EC450G / EC550G / EC750G
EC650LCD / EC850LCD
User's Manual

K01-0000277-01

PRODUCT REGISTRATION

Thank you for purchasing a CyberPower product. Please take a few minutes to register your product at www.cpsww.com/registration. Registration certifies your product's warranty, confirms your ownership in the event of a product loss or theft and entitles you to free technical support.

IMPORTANT SAFETY WARNINGS

(SAVE THESE INSTRUCTIONS)

This manual contains important safety instructions. Please read and follow all instructions carefully during installation and operation of the unit. Read this manual thoroughly before attempting to unpack, install, or operate your UPS.

CAUTION! To prevent the risk of fire or electric shock, install in a temperature and humidity controlled indoor area free of conductive contaminants. (Please see specifications for acceptable temperature and humidity range).

CAUTION! To reduce the risk of electric shock, do not remove the cover. There are no user serviceable parts inside.

CAUTION! Hazardous live parts inside can be energized by the battery even when the AC input power is disconnected.

CAUTION! The UPS must be connected to an AC power outlet with fuse or circuit breaker protection. Do not plug into an outlet that is not grounded. If you need to de-energize this equipment, turn off and unplug the unit.

CAUTION! To avoid electric shock, turn off the unit and unplug it from the AC power source before installing a computer component.

CAUTION! Not for use in a computer room as defined in the Standard for the Protection of Electronic Computer/Data Processing Equipment, ANSI/NFPA 75.

CAUTION! To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit over current protection in accordance with the National Electric Code, ANSI/NFPA 70.

CAUTION! Risk of explosion if battery is replaced by an incorrect type. Batteries shall be installed by service personnel, and the replacement of batteries with a suitable recommended type. Dispose of used batteries according to the instructions.

CAUTION! Do not dispose of batteries in a fire. The batteries may explode.

CAUTION! Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

DO NOT USE FOR MEDICAL OR LIFE SUPPORT EQUIPMENT! CyberPower Systems does not sell products for life support or medical applications. **DO NOT** use in any circumstance that would affect operation and safety of life support equipment, any medical applications or patient care.

DO NOT USE WITH OR NEAR AQUARIUMS! To reduce the risk of fire or electric shock, do not use with or near an aquarium. Condensation from the aquarium can cause the unit to short out.

INSTALLING YOUR UPS SYSTEM

UNPACKING

Inspect the UPS upon receipt. The box should contain the following:

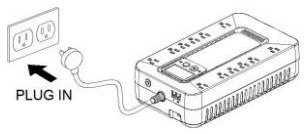
(a) UPS unit (b) User's manual (c) USB device cable

***PowerPanel® Personal Edition software is available on our website. Please visit www.cpsww.com and go to the Software Section for free download.**

HOW TO DETERMINE THE POWER REQUIREMENTS OF YOUR EQUIPMENT

1. Ensure that the equipment plugged into the UPS does not exceed the UPS unit's rated capacity (450VA/260W for EC450G, 550VA/330W for EC550G, 750VA/450W for EC750G, 650VA/390W for EC650LCD, and 850VA/510W for EC850LCD). If the rated capacities of the unit are exceeded, an overload condition may occur and cause the UPS unit to shut down or the circuit breaker to trip.
2. There are many factors that can affect the amount of power that your electronic equipment will require. For optimal system performance keep the load below 80% of the unit's rated capacity.

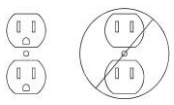
HARDWARE INSTALLATION GUIDE



1. Your new UPS may be used immediately upon receipt. However, after receiving a new UPS, to ensure the battery's maximum charge capacity, it is recommended that you charge the battery for at least 8 hours. Your UPS is equipped with an auto-charge feature. When the UPS is plugged into an AC outlet, the battery will automatically charge when it's turned on or turned off.
2. With the UPS unit turned off and unplugged, connect your computer, monitor, and any other peripherals requiring battery backup from the SURGE/BATTERY outlets. Plug the other peripheral equipment (e.g. printer, scanner, speakers, etc.) into the full-time surge protection outlets. **DO NOT plug a laser printer, paper shredder, copier, space heater, vacuum cleaner, sump pump, or other large electrical device into the "Battery and Surge Protected Outlets". The power demands of these devices will overload and possibly damage the unit.**
3. To protect a fax, phone, or modem line, connect a telephone cable from the wall jack outlet to the IN jack of the UPS. Connect a telephone cable from the UPS OUT jack to protect a modem port on the computer, a telephone, or fax machine.



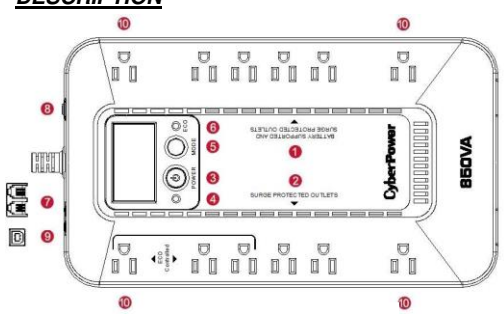
4. Plug the UPS into a 2 pole, 3 wire grounded receptacle (wall outlet). Make sure the wall branch outlet is protected by a fuse or circuit breaker and does not service equipment with large electrical demands (e.g. air conditioner, refrigerator, copier, etc.). The warranty prohibits the use of extension cords, outlet strips, and surge strips in conjunction with the UPS unit.



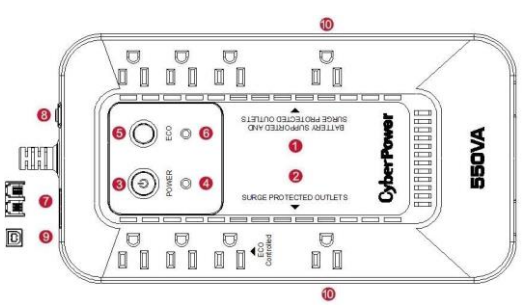
5. Press the power switch to turn the unit on. The Power On indicator light will illuminate green and the unit will "beep" twice.
6. If an overload is detected, an audible alarm will sound and the unit will emit one long beep. To correct this, turn the UPS off and unplug at least one piece of equipment from the battery power supplied outlets. Make sure the circuit breaker is depressed and then turn the UPS on.
7. To maintain optimal battery charge, leave the UPS plugged into an AC outlet at all times.
8. To store the UPS for an extended period of time, cover it and store with the battery fully charged. While in storage, recharge the battery every three months to ensure optimal battery life.
9. Ensure the wall outlet and UPS are located near the equipment being attached for proper accessibility.

BASIC OPERATION

DESCRIPTION



EC650LCD (8 outlets)
EC850LCD (12 outlets)



EC450G / EC550G (8 outlets)
EC750G (12 outlets)

1. **Battery and Surge Protected Outlets**

   The unit has battery powered/surge suppression outlets to ensure temporary uninterrupted operation of your equipment during a power failure. **(DO NOT plug a laser printer, paper shredder, copier, space heater, vacuum cleaner, sump pump, or other large electrical device into the "Battery and Surge Protected Outlets." The power demands of these devices will overload and possibly damage the unit.)**

2. **Full-Time Surge Protection Outlets / ECO Controlled Outlets**

   The unit has surge suppression outlets to provide surge and line noise protection. Three of the surge-only outlets are also ECO controlled outlets.

3. **Power Switch**

   To turn the UPS **ON**, press the power button for approximately 2 seconds - you will hear a constant tone (1 second) - and release after a short beep.

   To turn the UPS **OFF**, press the power button for approximately 2 seconds - you will hear a constant tone (1 second) - and release after two short beeps.

   Alarm setting: The audible alarm can be turned **Off or On** by quickly pressing the POWER button twice. The default setting is for the Alarm On. To turn the Alarm Off, quickly press the power button twice. You will hear two short beeps when the Alarm is turned Off. To turn the Alarm back On, quickly press the power button twice. You will hear a single short beep when the Alarm is turned On. *When the Alarm is turned Off, there will be no audible notification when the UPS reaches a low battery state.

4. **Power On Indicator (green)**

   This LED is illuminated when the utility power is normal and the UPS outlets are providing power, free of surges and spikes.

5. **Mode Switch (EC650LCD and EC850LCD only)**

   Press the Mode Switch for approximately 3 seconds to enter setup mode to select four functions: Utility High Voltage Range, Utility Low Voltage Range, ECO ON/OFF, and LCD sleep ON/OFF. When a function is selected, press Mode Switch for 3 seconds to view options. When an option is selected, wait for 8 seconds for the setting to be confirmed. After the setting has been confirmed the LCD screen will leave setup mode and go back to status display. If there is no action for 8 seconds during setup, the LCD will also leave setup mode and go back to the status display.

   a. Utility High Voltage Range: Adjust the value of high voltage range.
   b. Utility Low Voltage Range: Adjust the value of low voltage range.
   c. ECO: Eon/EoF (ON/OFF): Turn on or turn off ECO function. For more information, refer to *ECO Function Setup* section.
   d. LCD: L1/L0 (ON/OFF):
      * When LCD is set to L1, LCD will be always ON. When LCD is set to L0, LCD will dim if untouched for 1 minute.
      * In battery mode, LCD is always on regardless if the setting is L1 or L0.

   ECO Button (EC450G, EC550G, and EC750G only)

   Press ECO button for 3 seconds to turn on or turn off ECO function in line mode.

6. **ECO Indicator**

   ECO Indicator shows the condition of ECO function. For more information, refer to *ECO Function Setup* section.

7. **Communication Protection Ports**

   Communication protection ports will protect any standard modem, fax, or telephone line. (RJ11)

8. **Circuit Breaker**

   Located on the side of the UPS, the circuit breaker serves to provide overload and fault protection.

9. **USB Port to PC**

   The USB port allows connection and communication between the USB port on the computer and the UPS unit. The UPS communicates its status to the PowerPanel® Personal Edition software. The USB port is also used for operating the UPS in ECO mode. For more information, refer to *ECO Function Setup* section.

10. **Outlets Designed for AC Adapters**

    The UPS unit has 4 widely-spaced outlets so AC power adapters can be plugged into the UPS without overlapping or blocking adjacent outlets.

ECO FUNCTION SETUP

ECO Function

When the ECO function is active the UPS can detect whether the PC that is connected to the USB port is turned on or off. If the PC is turned off, the UPS will turn off the ECO controlled outlets and cut power to the devices connected to them in order to save power. Generally, these are peripherals that are not used when the PC is not turned on.

ECO Controlled Outlets

Three of the surge-only outlets are also ECO controlled outlets. When the PC that is connected to the USB port is turned off, the UPS will turn off the ECO controlled outlets to save energy.

ECO Setup

1. The factory default setting is OFF. ECO mode can only be enabled/disabled and will only be active when the UPS is receiving utility power and not in battery mode.
2. For the EC650/850LCD, press the Mode switch for approximately 3 seconds to enter setup mode and select the ECO function. When the ECO function is selected, press the Mode switch for 3 seconds to turn the function ON or OFF. Once ON or OFF is selected, wait 8 seconds for the setting to be confirmed and the LCD screen will return to status mode. For the EC450/550/750G, press the ECO button for 3 seconds to turn ON or OFF the ECO function.
3. When the ECO function is OFF, utility power from the ECO outlets will always be on. When the ECO function is ON, utility power from the ECO outlets will turn off if the PC connected to the UPS via the USB port is turned off or if there is no PC is connected to the UPS via USB.

ECO Indicator

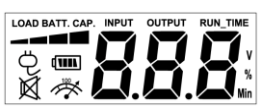
The LED will be blinking when the ECO function is turned ON but the PC is either off or not connected. The LED will be solid if the ECO function is turned on and the connected PC is on. The LED is off when the ECO function is disabled. See below table for more information.

ECO Indicator	ECO Function	ECO Outlet Status	Condition
Solid (green)	ON	With Utility Power	When PC is ON and USB port on the UPS is connected, Peripherals will receive power to operate.
Blinking	ON	Without Utility Power	When PC is OFF or the USB port on the UPS is not connected, power to the Peripherals will be turned off.
OFF	OFF	Always with Utility Power	When PC is ON/OFF, Peripherals is always ON.

DEFINITIONS FOR ILLUMINATED LED INDICATORS

Power ON	Alarm	CONDITION
On	Off	**Normal**
On	Beep twice every 30 seconds	**Utility Failure-** The UPS is providing power to battery power-supplied outlets from its battery.
On	Rapid Beeping every 1/2 second	**Utility Failure-** The UPS is providing battery power. Rapid beeping indicates the unit will run out of power shortly.
Off	Constant tone	**Battery Overload -** Occurs when connected equipment exceeds the listed capacity of the UPS. Turn the UPS off, unplug at least one piece of equipment from battery outlets, wait 10 seconds, reset the circuit breaker and turn the unit on.

DEFINITIONS FOR ILLUMINATED LCD INDICATORS



The LCD display indicates a variety of UPS operational conditions. All descriptions apply when the UPS is plugged into an AC outlet and turned on or when the UPS is on battery.

INPUT voltage meter: This meter measures the AC voltage that the UPS system is receiving from the utility wall outlet. The UPS is designed to continuously supply connected equipment with stable output voltage. In the event of a complete power loss, severe brownout, or over-voltage, the UPS relies on its internal battery to supply consistent 110/120 output voltage. The INPUT voltage meter can be used as a diagnostic tool to identify poor-quality input power.

OUTPUT voltage meter: This meter measures, in real time, the AC voltage that the UPS system is providing to the computer during normal AC/Utility Power mode, and battery backup mode.

ESTIMATE RUN TIME: This displays the run time estimate of the UPS with the current battery capacity and load.

NORMAL icon: This icon appears when the UPS is working under normal conditions.

BATTERY icon: During a severe brownout or blackout, this icon appears and an alarm sounds (two short beeps followed by a pause) to indicate the UPS is operating from its internal battery. The alarm will continue to sound during a prolonged brownout or blackout. The BATT.CAPACITY meter will show one 20% capacity segment remaining to indicate the UPS's battery is nearly out of power. You should save files and turn off your equipment immediately.

OVER LOAD icon: This icon appears and an alarm sounds to indicate the battery-supplied outlets are overloaded. To clear the overload, unplug some of your equipment from the battery-supplied outlets until the icon turns off and the alarm stops.
BATT. CAPACITY meter: This meter displays the approximate charge level of the UPS's internal battery in 20% increments. During a blackout or severe brownout, the UPS switches to battery power (the BATTERY icon appears) and the battery charge level decreases.
LOAD CAPACITY meter: This meter displays the approximate output load level of the UPS battery outlets in 20% increments.

TROUBLESHOOTING

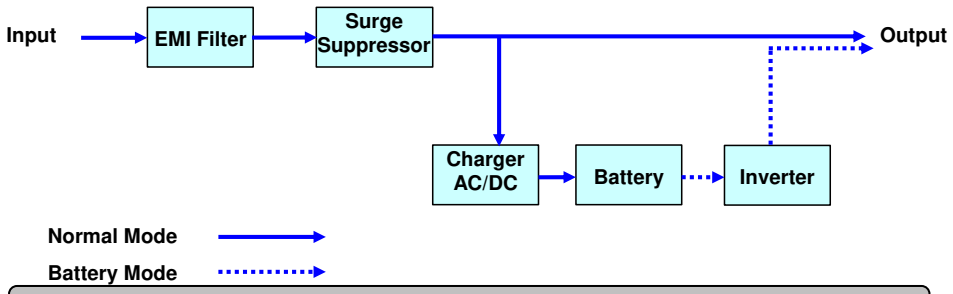
Problem	Possible Cause	Solution
Full-time surge protection outlets stop providing power to equipment. Circuit breaker button is projecting from the side of the unit.	Circuit breaker has been tripped due to an overload.	Turn the UPS off and unplug at least one piece of equipment. Wait 10 seconds, reset the circuit breaker by pressing the button, and then turn the UPS on.
The UPS does not perform expected runtime.	Battery not fully charged.	Recharge the battery by leaving the UPS plugged in.
	Battery is worn out.	Contact CyberPower Systems about replacement batteries at tech@cpsww.com.
The UPS will not turn on.	The on/off switch is designed to prevent damage from rapidly turning it off and on.	Turn the UPS off. Wait 10 seconds and then turn the UPS on.
	The unit is not connected to an AC outlet.	The unit must be connected to a 110/120V 50/60Hz outlet.
	The battery is worn out.	Contact CyberPower Systems about replacement batteries at tech@cpsww.com.
	Mechanical problem.	Contact CyberPower Systems at tech@cpsww.com.
	The frequency is outside of the operating range of 47-63Hz.	Turn the UPS off. Make sure the frequency range is within 47-63Hz. Or you can turn the UPS on in battery mode.
PowerPanel® Personal Edition is inactive (all icons are gray).	The USB cable is not connected.	Connect the USB cable to the UPS unit and an open USB port on the computer.
	The USB cable is connected to a bad USB port.	Check for a different USB port and plug the cable in.
	The unit is not providing battery power.	Shutdown your computer and turn the UPS off. Wait 10 seconds and turn the UPS back on. This should reset the unit.

Additional troubleshooting information can be found at "Support" at
www.CPSww.com

TECHNICAL SPECIFICATIONS

Model	EC450G	EC550G	EC750G	EC650LCD	EC850LCD
Capacity	450VA/260W	550VA/330W	750VA/450W	650VA/390W	850VA/510W
Nominal Input Voltage	120Vac				
Input Frequency	47 Hz to 63 Hz				
On-Battery Output Voltage	120Vac ± 5%				
On-Battery Output Frequency	50Hz/60Hz ± 1% (auto-sensing)				
Max. Load for UPS Outlets	450VA/260W	550VA/330W	750VA/450W	650VA/390W	850VA/510W
Max. Load for Full-Time Surge Protection outlets	10 Amps				
On-Battery Output Wave Form	Simulated Sine Wave				
Operating Temperature	32°F to 104° F / 0° C to 40° C				
Operating Relative Humidity	0 to 90% non-condensing				
Size (W x H x D)	5.9" x 3.1" x 10.6" 150 x 79 x 269 mm	5.9" x 3.1" x 10.6" 150 x 79 x 269 mm	7" x 3.1" x 12.2" 178 x 79 x 310 mm	5.9" x 3.1" x 10.6" 150 x 79 x 269 mm	7" x 3.1" x 12.2" 178 x 79 x 310mm
Net Weight	4.5 lbs / 2.1kg	6.0 lbs / 2.7kg	7.7 lbs / 3.5kg	6.4 lbs / 2.9kg	7.7 lbs / 3.5kg
Typical Battery Recharge Time	8 hours typical from total discharge				
Typical Battery Life	3 to 6 years, depending on number of discharge/recharge cycles				
Battery	Sealed Maintenance Free Lead Acid Battery				
Safety Approvals	UL1778(UPS), cUL CSA C22.2 No.107.3-05, FCC/DoC Class B				

SYSTEM FUNCTION BLOCK DIAGRAM



CYBERPOWER GREENPOWER UPS™ TECHNOLOGY

Advanced Energy-Saving Design

The GreenPower UPS™ has a high-efficiency charger, which makes it the most energy-efficient UPS in its class. The advanced high-frequency charging system significantly improves charging efficiency and conserves energy. As a result of this advanced design, the GreenPower UPS™ uses less energy compared to competitive models. The GreenPower UPS™ is manufactured in accordance with the Restriction on Hazardous Substances (RoHS) directive making it one of the most environmentally-friendly UPS on the market today.

ENERGY-SAVING TECHNOLOGY

Limited Warranty and Connected Equipment Guarantee

Read the following terms and conditions carefully before using the CyberPower EC450G, EC550G, EC750G, EC650LCD, and EC850LCD (the "Product"). By using the Product you consent to be bound by and become a party to the terms and conditions of this Limited Warranty and Connected Equipment Guarantee (together referred to as this "Warranty"). If you do not agree to the terms and conditions of this Warranty, you should return the Product for a full refund prior to using it.

Who is Providing this Warranty?
CyberPower Systems (USA), Inc. ("CyberPower") provides this Limited Warranty.

What Does This Warranty Cover?
This warranty covers defects in materials and workmanship in the Product under normal use and conditions.
It also covers equipment that was connected to the Product and damaged because of the failure of the Product.

What is the Period of Coverage?
This warranty covers the Product for three years. Connected equipment is covered for as long as you own the Product.

Who Is Covered?
This warranty only covers the original purchaser. Coverage ends if you sell or otherwise transfer the Product.

How Do You Get Service?
1. Call us at (877) 297-6937 or write to us at Cyber Power Systems (USA), Inc., 4241 12th Ave. E., STE 400, Shakopee, MN 55379 or send us an e-mail message at claims@cpsww.com for instructions.
2. When you contact CyberPower, identify the Product, the Purchase Date, and the item(s) of Connected Equipment. Have information on all applicable insurance or other resources of recovery/payment that are available to the Initial Customer and Request a Claim Number.
3. You must provide a dated Proof-of-Purchase receipt (or other proof of the original purchase) and provide a description of the defect.

How Do You Open A Connected Equipment Claim?
1. Call us at (877) 297-6937 or write to us at Cyber Power Systems (USA), Inc., 4241 12th Ave. E., STE 400, Shakopee, MN 55379, or send us an e-mail message at claims@cpsww.com for instructions, within 10 days of the occurrence.
2. When you contact CyberPower, identify the Product, the Purchase Date, and the item(s) of Connected Equipment. Have information on all applicable insurance or other resources of recovery/payment that are available to the Initial Customer and Request a Claim Number.
3. You must provide a dated purchase receipt (or other proof of the original purchase) and provide a description of the damage to your connected equipment.
4. Pack and ship the product to CyberPower and, if requested, the item(s) of Connected Equipment, a repair cost estimate for the damage to the Connected Equipment, and all claim forms that CyberPower provides to you. Show the Claim Number on the shipping label or include it with the product. **You must prepay all shipping costs, you are responsible for packaging and shipment, and you must pay the cost of the repair estimate.**

How Long Do I Have To Make A Claim?
All claims must be made within ten days of the occurrence.

What Will We Do To Correct Problems?
CyberPower will inspect and examine the Product.

If the Product is defective in material or workmanship, CyberPower will repair or replace it at CyberPower's expense, or, if CyberPower is unable to or decides not to repair or replace the Product (if defective) within a reasonable time, CyberPower will refund you the full purchase price you paid for the Product (purchase receipt showing price paid is required).

If it appears that our Product failed to protect any equipment plugged into it, we will also send you forms for making your claim for the connected equipment. We will repair or replace the equipment that was damaged because of the failure of our Product or pay you the fair market value (NOT REPLACEMENT COST) of the equipment at the time of the damage. We will use Orion Blue Book, or another third-party valuation guide, or eBay, craigslist, or other source to establish that amount. Our maximum liability is limited to $100,000 for the EC450G, EC550G, EC750G, EC650LCD, and EC850LCD.

Who Pays For Shipping?
We pay when we send items to you; you pay when you send items to us.

What isn't covered by the warranty?
1. This Warranty does not cover any software that was damaged or needs to be replaced due to the failure of the Product or any data that is lost as a result of the failure or the restoration of data or records, or the reinstallation of software.
2. This Warranty does not cover or apply to: misuse, modification, operation or storage outside environmental limits of the Product or the equipment connected to it, nor for damage while in transit or in storage, nor if there has been improper operation or maintenance, or use with items not designed or intended for use with the Product, such as laser printers, appliances, aquariums, medical or life support devices, etc.

What are the Limitations?
The sole and exclusive remedies to the Initial Customer are those provided by this Warranty.
1. This Warranty does not apply unless the Product and the equipment that was connected to it were connected to properly wired and grounded outlets (including compliance with electrical and safety codes of the most current electrical code), without the use of any adapters or other connectors.
2. The Product must have been plugged directly into the power source and the equipment connected to the Product must be directly connected to the Product and not "daisy-chained" together in serial fashion with any extension cords, another Product or device similar to the Product, surge suppressor, or power tap. Any such installation voids the Limited Warranty.
3. The Product and equipment connected to it must have been used properly in a suitable and proper environment and in conformance with any license, instruction manual, or warnings provided with the Product and the equipment connected to it.
4. The Product must have been used at all times within the limitations on the Product's VA/Watt capacity.

The Product was designed to eliminate disrupting and damaging effects of momentary (less than 1ms) voltage spikes or impulses from lightning or other power transients. If it can be shown that a voltage spike lasting longer than 1ms has occurred, the occurrence will be deemed outside the rated capabilities of the Product and the Limited Warranty is void. CyberPower Does Not Cover or Undertake Any Liability in Any Event for Any of the Following:

1. Loss of or damage to data, records, or software or the restoration of data or records, or the reinstallation of software.
2. Damage from causes other than AC Power Line Transients, spikes, or surges on properly installed, grounded and code-compliant 120 volt power lines in the United States and Canada; transients, surges or spikes on standard telephone land lines, PBX telephone equipment lines or Base 10T Ethernet lines, when properly installed and connected. (This exclusion applies, for example, to fluctuations in data transmission or reception, by CATV or RF transmission or fluctuations, or by transients in such transmission.)
3. Damage from any circumstance described as excluded above with respect to the Product.
4. Damages from fire, flood, wind, rain, rising water, leakage or breakage of plumbing, abuse, misuse or alteration of either the product or the Connected Equipment.
5. CyberPower excludes any liability for personal injury under the Limited Warranty and Connected Equipment Guarantee. CyberPower excludes any liability for direct, indirect, special, incidental or consequential damages, whether for damage to or loss of property [EXCEPT FOR (AND ONLY FOR) the specific limited agreement of CyberPower to provide certain warranty benefits regarding "Connected Equipment" under this Warranty], loss of profits, business interruption, or loss of information or data. NOTE: Some States or Provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you.
6. The Product is not for use in high-risk activities or with aquariums. The Product is not designed or intended for use in hazardous environments requiring fail-safe performance, or for use in any circumstance in which the failure of the Product could lead directly to death, personal injury, or severe physical or property damage, or that would affect operation or safety of any medical or life support device (collectively, "High Risk Activities"). CyberPower expressly disclaims any express or implied warranty of fitness for High Risk Activities or with aquariums. CyberPower does not authorize use of any Product in any High Risk Activities or with Aquariums. **ANY SUCH USE IS IMPROPER AND IS A MISUSE OF THE PRODUCT**.

The application of the United Nations Convention of Contracts for the International Sale of Goods is expressly excluded. CyberPower is the warrantor under this Limited Warranty.

Where Can I Get More Information?
For further information please feel free to contact CyberPower at Cyber Power Systems (USA), Inc. 4241 12th Ave E., STE 400, Shakopee, MN 55379; call us at (877) 297-6937; or send us an e-mail message at claims@cpsww.com.

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