

## RT650 User's Manual

K01-0000485-00

### PRODUCT REGISTRATION

Thank you for purchasing a CyberPower product. Please take a few minutes to register your product at [www.cyberpower.com/registration](http://www.cyberpower.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 INSTRUCTIONS

#### (SAVE THESE INSTRUCTIONS)

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

**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!** To avoid electrical shock, turn off the unit and unplug it from the AC power source before servicing the battery.

**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.

**DO NOT USE THE UPS ON ANY TRANSPORTATION!** To reduce the risk of fire or electric shock, do not use the unit on any transportation such as airplanes or ships. The effect of shock or vibration caused during transit and the damp environment 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

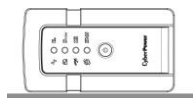
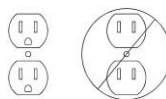
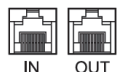
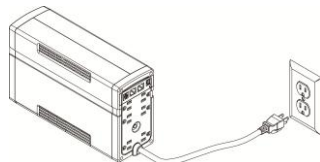
\*PowerPanel® Personal Edition software is available on our website. Please visit [www.cyberpower.com](http://www.cyberpower.com) and go to the Software Section for free download.

#### HOW TO DETERMINE THE POWER REQUIREMENTS OF YOUR EQUIPMENT

- Ensure that the equipment plugged into the UPS does not exceed the UPS unit's rated capacity (650VA/400W). 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.
- 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.

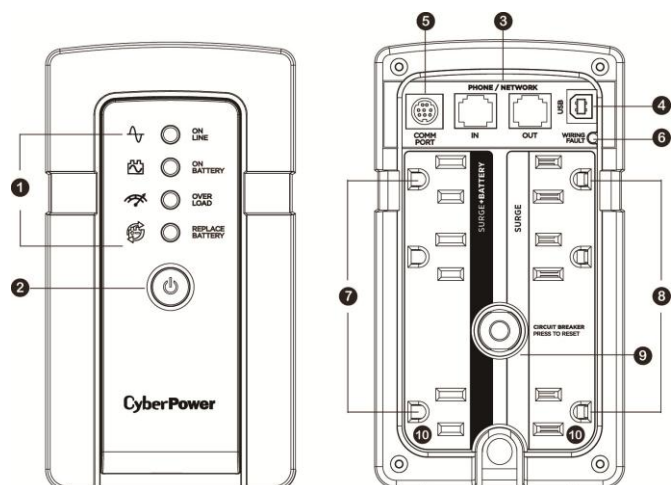
#### HARDWARE INSTALLATION GUIDE

- 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.
- 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.**
- 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.
- 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.
- Press the power switch to turn the unit on. The Power On indicator light will illuminate green and the unit will "beep" twice.
- 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.
- To maintain optimal battery charge, leave the UPS plugged into an AC outlet at all times.
- 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.
- Ensure the wall outlet and UPS are located near the equipment being attached for proper accessibility.
- The UPS can be laid down on its left side during operation. **DO NOT** lay the UPS down on the other side which may block the ventilation hole and hinder the heat dissipation.



### BASIC OPERATION

#### DESCRIPTION



#### 1. LED Indicators

The LED indicators will illuminate to show the status of power: on line, on battery, overload, replace battery.

#### 2. Power Switch

To turn the UPS **ON**, press the power button for approximately 2 seconds - you will hear a constant tone 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 and release after two short beeps.  
Mute mode: 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 goes to Battery mode or reaches a low battery state.

#### 3. Communication Protection Ports

Communication protection ports will protect any standard modem, fax, telephone line, network or Ethernet connection (RJ11/RJ45).

#### 4. 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.

#### 5. Communication Port to PC

This port allows connection and communication between the UPS and computer. The UPS communicates its status to the PowerPanel® Personal Edition software. For information regarding ordering a serial cable for the unit, please contact technical support at CyberPower System.

**NOTE:** Only one of communication port and USB port can be used as communication and control of the UPS unit at one time.

#### 6. Wiring fault Indicator (red)

This LED indicator will illuminate to warn the user that a wiring problem exists, such as bad ground, missing ground or reversed wiring. If this is illuminated, disconnect all electrical equipment from the outlet and have an electrician verify the outlet is properly wired. The UPS will not provide surge protection without being plugged into a grounded and properly wired wall outlet.

#### 7. 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.)**

#### 8. Full-Time Surge Protection Outlets

The unit has surge suppression outlets to provide surge and line noise protection.

#### 9. Circuit Breaker

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

#### 10. Outlets Designed for AC Adapters

The UPS unit has 2 widely-spaced outlets so AC power adapters can be plugged into the UPS without overlapping or blocking adjacent outlets.

### REPLACING THE BATTERY

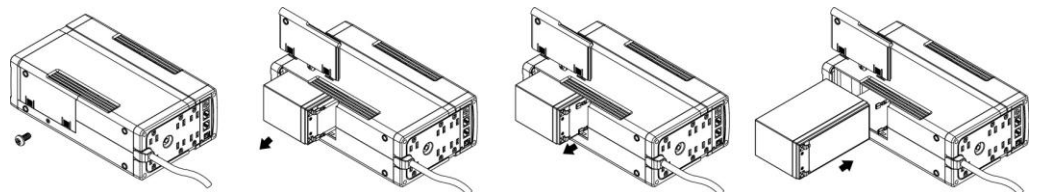
Installation or replacement of batteries located in an OPERATOR ACCESS AREA.

- When replacing batteries, replace with the same number of the following battery: CyberPower / RB1270C for both RT650.
- CAUTION!** Risk of energy hazard, 12V, maximum 9 Ampere-hour battery. Before replacing batteries, remove conductive jewelry such as chains, wrist watches, and rings. High energy through conductive materials could cause severe burns.
- 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 - RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO LOCAL REGULATIONS.**

#### TO REPLACE THE BATTERY

- Turn off and unplug all connected equipment.
- Unplug it from the AC power source.
- Turn the UPS on its side.
- Remove the retaining screw.
- Slide the battery compartment cover completely off of the unit.
- Remove the battery from the compartment.
- Disconnect the battery wires from the battery.
- Install the replacement battery by connecting the red wire and black wire to the positive (+) and negative (-) terminal of the battery.
- Put the battery back into the compartment.
- Slide back the battery compartment cover and tighten the retaining screw.
- Charge the unit for 8 hours to fully charge the battery.

**REMINDER:** Batteries are considered **HAZARDOUS WASTE** and must be disposed of properly. Most retailers that sell lead-acid batteries collect used batteries for recycling, as required by local regulations.



### DEFINITIONS FOR ILLUMINATED LED INDICATORS

					CONDITION
On	Off	Off	Off	Off	Normal
Off	On	Off	Off	Beep twice every 30 seconds	Utility Failure- The UPS is providing power to battery protected outlets from its battery.
Off	Flash	Off	Off	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	Off	One Flash every 5 seconds	Off	Constant tone	Overload Fault - 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.
Off	Off	On/Flash	Off	Constant tone	Short Fault (two flashes every 5 seconds) - Unplug at least one piece of equipment from battery outlets and turn the UPS on again. UPS Fault (constantly illuminate) - Contact CyberPower Systems for support.
On/Off	Off/On	Flash	Off	Beep every one second	Charger Fault (three flashes every 5 seconds) - Contact CyberPower Systems for support.
On	Off	Off	Flash	Beep every two seconds in 30 seconds	Battery is worn out or disconnected - Make sure the battery is connected or replace a new battery.

### FUNCTION SETUP GUIDE – SENSITIVITY SETUP

In line mode, the AC input voltage may not be stable all the time, to prevent the connected equipment from damage caused by the unexpected voltage fluctuations, please adjust the sensitivity of the unit by the steps as follows:

- Please make sure that the UPS is in **LINE MODE**.
- To Enter the Sensitivity Setup mode, press the Power Button for 10 seconds until all indicators flash 2 seconds rapidly.
- The unit will show the current sensitivity setting, as shown in the following table.
- To set up a level of sensitivity, hold down the power button until the green indicator (the first one) illuminates.
- To select Low Sensitivity setting: shortly press power button until one red indicator (the last one) illuminate.
- To select Medium Sensitivity setting, press the power button until both red indicators (the third and fourth from the top) illuminate.
- To select High Sensitivity setting, press the power button until yellow and both red indicators (bottom three) illuminate.
- Once in setup mode, if there is no action within 5 seconds, the unit will exit setup mode, no setting is done.

Indicators Illuminate	Sensitivity	Input Voltage Range	Description
1 (Red)	Low	88 – 145 Vac	If the connected equipment can tolerate more power events (example: unstable power often associated with stormy weather), select Low Sensitivity and the UPS will go to Battery Mode less often.
2 (Red, Red)	Medium (Default)	96 – 141 Vac	The UPS will go to Battery Mode if the input voltage is beyond the range.
3 (Yellow, Red, Red)	High	100 – 136 Vac	If the connected equipment is more sensitive to power events, select High Sensitivity and the UPS will go to Battery Mode more often.

## TROUBLESHOOTING

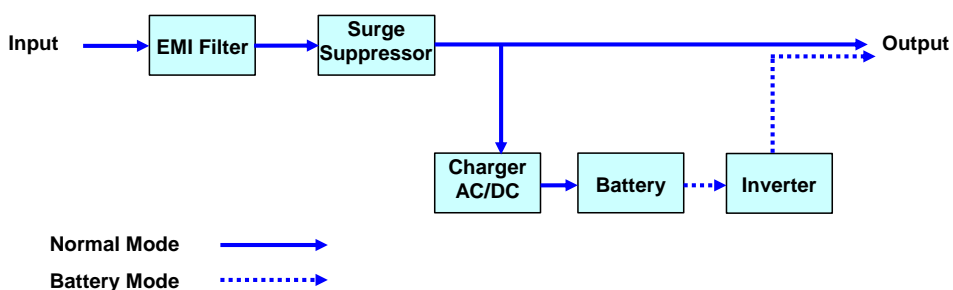
Problem	Possible Cause	Solution
Circuit breaker button is projecting from the back of the unit.	Circuit breaker has been tripped due to an overload.	Turn the UPS off and unplug at least one piece of equipment. Wait 10 seconds, reset the circuit breaker by pressing the button, and then turn the UPS on.
The UPS does not perform expected runtime.	Battery not fully charged.	Recharge the battery by leaving the UPS plugged in.
	Battery is worn out.	Please contact CyberPower Systems about replacement batteries.
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.	Please contact CyberPower Systems about replacement batteries.
	Mechanical problem.	Please contact CyberPower Systems.
PowerPanel® Personal Edition is inactive (all icons are gray).	The frequency is outside of the operating range of 50/60±3Hz.	Turn the UPS off. Make sure the frequency range is within 50/60±3Hz. Or you can turn the UPS on in battery mode.
	The USB cable is not connected.	Connect the USB / serial cable to the UPS unit and an open USB / serial port on the back of the computer. You must use the cable that came with the unit. <b>NOTE:</b> Only one of communication port and USB port can be used as communication and control of the UPS unit at one time.
	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.cyberpower.com](http://www.cyberpower.com)

## TECHNICAL SPECIFICATIONS

Model	RT650
Capacity	650 VA/ 400W
Nominal Input Voltage	120Vac
Input Frequency	50/60Hz ± 3Hz
On-Battery Output Voltage	120Vac ± 5%
On-Battery Output Frequency	50/60Hz ± 1% (Auto-sensing)
Max. Load for UPS Outlets	650 VA/ 400W
Max. Load for Full-Time Surge Protection outlets	12A
On-Battery Output Wave Form	Simulated Sine wave
Operating Temperature	32°F to 113°F / 0° C to 45° C
Operating Relative Humidity	0 to 95% non-condensing
Size (W x H x D)	3.6" x 6.5" x 11.0"
Net Weight	9.0 lbs
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
Certificates	UL1778(UPS), cUL107, 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.



## Limited Warranty and Connected Equipment Guarantee

Read the following terms and conditions carefully before using the CyberPower RT650 (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?

- Call us at (877) 297-6937 or write to us at Cyber Power Systems (USA), Inc., 4241 12<sup>th</sup> Ave. E., STE 400, Shakopee, MN 55379 or send us an e-mail message at [claims@cpsww.com](mailto:claims@cpsww.com) for instructions.
- 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.
- 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?

- Call us at (877) 297-6937 or write to us at Cyber Power Systems (USA), Inc., 4241 12<sup>th</sup> Ave. E., STE 400, Shakopee, MN 55379, or send us an e-mail message at [claims@cpsww.com](mailto:claims@cpsww.com) for instructions, within 10 days of the occurrence.
- 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.
- 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.
- 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 \$175,000 for the RT650.

### 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?

- 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.
- 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.

- 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.
- 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.
- 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.
- 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:

- Loss of or damage to data, records, or software or the restoration of data or records, or the reinstallation of software.
- 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.)
- Damage from any circumstance described as excluded above with respect to the Product.
- 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.
- 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.
- 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 12<sup>th</sup> Ave E., STE 400, Shakopee, MN 55379; call us at (877) 297-6937; or send us an e-mail message at [claims@cpsww.com](mailto:claims@cpsww.com).

CyberPower Systems encourages environmentally sound methods for disposal and recycling of its UPS products. Please dispose and/or recycle your UPS and batteries in accordance to the local regulations of your state.

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