



Patriot[®] Plus PNP 650 and PNP 920 User's Manual

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Trademarks

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IMPORTANT SAFETY INSTRUCTIONS!

SAVE THESE INSTRUCTIONS!

This manual contains important instructions for your Patriot Plus.

CAUTION!

Whenever the unit's On/Off switch is "On," there may be dangerous voltage present at the unit's outlets. This is true because the unit's battery supplies power even if the unit is not plugged into the wall outlet. The unit contains dangerous voltages.

To reduce the risk of electric shock, install in a temperature-controlled and humidity-controlled indoor area free of conductive contaminants.

The power supply cord is intended to serve as the disconnect device. The socket-outlet shall be near the equipment and shall be easily accessible.

All servicing of this equipment must be performed by qualified service personnel.

Before maintenance or repair, all connections must be removed. Before maintenance, repair, or shipment, the unit must be completely switched off and unplugged or disconnected.

The installation and use of this product must comply with all national, federal, state, municipal, or local codes that apply. For assistance, call your local [Best Power](#) office.

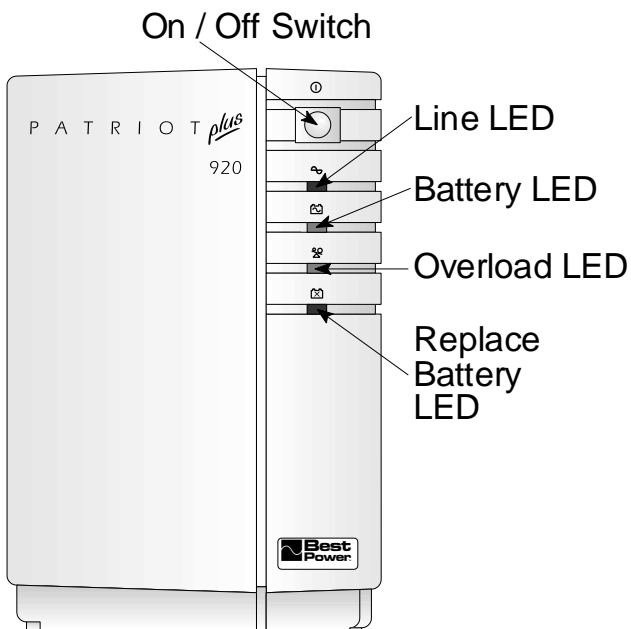
Refer to your Patriot Safety Information Manual (ILS-1080) for additional safety instructions.

If the Patriot Plus unit has been damaged during shipment, call your vendor immediately.

Introduction

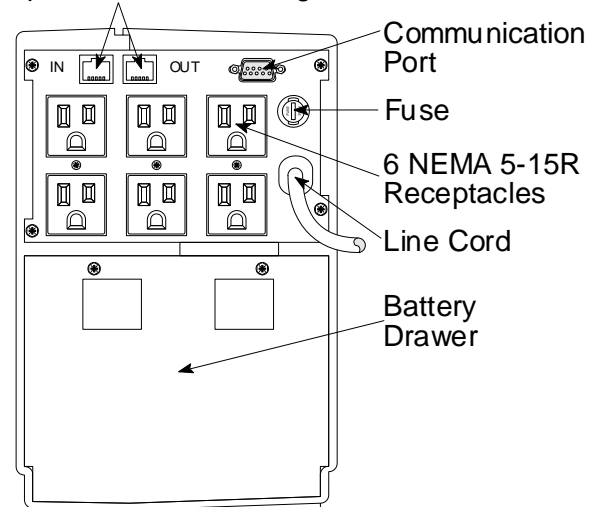
The BEST Patriot Plus system provides protection against power problems, including power outages, brownouts, and sudden increases in power. It also provides spike suppression and line noise filtering to protect your equipment. Front panel LEDs and an audible alarm keep you aware of the unit's status. Use the drawings below to familiarize yourself with the unit.

Front Panel



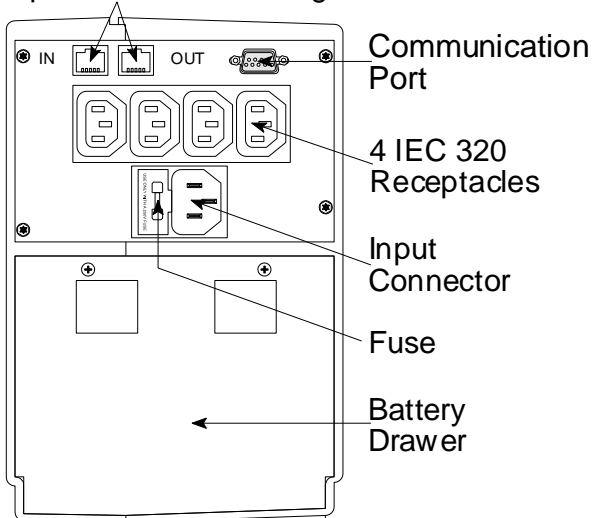
Back Panel: J, U, and P Models

Telephone / Network Surge Protection



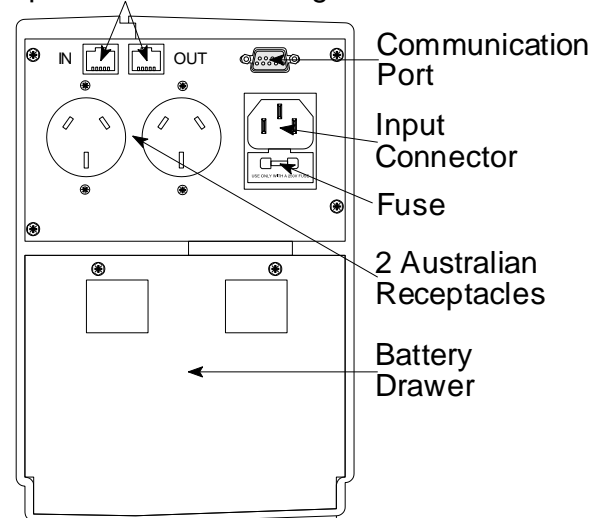
Back Panel: E Models

Telephone / Network Surge Protection



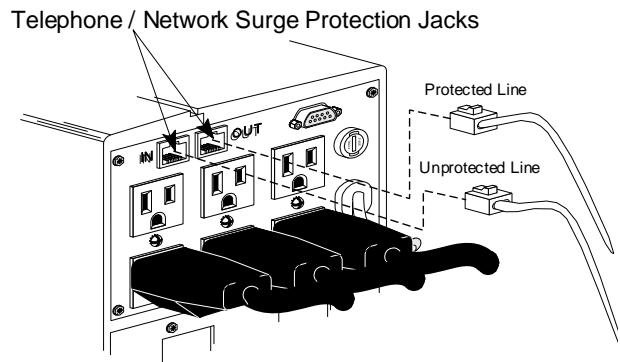
Back Panel: A Models

Telephone / Network Surge Protection



Starting the Unit

- 1 Plug the unit into a wall outlet.
- 2 Press the On/Off switch to turn the unit on. The unit will beep, all of the front panel LEDs will light for a moment, and then the LEDs will flash 5 or 6 times for the [Sensitivity Level](#). The green LINE LED should remain on. If not, see the [Troubleshooting](#) section.
- 3 Let the unit charge the battery for 10 hours. You may use the unit while the battery charges. However, the battery backup runtime will be reduced until the battery is fully charged.
- 4 Switch off the load equipment and plug it into the outlets on the back of the unit.
- 5 Switch on the load equipment one piece at a time.
- 6 The Telephone/Network Surge Protection jacks will protect equipment (phone, fax, modem, or 10BASE-T network connection) that utilizes an RJ-11 or RJ-45 connection. Plug the single telephone line or 10BASE-T network connection into the surge protection jacks on the back of the Patriot Plus. Use the provided phone jumper cable and your existing cable to connect your equipment. Network cabling is not provided. *This connection is optional. It is not needed to use the Patriot Plus.*
- 7 Please fill out the warranty registration card and return it to your local Best Power office. If you are in the U.S.A. or Canada and you would like to activate the Warranty for the Transient Voltage Surge Suppression Circuitry, please return the registration card within 10 days of installation.



LEDs and Audible Beeps

The front panel LEDs and an audible beep indicate the unit status. The unit sounds a series of beeps every five seconds whenever the unit is on battery power or an alarm is present. See Table 2.

Table 1: LEDs

LED	What It Means
LINE (Green)	Steady: Acceptable input power is present. The unit is running on line power. Blinking: The unit detects unacceptable input power. Off: No input power is present or the unit is switched off.
BATTERY (Yellow)	The unit is running on battery power.
OVERLOAD (Red)	Too much load equipment. See item 4 in Table 2.
REPLACE BATTERY (Red)	Replace the battery. See “Replacing the Battery Pack.”

Table 2: Audible Beeps

Number of Beeps	What It Means
1	The unit is on battery power. See Table 3 for more information.
2	Low Battery Alarm: The unit was running on battery power and shut down due to very low battery voltage. The unit will restart automatically when acceptable power returns.
3	Near Low Battery: The runtime remaining is low. The unit will shut down soon. Shut off the load equipment.
4	Output Overload Warning: Too much load equipment is connected to the unit. Decrease the amount of load equipment. The warning will clear when the amount of load equipment is sufficiently reduced.
5	Output Overload Alarm: Too much load equipment is connected to the unit. The unit will shut down. Decrease the amount of load equipment connected to the unit. Then, reset the unit by switching the On/Off switch off, then back on.
6	High Battery Alarm: The battery voltage is too high. Shut off the load equipment and the unit. Then, phone Best Power .
7	Shutdown: The unit has shutdown due to a shutdown request issued by a device connected to the DB9 communications port. See “Communications Port Pin-Outs.”
8	Replace Battery: The battery needs to be replaced. See “Replacing the Battery Pack.”
9	Phone Best Power for service.

Troubleshooting

If you have a question or problem, the troubleshooting table may help. (See Table 3.) If you need assistance, phone your local [Best Power](#) office. Please have the model number and serial number (located on the bottom of the unit) available.

If the unit must be returned, BEST will give you a Return Materials Authorization (RMA) number. *Phone [Best Power](#) for an RMA number before returning the unit for any reason.*

Table 3: Troubleshooting

Problem	Possible Reasons	What To Do
Green LINE LED blinking, yellow BATTERY LED on, one beep every five seconds.	Unacceptable power from wall outlet.	Wait for acceptable power to return or try a different wall outlet.
Yellow BATTERY LED on, green LINE LED off, one beep every five seconds.	1. Utility power outage. 2. Loose plug. 3. Blown fuse. 4. Power cord failure.	1. Wait for power to return. 2. Make sure both ends of power cord are secure. 3. Replace fuse. See " Replacing the Fuse. " 4. Phone Best Power .
Series of beeps every five seconds.	Alarm condition exists.	See Table 2.
The unit does not seem to be working. The LEDs are all off.	1. Unit switched off. 2. Very low battery voltage.	1. Switch the unit on. 2. Plug the unit into a working wall outlet for at least 10 hours to allow the batteries to charge. If the unit will not switch on after 10 hours, phone Best Power .
Red OVERLOAD LED on.	Overload.	Reduce load.
Red REPLACE BATTERY LED on.	Unit failed the battery test.	Replace battery. See " Replacing the Battery Pack. "
Unit transfers to inverter too often.	Unit sensitivity set too high.	See " Changing Sensitivity Levels. "

Changing Sensitivity Levels

Problems with line input may cause your Patriot Plus to transfer to inverter. If this happens often, you may want to change the sensitivity level of your unit to avoid the high number of transfers.

The Patriot Plus can be programmed to one of the three sensitivity levels listed below.

Sensitivity Levels	LED Indicators
1 — Most sensitive*	Flashing green
2 — Moderately sensitive	Flashing yellow
3 — Least sensitive	Flashing green and yellow

*Factory default setting

When you first start your unit, all of the front panel LEDs will light for a moment and then the LEDs will flash the color or colors indicated above 5 or 6 times to indicate the unit's sensitivity level.

To change the sensitivity level, turn your unit on with neither AC line applied nor your load equipment plugged in. The LEDs will first flash the current sensitivity level and then flash the new sensitivity level (refer to the table above). The yellow light will then stay on to indicate the unit is running on inverter. Each time you turn the unit off and on, with neither AC line nor load equipment applied, the unit will cycle to the next sensitivity level. The cycle process is from Level 1 to Level 2; Level 2 to Level 3; and Level 3 back to Level 1.

Once the unit is at the sensitivity level you want, turn it off and follow the instructions in "[Starting the Unit.](#)"

Replacing the Fuse

To replace the fuse, follow the steps below. The back panel drawings in the [Introduction](#) show the location of the fuse holder.

- 1 *All Models:* Switch off and unplug the protected load equipment before you switch off the Patriot Plus unit.
J, U, and P Models: Unplug the Patriot Plus unit.

E and A Models: Disconnect the UPS power cord from the back of the unit.

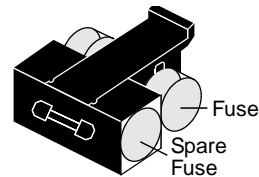
- 2 The new fuse must be the size and type listed on the label below the fuse holder.

- 3 *J, U, and P Models:* Unscrew the fuse cap by turning it to the left (counterclockwise). The fuse cap should pop out.

E and A Models: The top of the fuse holder has a small notch. Gently pry the fuse holder out of the unit.

- 4 *J, U, and P Models:* Gently pull the fuse out of the fuse cap and put the new fuse in its place.

E and A Models: One spare fuse is provided in the fuse holder. If the spare fuse has been used, call BEST to order a new fuse. Push the spare fuse out of the holder. Remove and discard the old fuse and put the new fuse in its place.



- 5 *J, U, and P Models:* Line up the tab on the fuse cap with the notch on the unit. Gently push the fuse into the holder and turn it to the right (clockwise).

E and A Models: Push the fuse holder back into the unit until it clicks into place.

- 6 *E and A Models:* Reconnect the UPS power cord to the back of the unit.

All Models: Plug the unit into the wall outlet. Switch on the unit. Plug the load equipment back into the unit

- 7 Switch on the load equipment one piece at a time.

Replacing the Battery Pack

CAUTION!

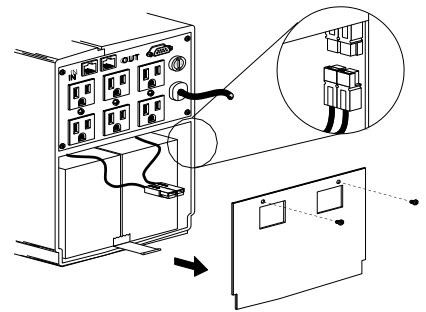
A battery can present a risk of high short circuit current. When working on batteries, remove watches, rings, or other metal objects. Use insulated tools.

This unit comes with one or more sealed, lead-acid batteries which must be disposed of properly according to local regulations. Batteries contain lead and pose an environmental and human health hazard if not disposed of properly. Do not dispose of batteries in a fire. The battery may explode.

Do not open or mutilate batteries. Released electrolyte or battery acid is harmful to the eyes and skin and may be toxic. If acid is spilled on skin or in the eyes, flush with water and contact a physician immediately.

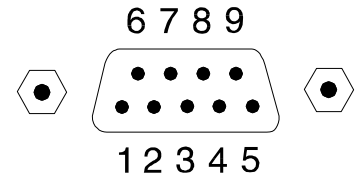
Battery replacement information: 1-800-356-5737 (U.S.A. and Canada) or 1-608-565-2100.

- 1 Phone [Best Power](#) to order a replacement battery pack. It must be the same type and rating of the original batteries.
- 2 Switch off and unplug the protected load equipment before you switch off the Patriot Plus.
- 3 Unplug the Patriot Plus unit.
- 4 On the back of the unit, remove the two Phillips screws at the top of the battery door. Remove the door.
- 5 Disconnect the battery connector and slide the battery pack out of the unit by pulling on the tape at the bottom of the battery.
- 6 Slide the replacement battery pack into the unit and plug in the battery connector before securing the battery door to the unit.
- 7 Use the two Phillips screws to secure the battery door to the unit.
- 8 Plug in the unit. Switch on the unit, plug in the load equipment and switch on one piece at a time.



Communication Port Pin-Outs

- Pin 1** **Shutdown:** A +12 VDC signal held for 5 seconds on this pin while the unit is on battery shuts down the unit 120 seconds later. The unit restarts after a 10-second delay when acceptable line power is restored.
- Pin 2** **Not used.**
- Pin 3** **Inverter Normally Open Contact:** Closes when the unit is on battery power.
- Pin 4** **Common:** Signal ground for all interface signals and contacts.
- Pin 5** **Low Runtime Normally Open Contact:** Closes when battery runtime is low.
- Pin 6** **Inverter Normally Closed Contact:** Opens when the unit is on battery power.
- Pin 7** **No connection.**
- Pin 8** **No connection.**
- Pin 9** **Chassis Ground.**



Contacts consist of open collector circuits capable of switching up to +30 VDC 6 mA resistive load.

Best Power offers interface kits that allow you to connect your computer system to the Patriot Plus unit's communication port. Best Power has interface cables for many systems, including the following:

Banyan VINES	Novell NetWare	DOS PCs
IBM RS/6000 AIX	IBM AS/400	OS/2
SCO UNIX/XENIX	UNIX and Compatible Systems	Lantastic v4.0
Windows 3.X, 95 and NT	LAN Manager/Server v2.0	

A coupon for a free CheckUPS software package is included with your unit. In addition to the platforms above, the Patriot Plus is plug-and-play compatible with Windows 95.

For the latest specific information on Best Power interface kits, call [Best Power](#) or your BEST dealer.

Specifications

Lightning and Surge Protection: Passes ANSI/IEEE C62.41 Category A, let-through voltage (as percentage of peak voltage) < 1.6%.

Safety Compliance: *Model U:* UL listed to UL1778 and UL1449 (TVSS rating of .500kv), cUL listed to CAN/CSA C22.2 No. 107.1 M91.

Model E: TÜV Certified.

EMC Compliance: *Model U:* FCC-A.

Model E: Vfg 243-91/46-92 B, EN55022,

CE Mark Self-certified to: EMC Directive (89/336)

CE Marking Directive 93/68EEC, Low Voltage Directive 73/23/EEC

Noise (RF) Suppression:

Full-time EMI/RFI filtering.

Efficiency: $\geq 95\%$ on line.

Capacity VA/Watts:

650 VA/400 W; 920 VA/560 W.

Frequency: 50/60 Hz auto-sensing

(47 - 53 Hz / 57 - 63 Hz on line;

50/60 Hz $\pm 3\%$ on battery).

Overcurrent Protection (on line): Fuse.

See label on unit for fuse size and type.

Runtime (typical): Full load: 5 minutes;

Half load: 15 minutes.

Transfer Time: 4 ms typical.

Telephone line surge suppression: per Bellcore 1089: 1.2/50msec waveform, ± 2 kV peak, Compliant to UL497A.

Battery: Sealed, maintenance-free, valve-regulated, UL 924 recognized.

650 VA: One 12 V, 10 AH battery.

920 VA: Two 12 V, 7 AH batteries.

Recharge Time (to 90% of capacity): ≤ 10 hours.

Load Compatibility: Can support 100% power factor corrected, switch-mode power supply load.

Audible Noise (on line): ≤ 40 dBA at one meter.

Ventilation: Air around the unit must be free of dust, chemicals, or other materials that corrode or contaminate. Air must be free to move around the unit.

Operating Temperature:

32° - 104° F (0° - 40° C).

Humidity: 0 - 95% non-condensing.

Dimensions (Height x Width x Depth):

9 x 6 x 13.5 in (229 x 153 x 343 mm).

Weight: 650 VA: 23 lbs. (10.5 kg);

950 VA: 30 lbs. (13.6 kg).

Model	J	U	P	E	A
Nominal Voltage (VAC)	100	120	230	230	230
Input Plug	NEMA 5-15P			IEC-320	Australian
Output Receptacles	6 NEMA 5-15R			4 IEC-320	2 Australian
Input Voltage Range, (VAC) On Line	75.5 ± 2 to 122.5 ± 2.5	90 ± 2 to 147.5 ± 2.5	173 ± 4 to 283, ± 5		
Output Voltage Regulation, (VAC) On Line & On Battery	89 to 104, ± 2	106 to 125, ± 2	204 to 240, ± 4		

Best Power reserves the right to change specifications without prior notice.

WARRANTY

LIMITED TWO YEAR WARRANTY

Standard Warranty For All Purchases

BEST POWER, a division of General Signal Power Systems, Inc. (hereinafter called BEST POWER) warrants that each product sold by BEST POWER is compatible with existing commercially available computer equipment with enclosed power supplies and is free from defects in materials and workmanship under normal use and service. This warranty is applicable only to the initial retail purchaser (PURCHASER), and is not transferable. The duration of this warranty is two (2) years from the date of the first retail sale or the date of delivery to the PURCHASER, whichever occurs first, subject to the following conditions.

If the PURCHASER discovers within the duration of this warranty a failure of the product to perform compatibly with presently existing computer equipment or a defect in material or workmanship, the PURCHASER must promptly notify BEST POWER in writing within the duration of the warranty or not later than one month after expiration of the warranty. BEST POWER's obligation under this warranty is limited to the replacement or repair, subject to the conditions specified below, of such product returned intact to BEST POWER which shall appear to BEST POWER, upon inspection, to have been either incompatible or defective. Replacement or repair will be made at BEST POWER's Worldwide Service, Highway 80, Necedah, Wisconsin 54646, U.S.A. Such repair or replacement shall be at BEST POWER's expense. This warranty does not cover any taxes which may be due in connection with replacement or repair, nor any installation, removal, transportation or postage costs. These expenses will be paid by PURCHASER. If BEST POWER is unable to repair or replace the product to conform to this warranty after a reasonable number of attempts, BEST POWER will refund the purchase price. Remedies under this warranty are expressly limited to those specified above.

TO THE EXTENT ALLOWED BY LAW, BEST POWER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY. TO THE EXTENT ALLOWED BY LAW, BEST POWER SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, INJURIES TO PROPERTY, LOSS OF USE OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT.

Some states do not allow limitations on how long an implied warranty lasts, so that the above limitation on duration of implied warranties may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. You are advised to consult applicable state laws.

No warranty is made with respect to other products sold by BEST POWER which do not bear the name BEST POWER, and no recommendation of such other product shall imply or constitute any warranty with respect to them. This warranty does not cover repair or replacement because of damage from unreasonable use (for example only, damage from road hazard, accident, fire or other casualty, misuse, negligence, or incorrect wiring) and any use or installation not in conformance with instructions furnished by BEST POWER, or repairs or replacements needed because of modifications or parts not authorized or supplied by BEST POWER.

LIMITED WARRANTY

Transient Voltage Surge Suppression Circuitry

(For U.S. and Canadian Purchasers Only)

BEST POWER, a division of General Signal Power Systems, Inc. ("BEST POWER") hereby warrants the transient voltage surge suppression circuitry in each FERRUPS®, FORTRESS®, PATRIOT®, UNITY/I™, CITADEL®, or SPIKEFREE™ product (hereinafter called "Product") sold by it for installation in the United States of America and Canada to be free from defects in material and workmanship under normal use and service for the lifetime of the Product, beginning with the date of sale to the initial retail purchaser, subject to the following conditions. This warranty is applicable only to the initial retail purchaser (hereinafter called PURCHASER), is not transferable, and is limited to the following remedies:

1. The replacement or repair of the transient voltage surge suppression circuitry in each Product that is returned intact to BEST POWER and which shall appear to BEST POWER upon inspection to have been defective in material or workmanship or to have been damaged through normal use;
2. The reimbursement to the PURCHASER of up to \$25,000 per occurrence of documented physical damage to specified computer equipment connected to a Product where such damage could have been prevented by transient voltage surge suppression circuitry as detailed in BEST POWER's specification for the Product sold.

This warranty is made in addition to BEST POWER's Limited Two Year Warranty.

This warranty does not include any taxes which may be due in connection with replacement or repair nor any installation, transportation or postage costs. These expenses will be paid by PURCHASER. Replacement or repair will be made at BEST POWER's Worldwide Service, Highway 80, Necedah, Wisconsin 54646, U.S.A.

This warranty does not cover repair or replacement because of damage from unreasonable use (damage from road hazards, accident, fire or other casualty, misuse, negligence, incorrect wiring) and any use or installation not in conformance with instructions furnished by BEST POWER, or repairs or replacements needed because of modifications or parts not authorized or supplied by BEST POWER.

This warranty is operable only upon the written acceptance by BEST POWER of an application by the PURCHASER on BEST POWER's standard form for the above warranty coverage for the Product sold. In such application, the PURCHASER shall represent that the Product sold has been properly installed and grounded in accordance with instructions received from BEST POWER, and the PURCHASER shall also specify the computer equipment to which the Product sold has been connected and the location of the computer equipment. This warranty will not apply to any equipment not specified in the application by the PURCHASER as protected equipment.

EXCEPT AS EXPRESSLY SET FORTH IN THIS WARRANTY AND BEST POWER'S LIMITED TWO YEAR WARRANTY, BEST POWER MAKES NO OTHER WARRANTIES, AND TO THE EXTENT ALLOWED BY LAW, BEST POWER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

REMEDIES UNDER THIS WARRANTY ARE EXPRESSLY LIMITED TO THE REPAIR OR REPLACEMENT OF PRODUCTS AND THE REIMBURSEMENT SPECIFIED ABOVE, AND TO THE EXTENT ALLOWED BY LAW ANY CLAIMS FOR LOSS ARISING OUT OF THE FAILURE OF PRODUCTS TO PERFORM FOR ANY PERIOD OF TIME, OR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR OTHER ECONOMIC LOSS ARE EXPRESSLY EXCLUDED.

Some states do not allow limitations on how long an implied warranty lasts, so that the above limitation on duration of implied warranties may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. You are advised to consult applicable state laws.