typically lasts for 3 to 5 years, a shorter period if subjected to frequent outages or elevated temperatures. Battery replacement parts for Back-UPS is **APCRBC158**. Delaying the replacement of parts may corrode the batteries in the cartridge. Recycle spent battery cartridges.

## Warranty

The standard warranty is three (3) years from the date of purchase. Schneider Electric IT (SEIT) 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 SEIT Technical Support representative. SEIT 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 SEIT. SEIT pays ground freight transportation costs to ship the replacement unit to the customer.

## EMC 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 receiver.
- Connect the equipment into 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.



Select models are ENERGY STAR® qualified.

For more information on your specific model visit APC by Schneider Electric website, [www.apc.com](http://www.apc.com).



Select models are compliant with California (CEC) Battery Charger regulations.

For more information on your specific model visit APC by Schneider Electric web site, [www.apc.com](http://www.apc.com).

# **APC by Schneider Electric IT Customer Support Worldwide**

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