

# PUREPOWER<sup>+</sup>

## User's Guide and Warranty Information PurePower+ 1500HV 230 Volt model





# Table of Contents

<b>About the PurePower+</b>	<b>2</b>
<b>Safety Warnings</b>	<b>3</b>
<b>Installation</b>	
<b>Inspecting the Equipment</b>	<b>4</b>
<b>PurePower Preparation</b>	<b>5</b>
<b>Activating Your PurePower</b>	<b>8</b>
<b>Operation</b>	<b>10</b>
<b>PurePower Maintenance</b>	<b>13</b>
<b>Specifications</b>	<b>14</b>
<b>Troubleshooting</b>	<b>16</b>
<b>Service and Support</b>	<b>17</b>

# The PurePower Audio Power Supply

The PurePower Audio Power Supply (APS) provides pure regenerated power for your sensitive home theater and audio equipment. This is accomplished through our double conversion technology. We convert the incoming AC power to produce a clean DC supply, then recreate a new AC wave form with proper voltage and frequency from the DC. We make sure that your system gets the power it was designed for and your amplifiers get the current they need for top performance.

The APS also protects from power disturbances including power sags, power surges, over-voltages, line noise, undervoltages, frequency variations, switching transients and harmonic distortion. Power disturbances have the potential to damage sensitive hardware causing expensive repairs with either catastrophic failures or degradation over time through chronic overheating. With the APS you can safely eliminate the effects of power disturbances and guard the integrity of your equipment.

In addition to pure power, the APS provides you with something unique in audio power regenerators - protection against power outage. The APS maintains full wattage output even when the power fails completely.

## **Providing outstanding performance and reliability, the PurePower's unique benefits include the following:**

- True double conversion AC regeneration design with pure sine wave output. The APS filters and regulates incoming AC power, creates a DC source, then regenerates new pure AC and provides monitored, consistent power to your components.
- The APS improves amplifier performance by ensuring full wattage and improves signal component output quality by removing noise and distortion.
- The PurePower APS design allows any of our high quality, full contact receptacles to supply digital, analog or amplifier components.
- Hours of extended viewing or listening time with optional APS PowerPack Modules during outages.
- Built in line surge protection guards against spikes and surges on coax, RJ11 and RJ45 lines.
- USB communication port allows the APS to be integrated into whole home systems.

# Safety Warnings

Read the following precautions before you install the APS.

### IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS.

This manual contains important instructions that you should follow during installation and maintenance of the APS and batteries. Please read all instructions before operating the equipment and save this manual for future reference.

## DANGER

This APS contains LETHAL VOLTAGES. All repairs and service should be performed by AUTHORIZED SERVICE PERSONNEL ONLY. There are NO USER SERVICEABLE PARTS inside the APS.

## WARNING

This APS contains its own energy source. The output receptacles may carry live voltage even when the APS is not plugged in.

Under normal operating conditions, do not remove or unplug the input cord when the APS is turned on. This removes the safety ground from the APS and the equipment connected to the APS.

To reduce the risk of fire or electric shock, install this APS in a temperature and humidity controlled, indoor environment, free of conductive contaminants. Ambient temperature must not exceed 32°C (90°F). Do not operate near water or excessive humidity (95% max).

To comply with international standards and wiring regulations, the total equipment connected to the output of this APS must not have an earth leakage current greater than 3.5 milliamperes.

## CAUTION

Batteries can present a risk of electrical shock or burn from high short-circuit current. Observe proper precautions. Servicing should be performed by qualified service personnel knowledgeable of batteries and required precautions.

Proper disposal of batteries is required. Refer to your local codes for disposal requirements. Never dispose of batteries in a fire. Batteries may explode when exposed to flame.

## Inspecting the Equipment

Before installation, please check to ensure that your PurePower+ package is complete and undamaged. If any deficiencies are discovered, please contact your PurePower Dealer.

### Package Contents

The PurePower package includes:

- PurePower+
- Quick Start Guide
- Input line cord with an IEC C-19 connector and appropriate local plug.
- This manual

### Shipping damage

If any equipment has been damaged during shipment, keep the shipping cartons and packing materials for the carrier or place of purchase and file a claim for shipping damage. If you discover damage after acceptance, file a claim for concealed damage.

To file a claim for shipping damage or concealed damage:

- 1) File with the carrier within 15 days of receipt of the equipment
- 2) Send a copy of the damage claim within 15 days to your PurePower+ dealer.

## APS Preparation

The APS is designed for flexible configurations and can be rack mounted or placed on a shelf or as a standalone cabinet.

### Standalone / shelf component

When you position the APS horizontally on a shelf or in a non-rack style AV equipment stand or enclosure, ensure there is sufficient clearance for unimpeded airflow through the grilles at front and rear of the unit.



### Rack-Mount

The PurePower+ 1500 can be installed in 19 or 23-inch racks and uses 3U of rack space. Rack handles with rack mount brackets are an optional accessory available on request from PurePower. For added stability mounting rails or a rack shelf are recommended.

Place the APS on a flat, stable surface with the front of the APS facing toward you.

Attach the mounting handles to the bracket with the screws provided in the accessory kit and to the case with the 12 screws provided in the kit.

If installing optional PowerPacks, install rack handles for each unit.

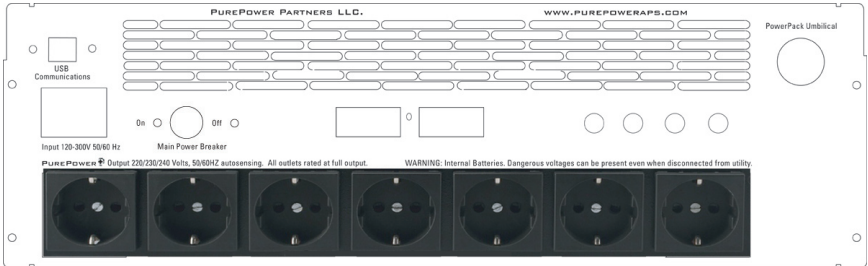
NOTE The PowerPacks must be installed BELOW the APS.



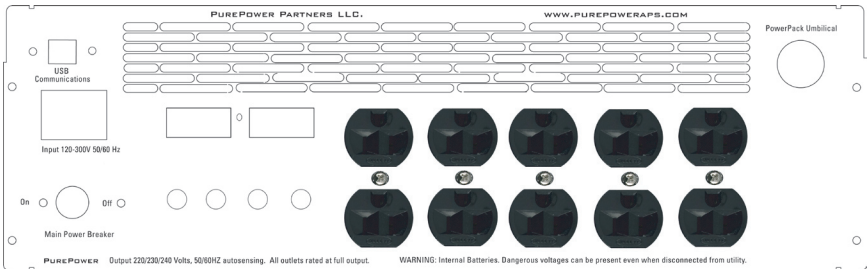
# Installation

## Connections

The PurePower+ 1500 HV model provides 7 Schuko output receptacles that may be used interchangeably to power signal components, video components or amplifiers. Your PurePower may be fitted with alternate receptacles such as UK, Australia, India, China, Israel, South Africa, Brazil, Argentine, Swiss, Fench, Italian or Denmark style receptacles.



Optional US style Nema receptacle version.



## Surge protection connectors

The PurePower unit provides built in surge protection to isolate system components such as cable television, satellite, ethernet and telephone lines from your AV system. All surge modules provide instantaneous response using advanced silicon avalanche diodes with the ability to safely dissipate surge currents of up to 1kA and auto reset in readiness for any subsequent surge or transient voltage.

	Connector	Voltage	Let through	Bandwidth
Coax	Type F (2)	30	45	2 GHzT
Telephone	RJ11 4 wire	190	<298	na
Network	RJ45	5	10	155MHz

## USB

A USB serial connector allows communication of power conditions to an attached computer or control system. Contact PurePower for system requirements and software compatability.



## Installing Optional PowerPacks

PowerPack Modules must be installed before powering the APS. Place the PowerPacks below the PurePower unit. All PurePower 1500+ models incorporate a PowerPack connector that mates only with the 36 Volt DC output of the Optional PowerPack. Up to 3 PowerPacks may be daisy chained together to provide extended operating time.



**CAUTION:** The 1500 must be turned off, unplugged or the input breaker switched to off before proceeding. The breaker on the Powerpack must also be switched to off.

To connect the PowerPack, first unscrew the protective cap on the right angle receptacle. Line up the flat surfaces of the receptacle and plug as shown. The plug can only be inserted when in the correct orientation. Insert firmly and screw together tightly. If additional PowerPacks are to be installed, plug the cable of the second cabinet into the receptacle on the first PowerPack.

**NOTE:** The batteries charge to 80% capacity in approximately 2 hours. However, it is recommended that the batteries charge for 24 hours after installation or long-term storage. The battery charging process will occur during normal operation.

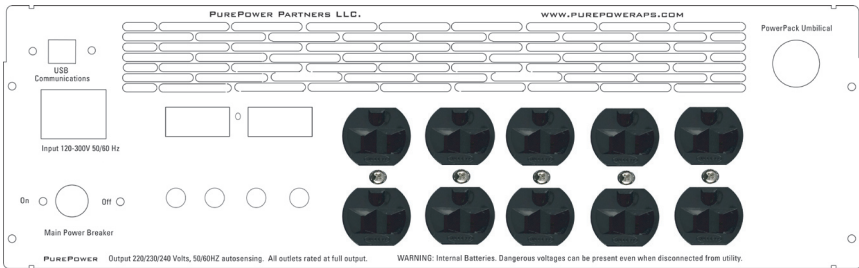
### Run times:

The following chart provides approximate time in minutes that the PurePower+ 1500 will operate on battery power when the utility supply is interrupted.

	Full load	1/2 load	1/4 load
Internal batteries	8	24	48
with 1 PowerPack	30	110	180
With 2 Powerpacks	100	240	600



## Activating your PurePower+ 1500HV



- Examine the rear panel label to ensure the voltage specifications of the unit and the power source are correctly matched.
- Plug the components to be supplied into the APS output receptacles. The PurePower APS design allows any outlet to supply digital, analog or power amplifier components.
- Ensure that each component is switched off.
- DO NOT operate electric space heaters (tube heaters excepted) with the APS.
- Plug the APS power cord into a utility outlet.
- Switch the input circuit breaker at the rear of the unit to "on"
- The APS conducts a self-test. You may hear a slight click and the fans will rotate. When the self-test is complete, the APS is in standby mode.
- Start the APS by pressing the On button for 2 to 3 seconds
- The display will change from "000" to "230". The "Online" icon will illuminate.



During startup the APS will operate in Bypass mode for a few seconds, then turn on its output - indicated by the LCD display icon "Online". When the "Online" indicator is illuminated, power is being supplied to the PurePower output receptacles. The PurePower APS is now ready to supply power to your system. Turn on the components, ensuring that the total load does not exceed the capacity of the PurePower 1500. The load usage will be indicated by the bar graph at the top of the display.

After initial start up it is acceptable to keep the APS on at all times. In standby the unit will only consume 10 watts. Battery charging will continue with the unit turned Off so long as it is plugged in to an AC supply and the input circuit breaker is switched on.

If the Online icon and voltage display fail to illuminate after plugging the unit in and pressing the On button, check the line cord, ensure AC power is available at the receptacle.

In no circumstances should the lid of the PurePower unit be removed. There are no user serviceable components inside and there may be lethal voltages present even if the unit is unplugged from the wall.

## Starting the PurePower+ on battery

To turn on the APS when utility power is unavailable, press and hold the On button for 2 to 3 seconds. The APS will turn on and supply power to your equipment from its internal battery power. The Online icon will not be illuminated and the area to the right of the output voltage display will indicate the approximate number of hours and minutes of battery power remaining. When the APS starts on battery, it does not conduct a self-test to conserve battery power. It will automatically return to Online when utility power becomes available.

## Turning the PurePower APS off

To turn off the APS press and hold the Off button for 2 to 3 seconds. The output voltage will indicate 0 and only the battery icon will be illuminated to indicate that battery charging continues. Power to the APS output receptacles will be off. If you do not unplug or switch off the input circuit breaker the APS will remain in Standby mode and the batteries will remain fully charged. In standby mode the PurePower+ 1500 uses only 10 watts.

## Initiating the Self-Test

Press and hold the On button for five seconds while the unit is in "Online" mode to initiate the self-test.

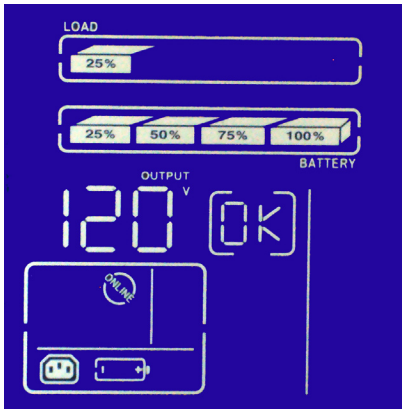
NOTE: The batteries must be charged and the APS must be in normal mode to perform the self-test.

# Operation

The PurePower unit indicates the APS status through the LCD Display. Pressing the "Display" button on the control panel will cycle through the 5 information displays.

The display presents data on the numerical area of the display cycling through:

- Input Voltage
- Input Frequency
- Battery Voltage
- Output Voltage
- Output Frequency



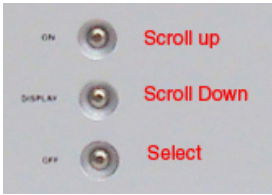
## Information display

The display indicates the percentage of load capacity being used by your system in a bar graph across the top of the display. Fault messages indicate overloads or any short that occurs on the output.

The battery strength is indicated by a battery bar chart. During battery mode it indicates the approximate minutes of operation left before shutdown in hours/minutes.

The APS monitors and provides power to your system and charges the batteries as needed. You may press the "Display" button to read the input and output voltages, input and output frequency and battery condition.

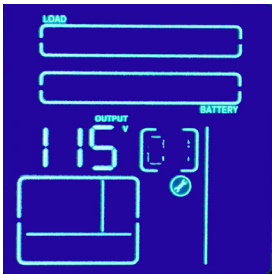
Fault conditions are indicated by a triangle fault icon and error codes displayed below the icon.



## Programming Settings

The PurePower voltage and frequency can be set in programming mode. To begin press "Display" for 5 seconds while in "Standby". Scroll up using the "On" button and down using the "Display" button. The "Off" button selects the value displayed.

**Program modes 1,2,3 and 9 are user definable. Modes 4,5,6,7 and 8 are for service use only. Do not change or functionality will be detrimentally affected.**



## Setting the Voltage

The output voltage can be set to 208, 220, 230 or 240 Volts. To change voltage first press "Off" to enter standby.

Press and hold "Display" for 5 seconds.

The unit will enter programming mode as indicated by the wrench icon. Scroll to Mode "01"

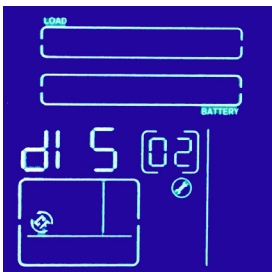
Press "Off" to select "01".

Scroll to cycle through the available voltages.

Press "Off" to select the desired voltage.

Scroll to reach programming mode "0" (ESC).

Press "Off" to save and exit.



## Setting the Frequency

The output frequency of the PurePower+ 1500 automatically senses and matches the utility frequency. To operate in a different frequency from the utility you must first enable converter mode.

Make certain the unit is in standby mode.

Press "Off" to enter standby, then hold "display" for 5 seconds to enter programming mode as indicated by the wrench icon.

scroll to "02".

Press "Off" to select.

Press "Display". The information display will read "ena" for enable.

Press "Off" to select "enable."

With Conversion enabled you be able to program the output frequency to 50 or 60 Hz.

Scroll to "03"

Press "Off" to select.

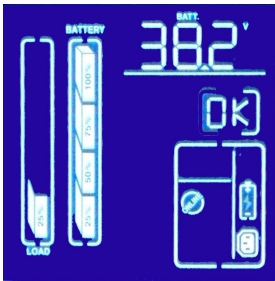
Scroll to display "50.0 or 60.0" Hz.

Press "Off" to select the desired output frequency.

Scroll up to reach programming mode "0" (ESC).

Press "Off" button to save the setting and exit.

# Operation



## Rotating the Display

The display can be rotated 90 degrees for vertical placement.

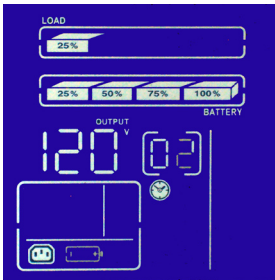
Press "Off" to enter standby.

Press and hold "Display" for 5 seconds to enter programming.

Scroll to "09", Press "Off" to select "09".

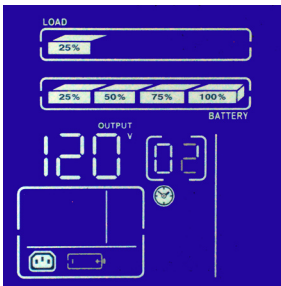
Scroll between "RAC" and "TOE". Press "Off" to select.

Scroll to "ESC". Press "Off" to save and exit.



## Test Mode

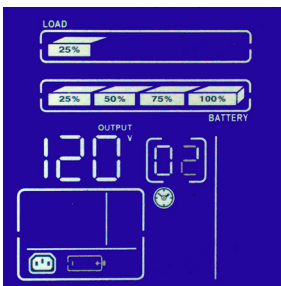
When the APS is operating in Online Mode, pressing the On button for 5 seconds causes the APS to enter test mode. The APS will then operate on battery and complete a self test. If there are any faults discovered they will be displayed as codes below a triangular fault icon.



## Switching to Bypass mode

The PurePower+ can be manually switched from regeneration mode to bypass mode in which the utility power will be directly supplied to the output receptacles. Simply press the On and Display buttons simultaneously for 5 seconds. The PurePower will switch to Bypass (Unless the utility power is out of acceptable voltage range).

To return to regeneration mode simply press the On and Display button for 5 seconds.



## Over Load

When the APS detects an overload condition its behavior varies with the amount and duration of the overload. Overloads of 1% to 5% can be sustained indefinitely, overloads up to 130% for up to two minutes. Between 130 and 200% the APS will switch to bypass after 10 seconds and above 200% it will switch immediately and supply power from the utility until the condition is cleared. The APS will only switch to bypass if the utility supply is acceptable. Otherwise it will initiate a shutdown.

# PurePower Maintenance

## PurePower APS

For the best preventive maintenance, keep the area around the APS clean and dust-free. If the atmosphere is very dusty, clean the outside of the system with a vacuum cleaner. For full battery life, keep the APS at an ambient temperature of 21° C (72° F).

## Storing the APS and Batteries

If you store the APS for a long period, recharge the batteries every 6 months by plugging the APS into a power outlet. The batteries charge to 80% capacity in approximately 2 hours. However, it is recommended that the batteries charge for 24 hours after long-term storage.

## When to Replace Batteries

When the battery load indicator remains low (below 50%) even after a prolonged charge cycle, the batteries may need replacing. Conduct a self-test by holding the On button for 5 seconds while the unit is in normal operating mode. The unit will switch to battery mode and count through 10 seconds and report "OK". If the test indicates a battery fault, contact PurePower or your PurePower dealer to order new batteries. The average battery life is approximately 5-7 years.

The PurePower APS will still provide full power conditioning including output voltage correction and surge protection when the batteries need replacement, but it will not be able to continue to operate during a power outage.

You may perform the battery replacement yourself by ordering a PurePower battery replacement kit. Full instructions are included with the kit and are also available on our web site.

## Cleaning

To prevent dust build up and reduced cooling capacity that could lead to overheating it is a good idea to clean the front and rear grill area of the PurePower by vacuuming several times a year.

# Specifications

## Specifications

This section provides the technical specifications for the PurePower+ 1500HV

### Physical

	Ship Weight	Net Weight	Dimensions (HxWxD)
PurePower APS Model 1500HV	22Kg	19Kg	13 x 42 x 42 cm
Audible noise	<17 dB at 1 meter		
Form Factor	Shelf mount, Rack mount or Vertical placement		

### Electrical Input

Nominal Voltage	230
Voltage Range	100 – 300V (Load dependant)
Frequency Range	40-70Hz, 50/60 Hz auto-sensing
Noise filtering	MOVs & line filter for normal & common mode noise
Input Connections	IEC-320-C19 Input connector
Input Power Factor	>0.95 @ nominal voltage
Earth Leakage	3.5mA, Max

### Electrical Outputs

Output Voltage	208/220/230/240 User selectable
Output Power	1500VA (1350 Watts)
Voltage Regulation	Nominal output voltage $\pm 1\%$
Voltage Waveform	Normal mode: Sine wave; <2% THD with full PFC
Output Receptacles	7 Modular Schuko*
Energy Efficiency	86 - 88 % depending on load
Output Power Factor	0.9

\* or other country specific modular receptacles or optional US style NEMA



## Environmental and Safety

Operating Temperature	0°C to 32°C (32°F to 90°F)
Optimal battery performance:	21°C (72°F)
Storage Temperature	0°C to 25°C (32°F to 77°F)
Transit Temperature	-25°C to 55°C (-13°F to 131°F)
Relative Humidity	20-90% noncondensing
Operating Altitude	Up to 3,000 meters above sea level
Transit Altitude	Up to 10,000 meters above sea level
Surge Suppression	ANSI C62.41 Category B (formerly IEEE 587)

## Class B EMC Statement

FCC Part 15

Note: This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 to the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation, in which case the user will be required to correct the interference at his own expense. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

## Troubleshooting your PurePower APS

This section contains troubleshooting information and an explanation of APS alarm conditions.

Condition	Possible Cause	Resolution
The APS won't start	Wall outlet is faulty, power cord not plugged in fully, breaker off	Clear Cause and Reset breaker Have outlet checked and repaired
Triangle fault Icon illuminated Code SF is flashing	Receptacle ground wiring fault, Neutral and line wires are reversed	rewire receptacle
Online icon off, Battery mode indicated	Utility power failure or APS is not connected to wall	Check Input power cable
Bypass icon is illuminated	APS in bypass mode Your components have been transferred to utility power. Power filtering and surge suppression are active.	Check for Overload. If condition persists note error code and call PurePower service.
APS shuts down	Overload or over temp condition and Utility power bad  Utility failure and batteries depleted	Reduce load, check for obstruction and fan operation  APS will restart when utility returns
Battery % indicator low	Battery fully discharged  Battery failure	Allow batteries to charge for 24 hours then hold On button for 5 secs. for self test.  Replace the batteries or contact your dealer.
Overload message, APS turns off output Fault code 43	Power demand exceeds APS overload capacity*  Amplifier startup demands	Turn off APS. Wait 5 seconds, restart APS. If problem persists, remove components from APS until wattage is within APS rating. Some amplifiers have very high power draws* on startup. A higher wattage APS may be required.
Fault code 01, 02, 03, 04, 11, 12, 13 or 41	Possible internal fault	Contact PurePower service

\* The APS is capable of supporting up to 130% of its rated capacity for 2 minutes and up to 200% of its rated capacity for 10 seconds. Turn on multiple high power amps one unit at a time.

# Service And Support

For setup and support for your PurePower APS, please contact your authorized PurePower Dealer.

For warranty service, please contact your authorized dealer or PurePower. All PurePower+ models have a two year warranty for original registered owners. If we are unable to solve a problem with your PurePower over the phone, we'll provide fast repair or replacement.

For technical support and warranty service, and full RMA instructions please contact PurePower via:

email: [service@PurePowerAPS.com](mailto:service@PurePowerAPS.com) | phone at 519.624.9735 | fax at 888.336.4293

Aug 1 2012