Owner's Reference

PS AUDIO

Owner's Reference PowerPack 1500 MKII
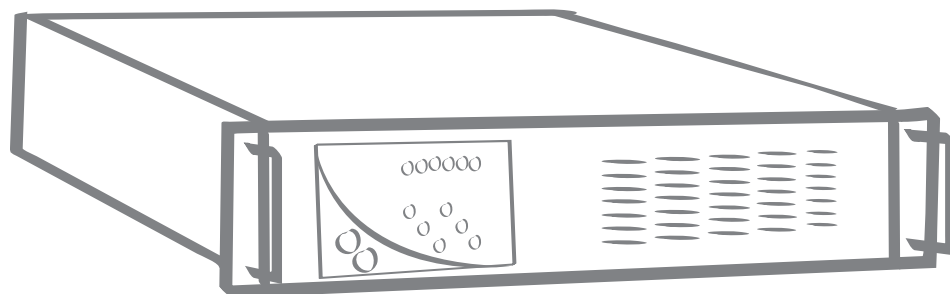
PowerPack 1500 MKII

Table Of Contents

4826 Sterling Drive, Boulder, CO 80301

PH: 720.406.8946 service@psaudio.com www.psaudio.com

Important Safety Instructions

Read these instructions
Heed all warnings
Follow all instructions

WARNING. TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

Clean only with a dry cloth.

Do not dispose of battery or batteries in fire. The batteries may explode.

The batteries used by this Uninterrupted Power System are recyclable. Proper disposal of the batteries is required. The batteries contain lead and pose a hazard to the environment and human health if not disposed of properly. Please refer to local codes for proper disposal requirement or return the unit to a factory authorized Service Center for battery replacement or disposal.

Do not place flammable material on top of or beneath the component.

All PS Audio components require adequate ventilation at all times during operation. Rack mounting is acceptable where appropriate.

Do not remove or bypass the ground pin on the end of the AC cord unless absolutely necessary to reduce hum from ground loops of connected equipment. This may cause RFI (radio frequency interference) to be induced into your playback setup. Removing or bypassing the ground pin on any electrical component is potentially dangerous and should be avoided for safety reasons. A polarized plug has two blades, one wider than the other. A grounding type plug has two blades and a third grounding prong. All PS products ship with a grounding type plug. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus. Unplug this apparatus during lightning storms or when unused for long periods of time.

When making connections to this or any other component, make sure all components are off. Turn off all systems' power before connecting the PS Audio component to any other component. Make sure all cable terminations are of the highest quality.

THERE ARE NO USER-SERVICEABLE PARTS INSIDE ANY PS AUDIO PRODUCT. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL

Please contact your authorized dealer, distributor, or PS Audio if you have any questions not addressed in this reference manual.

The exclamation point within a triangle is intended to tell the user that important operating and servicing instructions are in the papers with the appliance.

The lightning flash with arrow-head within a triangle is intended to tell the user that parts inside the product are a risk of electric shock to persons.

WARNING
RISK OF ELECTRIC SHOCK
DO NOT OPEN

WARNING: To reduce the risk of electric shock do not remove cover or back. No user-serviceable parts inside. Refer servicing to qualified service personnel.

1.1 System Descriptions

The PowerPack 1500 MKII Battery Backup is a high performance solution for Audio Video system protection. The True Sine Wave output and Voltage Regulation functionality makes the PowerPack 1500 MKII a better choice than Off-Line or On-Line UPS.

The communication provided between the PowerPack and PS Audio's Power-Play and Audio Video Power Center line conditioners provides unparalled control and monitoring.

1.2 Features

Line-Interactive Design Provides High Reliability and Efficiency
Intelligent Microprocessor Control
True Sine Wave Output with Less than 5% THD
Boost and Bucking Design Expands the Input Voltage Range
User Configurative Input Regulated Range and Output Voltage
Smart Battery Reminder
RJ11 Data/Fax Modem Connection Provides Surge Protection from Telephone
100BT RJ45 Connection Provides Surge and Spike Protection for Network
True RS232 & Contact Closure Signal for Power Management Software
Optional SNMP/HTTP Card Connectivity for Remote Monitoring

2.1 Unpacking & Inspection

Examine the packing carton for damage upon receipt. Once the UPS has been removed from its shipping container, everything inside the package should be inspected for damage that may have occurred while in transit. Notify the carrier immediately if any damage is observed.

2.2 Overview

The box should include the following

- UPS and Input Power Cord
- User Manual
- PowerPlay and Audio Video Power Center Communications Cable
- Retain the packing for future use or disposal of property.

| Item	Panel Indicator	Description
1	Main On Switch (Silence/Test) "|"	Turn on UPS, Silence and Self-Test
2	Main Switch Off "⏻"	Turn off UPS
3	Capacity Indicator	LED bar shows load size and battery capacity
4	AC Buck Mode Indicator	Continuous Amber LED display AC buck
5	AC Normal Indicator	Continuous Green LED display AC normal
6	AC Boost Mode Indicator	Continuous Amber LED display AC boost
7	Backup Mode Indicator	Continuous Green LED displays backup mode
8	Battery Replace Indicator	Continuous Red LED displays battery failure
9	UPS Warning / Fault Indicator	
10	RS232 Communication Interface	Displays Flashing/Continuous Red LED Transmits UPS status and receives control
11	Site Wire Fault Indicator	Commands from the computer system. The LED will illuminate upon hot and neutral polarity reversal, or a bad ground connection.

| Item	Panel Indicator	Description
12	External Battery Connector	Provides connection port for external battery cable
13	Input Fuse	Provides circuit overload and fault protection for the UPS and load
14	AC Inlet	Connect to input power cord
15	Data Line Surge Protection (RJ11)	Surge protection for fax, modem and telephone
16	Networking Surge Protection (RJ45)	Surge protection for network
17	AC Outlet	Connect to load
18	SNMP/HTTP Card Slot	Optional SNMP/HTTP card connectivity for Remote Monitoring.

Front Panel

Rear Panel
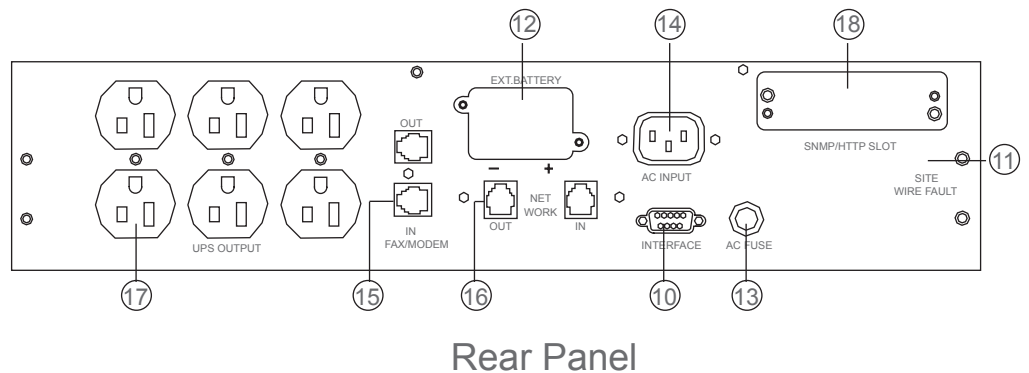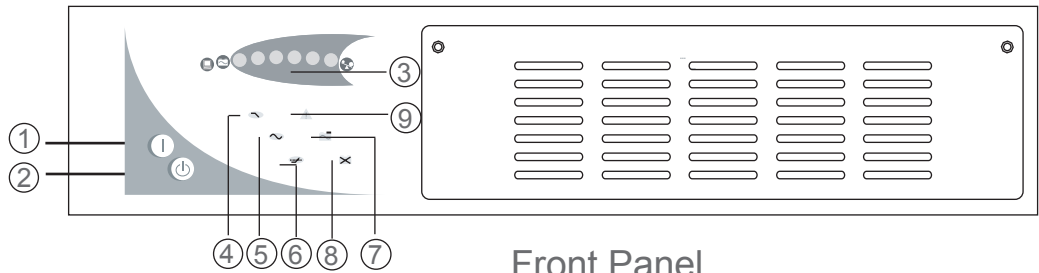
2.3 Installation

Before installation, please read and understand the following instructions:

Placement
The UPS must be installed in a protected environment away from heat-emitting appliances such as a radiator or heat register. Do not install this product where excessive moisture is present.
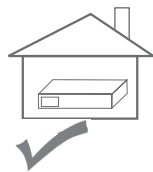
Ventilation
The location should provide adequate air flow around the UPS with one inch minimum clearance on all sides for proper ventilation.

Charge the Battery
Your new UPS may be used immediately upon receipt. However charge loss may occur during shipping and storage. So charging the battery for at least 8 hours is recommended to insure that the battery is fully charged.
To recharge the battery, simply leave the unit plugged into an AC outlet.
(This UPS will recharge in both the On and the Off status.)

Connect to AC
Make sure that the voltage and frequency are correct. Plug the UPS into a 2 pole, 3 wire grounding receptacle (wall outlet). Make sure the wall outlet branch is protected. Avoid using extension cords if at all possible. If used, make sure the extension cord is rated for 15 Amps.
For 220/230/240V versions: Swap the input power cord of the equipment to the inlet of UPS. Use the power cord supplied with the UPS to connect from the outlet of the UPS to your equipment.

Determining the Load:
1. Make a list of all equipment that requires protection.

2. Calculate the sum of all the V x A ratings. (Input voltage/current show on the device or listed in the manual).
3. Ensure that the total VA rating does not exceed the rated capacity of the UPS.

If rated unit capacities are exceeded, an overload condition may occur and cause the UPS unit to shut down or the circuit breaker to trip.

Connect the Load
Plug your primary equipment into the Battery Power Protected outlets. Leave the power switches of the equipment in the "off" position for the moment.

Connect to PowerPlay
Use the enclosed RS-232 (DB9) to AppleTalk cable. Plug the 9-pin male end into the UPS. Plug the 3-pin male end into the UPS port on your PS Audio Power Conditioner.

•	Note: Please check with your local dealer for the monitoring services.

2.4 Operation and
Functionality Test

AC Mode
The UPS delivers power to the loads derived from the utility and maintains proper battery charge. It also regulates the output voltage to within a narrow range and serves to isolate the load from surges and electrical noise brought by the utility wiring.

On Battery Mode
The UPS operates on battery when the line voltage or frequency has fallen outside the limits. Users are alerted to this mode of operation by visual indicators. The UPS provides power to the load from the battery and through its inverter and the output voltage and frequency of the UPS are regulated within a narrow band.

Function	Panel Indicator
Switch on	Press and hold the main on switch on the front panel for more than 3 seconds until the "AC normal" green LED lights up. The UPS will perform a self-test every time it is switched on.
Test	Use the test function to check both the operation of the UPS and the condition of the battery. In AC operating mode, the level indicator will show the actual load connected to this UPS normally. Press and hold the "I" switch on the front panel for more than 3 seconds. The level indicator will show the battery voltage for 10 seconds. During this 10 seconds, if you press and hold the "I" switch for more than 3 seconds again, this UPS will enter into testing mode. The battery will provide power to the load during this period. Testing mode will check the status of the battery and operation of the UPS , last for 10 seconds and transfer back to normal status automatically. Testing mode can not be performed if the load connected is greater than 100% or the charging voltage is lower than 26Vdc.
Alarm Silence	In battery backup mode, the level indicator will show the battery voltage level. Press and hold the "I" switch on the front panel for more than 3 seconds. The level indicator will show the load level for 10 seconds.

Function	Panel Indicator
Switch Off	Press and hold the main off switch for more than 3 seconds until the visual indicators turn off.
Cold Start/ Start on Battery	This UPS can be turned on even when AC is not present.

2.5   Manual Simulation of Power Outage for the UPS

To test the backup function, you may unplug the power cord of the UPS or simply press the main on switch (silence/test) button on the front panel. The UPS backup mode LED will turn on.

If the UPS is left to run continuously, it is a good idea to perform a periodic functionality test on the unit. To perform this test simply press the test button on the front of the UPS or unplug the power cord to the UPS to simulate the utility blackout.

Observe that your equipment operates properly and uninterrupted during this period. Plug the power cord back in if the function test was performed by unplugging it.

To conduct a simulation-test:
Switch the UPS on and wait for the Power On indicator to light up.
Then unplug the UPS from the AC outlet to simulate a utility failure.

When utility failure occurs, power is immediately supplied to your equipment from the UPS battery.

If the utility power is not restored, the UPS will soon run out of battery power and will shut itself down.

2.6   Operating Parameter Setting

Restore electrical power to connected equipment by re-plugging the UPS power cord into a wall outlet

2.6.1 Configuration Mode

Press and hold both the main on switch "I" and the main off switch "⏻" on the front panel for more than 3 seconds while the UPS is in the off status. The UPS will now enter parameter configuration mode.

Level Indicator
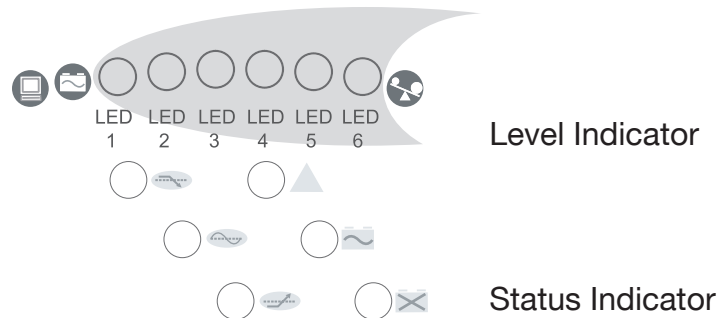
Status Indicator

2.6.2 Display and Control Switch

• When the UPS enters into the configuration mode, the turn on of six different status indicator LEDs represent different parameter being programmed.

• Different parameter can be selected by pressing and holding the main off switch "⏻" for more than 3 seconds.

•Different settings can be selected by pressing and holding the main on switch "I" for more than 3 seconds.

2.6.3 End of Configuration mode

• To Exit the configuration mode:
Press and hold both the main on switch "I" and off switch "⏻" for more than 3 seconds.

2.6.4 Setting of Parameters

2.6.4.1 Output 'Frequency Setting

Press and hold the main on switch "I" for more than 3 seconds to turn on the right most LED. This indicates that the UPS is configured to work at 50Hz output frequency.

Press and hold the main switch "I" again for more than 3 seconds to configure the UPS to operate in the 60Hz mode.

Note: the battery backup mode output frequency will always follow the frequency of AC mains, even if the internal presetting is different.

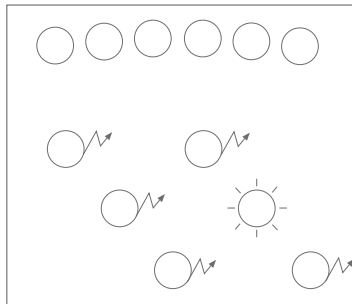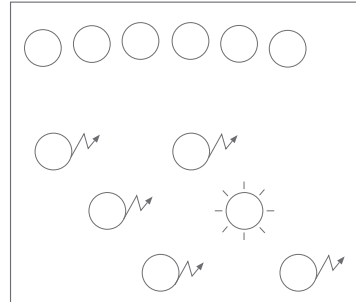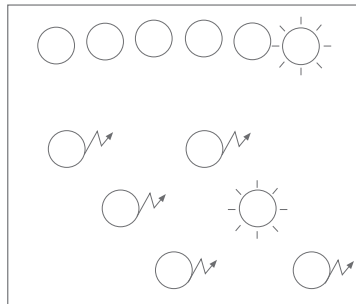50Hz   60Hz
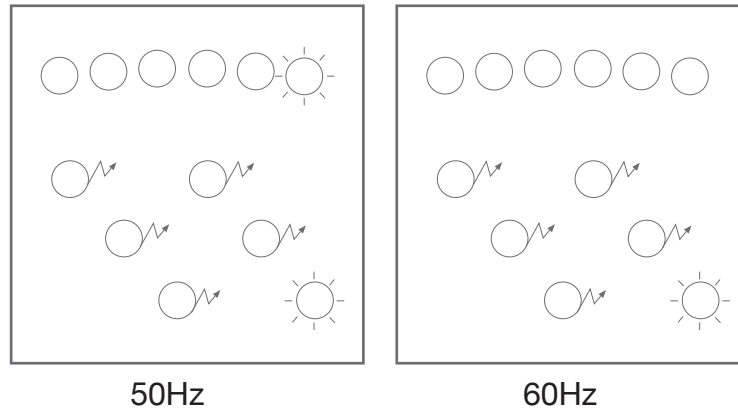
LED on continuously   LED flashing

2.6.4.2 Output 'Frequency Setting

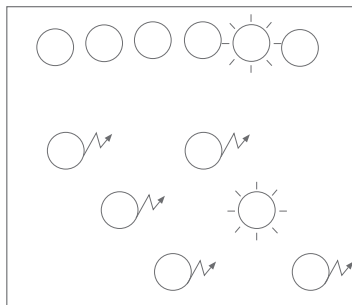• Press and hold the main off switch "⏻" to select the output voltage setting mode.

• Press and hold the main on switch "I" for more than 3 seconds to select different output voltage settings.
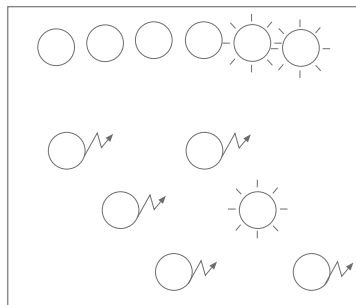

All Level LEDs off
Output = 115V (230V)

6th Level LED on
Output = 110V (220V)

5th Level LED on
Output = 120V (240V)

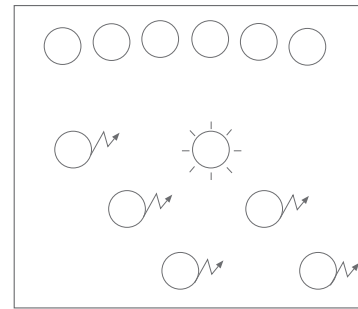5th, 6th Level LED on
Output = 127V (208V)

2.6.4.3 AVR Buck Range Setting

AVR Buck Range sets the range at which the UPS will switch over to battery when the utility presents an overvoltage situation.

• Press and hold the main off switch "⏻" to select the AVR Buck Range Setting mode.

• Press and hold the main on switch "I" for more than 3 seconds to select different AVR buck ranges.
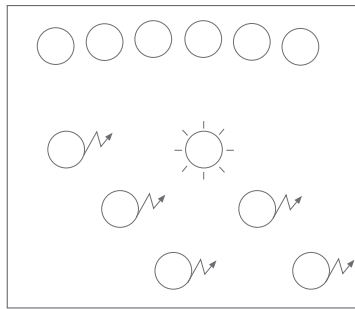
AVR Buck Range mode

All Level LEDs off
AVR Buck = +25%

6th Level LED on
AVR Buck = +30%

5th Level LED on
AVR Buck = +20%

2.6.4.4 AVR Boost Range Setting

AVR Boost Range sets the range at which the UPS will switch over to battery when the utility presents an undervoltage situation.
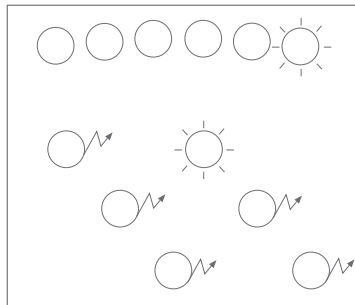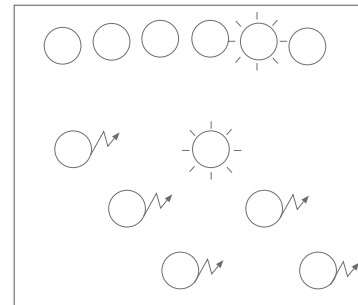
• Press and hold the main off switch "⏻" to select the AVR Boost Range Setting mode.

• Press and hold the main on switch "I" for more than 3 seconds to select different AVR boost ranges.

AVR Boost Range mode

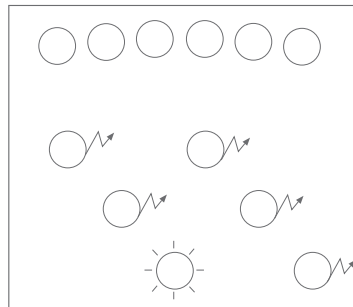All Level LEDs off
AVR Boost = -25%
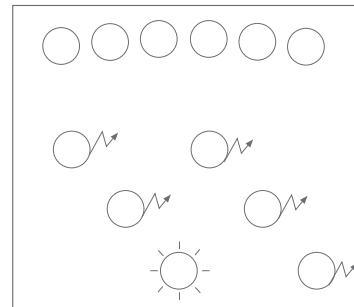
6th Level LED on
AVR Boost = -30%

5th Level LED on
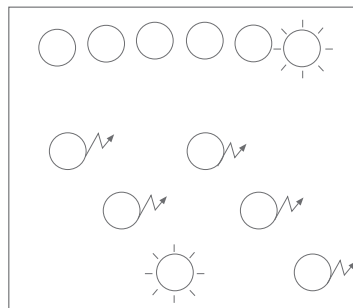AVR Boost = -20%

Getting Started 15

2.6.4.5 Energy Saving mode

• Press the main off switch "⏻" to select the energy saving setting mode.

• Press and hold the main on switch "I" for more than 3 seconds to select different energy saving modes.
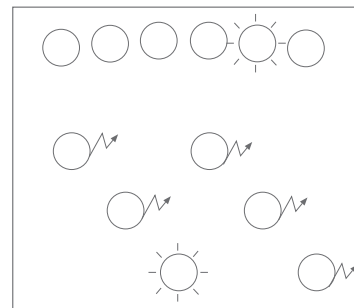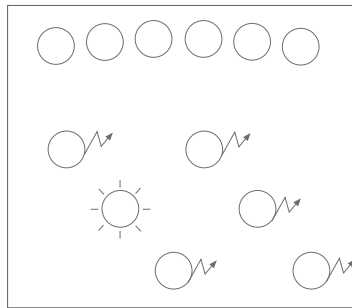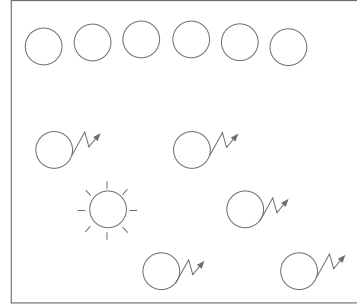
All Level LEDs off
UPS in energy saving mode
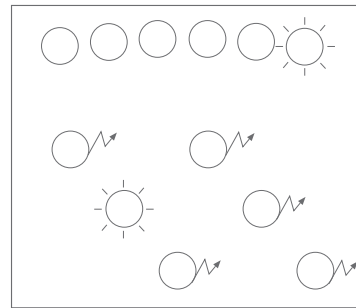
6th Level LED on
UPS in normal mode

2.7 Visual Indicators
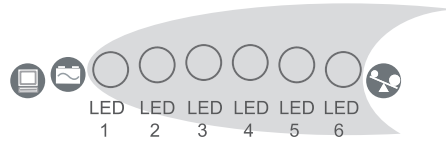
Audible / Visual Indicators

⬮	⬮	⬮	△	∿	⨯	Operating Status
✳	—	—	—	—	—	AC buck mode
—	✳	—	—	—	—	AC normal
—	—	✳	—	—	—	AC boost mode
—	—	—	✳			UPS fault
—	—	—	—	✳	—	Backup mode
—	—	—	—	✳	—	Backup time over 30 minutes
—	—	—	—	✳	—	Energy saving mode
—	—	—	—	—	✳	Battery is dead

Battery Capacity Indicators

LED1	LED2	LED3	LED4	LED5	LED6	Operating Status
✳	✳	✳	✳	☆	—	Battery capacity= 100%
✳	✳	✳	☆	—	—	Battery capacity= 80%
✳	✳	☆	—	—	—	Battery capacity= 60%
✳	☆	—	—	—	—	Battery capacity= 40%
☆	—	—	—	—	—	Battery capacity= 20% battery will run out

Note: ✳ LED turn on continuously   — LED of   ☆ LED flashing   X Any status

Load Size Indicators (AC Normal)

LED1	LED2	LED3	LED4	LED5	LED6	Operating Status
✷	—	—	—	—	—	Load size 20%
✷	✷	—	—	—	—	Load size 40%
✷	✷	✷	—	—	—	Load size 60%
✷	✷	✷	✷	✷	—	Load size 80%
✷	✷	✷	✷	✷	✷	Load size 100 % UPS full load. Remove the non-critical loads.
✷	✷	✷	✷	✷	✷	Load size 110% Remove the non-critical loads
✷	✷	✷	✷	✷	✷	Load size 140% Remove the non-critical loads or UPS shuts off in 2 minutes

LED1	LED2	LED3	LED4	LED5	LED6	Operating Status
X	X	X	X	X	✷	UPS full load. Remove the non-critical loads.
X	X	X	X	X	✷	UPS overload. Remove the non-critical loads within 20 seconds

Note: ✷ LED turn on continuously   — LED of   ☆LED flashing   X Any status

Abnormal Status Indicators

✂	⚠	LED1	LED2	LED3	LED4	LED5	LED6	Operating Status
—	☀	☀	☀	—	☀	—	—	Output circuit short
—	☀	☀	☀	—	—	—	—	Inverter over voltage
—	☀	☀	—	☀	—	—	—	Inverter under voltage
—	☀	☀	—	—	☀		—	Over temperature
—	☀	☀	—	—	—	☀	—	Charger over voltage
—	☀	☀	—	☀	—	☀	—	Charger fault
—	☀	☀	☀	—	—	☀	—	Battery voltage abnormal
☀	☀	☀	—	—	☀	☀	—	Battery is dead
—	☆	☀	☀	☀	☀	☀	☀	Load size = 100%
—	☆	☀	☀	☀	☀	☀	☀	Load size = 110%
	☆	☀	☀	☀	☀	☀	☀	Load size = 140%
—	☆	—	☀	☀	—	—	—	Charger voltage abnormal
—	☆	—	☀	—	☀	—	—	AC abnormal

Note: ☀ LED turn on continuously   — LED of   ☆ LED flashing   X Any status

LED 1 LED 2 LED 3 LED 4 LED 5 LED 6
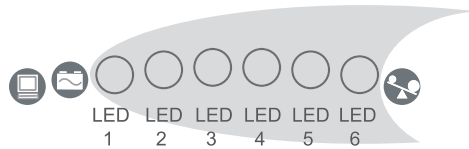
2.8 Instructions for first time use

1. Remove the two screws from the vented door on the front panel.
2. Remove the vented door from the panel.
3. Remove the screws on left and right sides of battery drawer.
4. Slowly pull out the battery drawer.
5. Connect the black wire to the Negative (-) terminal of battery B (There may be a large spark when batter connections are made).
6. Slowly push the battery drawer into the UPS.
7. Replace and tighten the screws on left & right sides of battery drawer.
8. Replace the vented door.
9. Replace and tighten screws to secure the vented door.

2.9 Instructions for battery replacement

1. Remove the two screws from the vented door on the front panel.
2. Remove the vented door from the front panel.
3. Remove the screws on left and right sides of battery drawer.
4. Pull out the battery drawer.
5. Connect batteries A & B in series by connect the Negative (-) terminal of battery A to the Positive (+) terminal of battery B with the included battery connecting cable.
6. Put the two batteries inside the battery drawer.
7. Connect the red wire to the Positive (+) terminal of Battery A.
8. Connect the black wire to the Negative (-) terminal of Battery B.
(There may be a large spark when batter connections are made)
9. Slowly push the battery drawer into the UPS.
10. Replace and tighten the screws on left & right sides of battery drawer.
11. Replace the vented door
12. Replace and tighten crews to secure the vented door.

Battery A   Battery B

Battery drawer

Screws
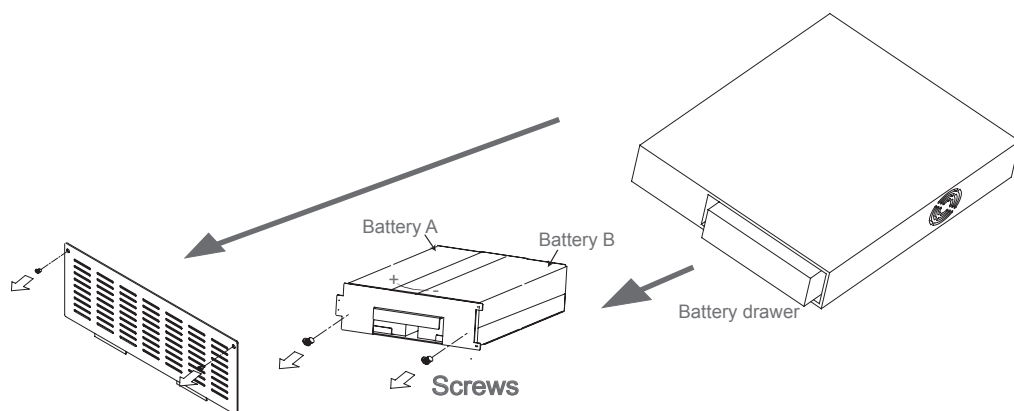
3. Interface with PowerPlay

When connected with a PS Audio PowerPlay or Audio Video Power Center, the UPS communications cable provides critical information to the power conditioner. In order to enable PS Audio's revolutionary Intelligent UPS Management Control and Configuration connect the RS-232 (DB9) end of the included communications cable into the PowerPack. Then connect the 3-Pin connector to the UPS port of the PS Audio power conditioner. Finally plug the power cable for the power conditioner into one of the outputs of the PowerPack.

Note: The Intelligent Management Control and Configuration is only available for devices powered from the PS Audio power conditioner. When a PS Audio Power Conditioner is connected it is not recommended to power any other devices directly from the PowerPack.

PowerPlay

Connect Power play UPS to Interface connection on the UPS
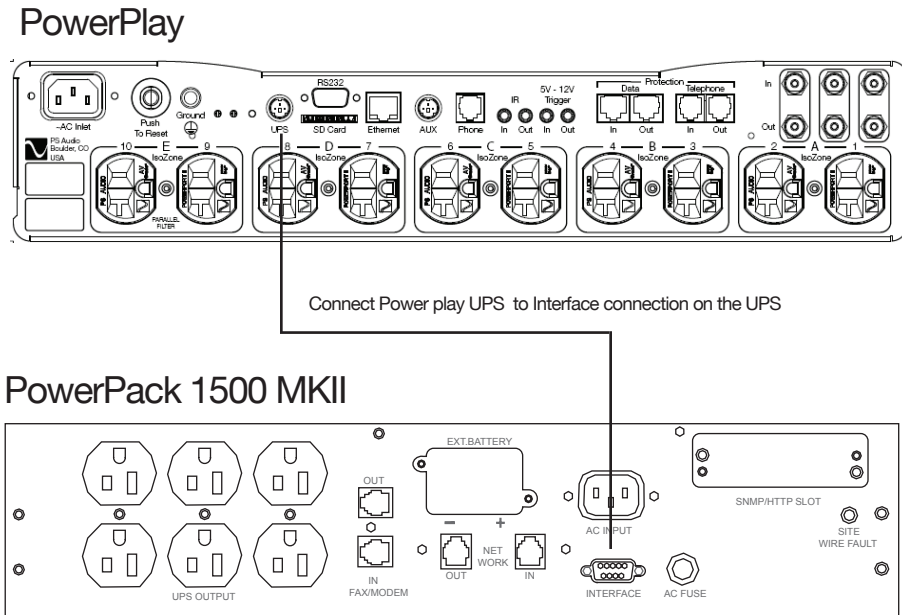
PowerPack 1500 MKII

TERMS AND CONDITIONS

PS Audio provides a 1 year manufacturer's warranty on the PowerPack 1500 MKII component. This Warranty is for the benefit of the original purchaser and may not be transfered to a subsequent purchaser of the product.

Conditions

This Warranty is subject to the following conditions and limitations: the Warranty is void and inapplicable if the product has been used or handled other than in accordance with the instructions in the owner's manual, abused, or misused, damaged by accident or neglect or in being transported, or the defect is due to the product being repaired or tampered with by anyone other than PS Audio or an authorized PS Audio repair center.

a. The product must be packaged and returned to PS Audio or an authorized PS Audio repair center by the customer at his or her sole expense in the original packing material. PS Audio will pay return freight of its choice for original purchasers.

b. Return Authorization Number (RA Number) is required before any product is returned to our factory for any reason. This number must be visible on the exterior of the shipping container for PS Audio to accept the return. Units shipped to us without a Return Authorization Number or without a visible RA Number on the exterior of the shipping container will be returned to the sender, freight collect.

c. RETURNED PRODUCT MUST BE ACCOMPANIED BY A WRITTEN DESCRIPTION OF THE DEFECT.

Remedy

PS Audio reserves the right to modify the design of any product without obligation to purchasers of previously manufactured products and to change the prices or specifications of any product without notice or obligation to any person.

In the event the product fails to meet this Warranty and the above conditions have been met, the purchaser's sole remedy under this Limited Warranty shall be to return the product to PS Audio or an authorized PS Audio repair center where the defect will be repaired without charge for parts or labor.

4826 Sterling Drive, Boulder, CO 80301

PH: 720.406.8946 service@psaudio.com www.psaudio.com

Miscellaneous

This warranty does not cover the cost of custom installation, customer instruction, setup adjustments or signal reception problems.

This warranty does not cover cosmetic damage or any damage due to accident, misuse, abuse, negligence or modification of, or to any part of the Product, without initial express consent from PS Audio. This warranty does not cover damage due to improper operation or maintenance, connection to improper voltage supply, or attempted repair by anyone other than a facility authorized by PS Audio to service the Product.

This warranty is invalid if the factory applied serial number has been altered or removed from the Product.

To locate the servicer or dealer nearest you, or for service assistance or resolution of a service problem, or for product information or operation, call or email PS Audio.

ANY IMPLIED WARRANTIES RELATING TO THE ABOVE PRODUCT SHALL BE LIMITED TO THE DURATION OF THIS WARRANTY. THE WARRANTY DOES NOT EXTEND TO ANY INCIDENTAL OR CONSEQUENTIAL COSTS OR DAMAGES TO THE PURCHASER. Some states do not allow limitations on how long an implied warranty lasts or an exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This Warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

Inquiries regarding the above Limited Warranty may be sent to the following address: PS Audio International, Inc., 4826 Sterling Drive, Boulder, Colorado 80301 ATTN: Customer Service; Email: customerservice@psaudio.com; Voice 720-406-8946; FAX: 720-406-8967.

Outside the US

PS Audio has authorized distribution in many countries of the world. In each country, the authorized importing retailer or distributor has accepted the responsibility for warranty of products sold by that retailer or distributor. Warranty service should normally be obtained from the importing retailer or distributor from whom you purchased your product. In the unlikely event of service required beyond the capability of the importer, PS Audio will fulfill the conditions of the warranty. Such product must be returned at the owner's expense to the PS Audio factory, together with a photocopy of the bill of sale for that product, a detailed description of the problem, and any information necessary for return shipment.

If you require service in North America

In the unlikely event there is a problem with your PS Audio component, please contact your dealer, distributor, or the PS Audio corporate research center to discuss the problem before you return the component to our facilities for repair. Products shipped to the corporate research facilities will be refused and returned freight collect if not accompanied by a PS Audio Service Department issued return authorization number (RA Number).

Obtain an RA number

Return authorization numbers must be prominently displayed on the outside of the box and an accompanying letter describing the problem and re-listing the RA number must be inside the box to qualify for service.

If you are transferring your warranty, you must first contact PS Audio or your dealer or distributor for details.

To contact the PS Audio Service Department:

Contact information

TELEPHONE	720-406-8946
HOURS	Monday-Friday, 9:00 am to 5:00 pm MST
FAX	720-406-8967
E-MAIL	service@psaudio.com
WEBSITE	http://www.psaudio.com

If you are in the United States

If you are in the United States use the following procedure:

1. Obtain a Return Authorization Number (R/A number) and shipping address from the PS Audio Service Department.

2. Insure and accept all liability for loss or damage to the product during shipment to the PS Audio factory and ensure all freight (shipping) charges are prepaid.

The product may also be hand delivered to the California or Colorado facilities if arrangements with the Service Department have been made in advance. Proof of purchase will be required for warranty validation at the time of hand delivery.

Use original packing

Use the original packaging to ensure the safe transit of the product to the factory, dealer, or distributor. PS Audio may, at its discretion, return a product in new packaging and bill the owner for such packaging if the product received by PS Audio was boxed in nonstandard packaging or if the original packaging was so damaged to the point it was unusable. If PS Audio determines that new packaging is required, the owner will be notified before the product is returned.

To purchase additional packaging, please contact your authorized PS Audio dealer, distributor, or the PS Audio Service Department for assistance.

If you are outside the US

If you are outside the United States and require service you must contact your country's dealer or distributor for instructions. PS Audio warranties its products (see warranty section)

worldwide. Service for PS Audio products outside the United States is handled through your country's distributor or dealer.

1.   Obtain a Return Authorization Number (R/A number) and shipping address from your dealer or distributor's Service Department.

2.   Insure and accept all liability for loss or damage to the product during shipment to the dealer or distributor's Service Department and ensure all freight (shipping) charges are prepaid.

If you have problems

If you feel your country's dealer or distributor is either unwilling or unable to service your PS Audio products, please contact our service department at service@psaudio.com or at the above contact numbers to discuss the situation.

Voltage changes

Voltage changes to match your country's voltage and frequency requirements to your PS Audio product are possible only through your dealer, your country's authorized PS Audio distributor or the factory. Units purchased outside your country of residence will not be changed to the appropriate voltage unless prior arrangements have been made at the time of purchase. Please refer any questions to your dealer or distributor or by contacting the PS Audio service department.

Your serial number

Your PS Audio product serial number is:

Your purchase information

Please fill in the dealer or distributor's information from where you originally purchased the unit.

Date of purchase

6. Troubleshooting

The TROUBLESHOOTING TABLE in the next page covers most of the difficulties that you may encounter under normal working conditions. If the UPS fails to operate properly, please review the following steps before calling the repair center:

1. Is the UPS plugged into a proper working outlet ?
2. Is the line voltage within the rating specified?
3. Does the fuse on the rear panel need to be replaced?

Please do not open the metal cover.
There are no user serviceable parts inside.

The batteries contained in the UPS are recyclable.
The batteries contain lead and pose a hazard to the environment and human health if not disposed of properly.

Caution: Do not open or mutilate the batteries. They contain an electrolyte which is toxic and harmful to the skin and eyes.
A battery can present a risk of electrical shock and high short circuit current. When replacing batteries, wrist watches and jewelry such as rings should be removed. Use tools with insulated handles.

Note: Please note the following information when you call for service:
1. Model No. / Serial No.
2. Date of purchase
3. Full description of problem.

6.1 Troubleshooting

Abnormal Situation	Cause	Solution
UPS can not turn and LED not lit	• Main on switch not pushed or pushed less than 3 seconds. •Battery voltage is too low.	• Press and hold the Main on switch for more than 3 seconds. • Recharge the battery for at least 4 hours.
UPS always at battery mode	• Power cord loose. • Input fuse blown. • Line voltage too high or two low. • Line frequency over range.	• Re-plug the power cord firmly. • Remove load and replace fuse with the same rating. • Check input voltage. • Check input frequency.
UPS is normal but the computer won't turn on.	• Computer input power cord is loose or not connected.	• Reconnect computer input power cord.
Backup time is less than the rating	• Battery is not fully charged or battery is dead. • UPS is slightly overloaded.	• Recharge the battery for 6 hours and re test the backup time. If problem remains, call for service. • Remove the least critical load
Backup mode, the UPS automatically turns off after 2 minutes	• UPS is in green power mode and UPS will automatically turn off in 2 minutes.	• Connect to load. • Disable green power mode.
AC fail, UPS automatic turn off.	• Battery is not fully charged or is dead. • UPS is overloaded and shuts down.	• Recharge the battery for 6 hours and re-test the backup time. If problem re mains, call for service • Remove non-critical load and start the UPS again and recharge the battery for 6 hours.
The UPS fault LED flashes, LED6 is lit.	• UPS is at full load	• Remove the non-critical loads.
During AC fail, the UPS fault LED flashes, LED 6 is lit.	• UPS is over loaded, UPS shuts down in 20 seconds in backup mode.	• Remove non-critical loads and start the UPS again.

Troubleshooting

Abnormal Situation	Cause	Solution
AC fail, the UPS fault LED flashes, LED6 is lit.	UPS is overloaded, UPS shuts down in 20 seconds in backup mode.	Remove non-critical load and start the UPS again.
AC is normal, the UPS fault LED flashes, LED6 is lit.	UPS is overloaded.	Remove the non-critical loads.
AC boost mode, the UPS fault LED flashes, LED6 is lit.	UPS is overloaded and UPS will automatically turn off in 2 minutes.	Remove the non-critical loads.
Site Wiring fault LED is on communication function.	Site wiring problem.	Call an electrician to check your wiring.
Not working LED 1,2,4 lit.	Wrong interface cable.	Purchase the correct one from your distributor.
LED 1,2 lit.	UPS output circuit short.	Check output circuit.
LED 1,3 lit.	UPS inverter.	Call for service.
LED 1,4 lit.	Inverter over voltage.	Call for service.
LED 1,5 lit.	• UPS inverter is under voltage. • UPS is over heated.	Remove the UPS to provide adequate air flow area, or check fan of UPS.
LED 1,3,5 lit.		Call for service.
LED 1,2,5 lit.	Charger over voltage.	Call for service.
LED1,4,5 lit.	Charger fault.	Plug in AC power.
	Battery voltage abnormal or the battery is dead.	Refer to 4.2 instructions to replace batteries.

It is suggested that the battery replacement should be conducted by an authorized technician and with the same type and capacity of battery.

Capacity		1500 VA		
EMI/RFI Noise Filter		Up to 60dB (@1MHz)		
TEL/FAX Surge Suppression	Joules Clamp Rating Type	114 Joules 395V RJ11 (one pair), 2C		
Networking Surge Suppression	Performance Type	Up to 100 Base-T RJ45 (one pair), 4C		
Indicators	Front Panel LEDs	Line Normal (Green), Battery Backup (amber), Boost (amber), Buck (amber), Battery Replacement (red), Fault (red), Overload (red), Load/Battery Capacity (Green x5 pcs)		
	Rear Panel LEDs	Red Site Wiring Fault LED (15Vac Model only)		
	Fault Message	Display by Load/Battery Capacity LED(Greenx5pcs)		
	Audible Alarms	Battery Backup (every 4 seconds), Battery Backup over 30 minutes (Every 15 seconds), Battery Low (Every Second), Overload (twice per second), Fault (Continuously)		
Safety	North America Europe	CSA, UL1778 EN 60950, EN 50091-1-1		
EMI	North America Europe	FCC Part 15, Class B EN55022, Class B/EN 5091-2, Class B		
EMS	Worldwide	IEC 801-1, 2, 3, 4, 5/EN1, 2, 3, 4, 5		
Environment	Ambient Operation Audible noise	3000 Meters max Elevation 0~95% Humidity, Non-condensing 0~40 °C 455x420x89.6mm/17.9"x16.5".3.5"		
Physical	Dimension (D*W*H)			
	Net Weight	120VAC		
		230VAC		

*Specifications subject to change without prior notice

7. Specifications

Capacity		1500 VA
Topology		Line-interactive
Input	•Nominal Voltage	•115V/230 Vac
	•Voltage Range	•+/-25% (+/-20 or +/-30% Configurable)
	•Frequency	•50/60Hz +/-5%
	•Range	•>0.95 (full load condition)
	•Power Factor	
Output	•Nominal Voltage	•11 5Vac/230 Vac (100, 1 10, 120, 127V ac/208, 220, 230, 240 Vac Configurative)
	•Voltage Regulation	•+10~15% (Line Mode typical), +3% (Battery back up mode)
	•Frequency Stability	•50/60Hz +/-0.5%
	•Wave form	•True Sine Wave
	•Power Factor	•0.625 lagging to 1
	•Distortion	• <5% (Linear Load)
	•Overload Capacity	•110%~140% for 20 sec. (Back up mode)
		•>104% for 10 cycles (Back up mode)
	•Transfer Time	•<4mS (typical)
Battery	•Type	•Sealed, Maintenance-free Lead Acid
	•DC Voltage	•24V dc
	•Backup	•0~25 Minutes for standard Series
	•Recharge Time	•<4 Hours Recovery to 90% (typical)
	•External Battery Connector	•Yes
	•Users Replacement	•Yes
Power Line Surge Suppression	•Joules	•741 Joules
	•Max Peak Current	•1300A
	•Clamping Rating	•1300A (UL 1449 TVSS Rating)
	•Response Time	•Normal Mode=OnS, Common Mode<1Ns