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Operating Instructions for the Power Plant P1000

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What's in the Box

- One Power Plant P1000
- One 6 foot AC power cable
- One user's manual
- One warranty card
- One spare 1 amp fast blow fuse
- One spare 15 amp slow blow fuse

IMPORTANT:

Be sure to save all packing materials included with the Power Plant P1000 as this will be required if you ever need to ship the unit for service or modification.



Warning

To prevent fire or shock hazard, do not expose the unit to rain or moisture. To avoid electrical shock, do not open the enclosure. Refer servicing to qualified personnel only.

To prevent electric shock, use a 3 prong, grounded type power cable.

Any change or modifications not expressly approved in the manual could void your warranty.

Safety Instructions

Any turntable or equipment with AC synchronous motors, such as some cooling fans should not be used with MultiWave II. This equipment must be used with 60Hz SineWave mode, or connected to the Filtered AC zone outlets.

We recommend the use of the SineWave [SINE] or TubeWave [TWAVE] with any type of tube based audio products.

Read the operating instructions provided with the P1000.

Retain the operating instructions for later use and reference.

Unplug the P1000 from the wall outlet before changing the fuse or performing any cleaning or service.

Do not operate the P1000 near water. Avoid placement near a water reservoir or excessive moisture.

When replacement parts are required, be sure they are specified by the manufacturer to have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

Do not operate with faulty or frayed power cables.

Overview

The Power Plant P1000 is a power regenerator capable of delivering the highest level of AC performance to all audio and video components.

The PS Audio Power Plant P1000 is designed to operate as a stand-alone power management device, or as part of a larger power management system. In many cases one P1000 will be all that is necessary to protect, clean and regenerate power for any audio system or home theater system.

The P1000 has two power delivery zones: Eight outlets produce "Regenerated AC" with MultiWave II™. Two outlets pass "Filtered AC" by filtering power with Ultimate Outlet™ technology.

The Regenerated AC zone is capable of delivering up to 1000 watts of peak power, depending on the load. The filtration zone is not current limiting and will deliver as much power as a 15 amp wall socket can provide.

All settings in the P1000 are non-volatile. Any changes made to the settings will not be lost, even if the P1000 is disconnected from AC power.



off using the front panel power button, let it sit for a few seconds and power it back up. If the "FAULT" message continues to appear, please contact your dealer for additional service.

How do I reset the settings to factory default?

The P1000 was designed to easily reset the micro-processor back to the original factory default. If the P1000 is displaying any characters in the front panel that seem abnormal, if the front panel buttons do not correlate with the display read-outs or to simply reset all settings back to the factory defaults follow these instructions.

With the unit powered off, hold down both Mode buttons (Up and Down) and press the Power button. This will activate the Setup Display Mode. Using the Mode Up or Down buttons, cycle to the "RESET" mode. Press either Edit button (Up or Down) and the display will read "GO ->" to confirm the choice. Press either Edit button again to perform the reset function. Once it is complete, the P1000 will exit the Setup Display Mode automatically.

Specifications

Output:

Power	-	up to 1000 Watts
Voltage	-	95-250 Volts (depending on model)
Current	-	7 Amps
Frequency	-	50-120 Hz
Peak	-	10 Amps (soft limit)
Distortion (THD+N)	-	0.1%

Input:

AC input range	-	90-250 Volts (depending on model)
Frequency input	-	50/60 Hz (depending on model)
Input capacity	-	750 VA
Power consumption	-	35 Watts (with no load)

General:

W x H x D	-	17 x 9 x 20 in
Weight	-	87 lbs (unboxed)
Cooling system	-	massive heatsinking

Warranty and Service

Inside the U.S. and Canada

PS Audio's warranty is 3 years parts and labor, from the date of original purchase. The warranty follows the product itself regardless of ownership, new or used.

Outside the U.S. and Canada

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 the 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. Contact your PS Audio distributor or the PS Audio customer service department for more information.

Service issues

Should your unit ever require service or if you have any technical questions about the P1000, you must either contact your dealer (PS Audio if purchased direct) or your PS Audio distributor. No equipment will be received at our service facilities without an attached RA number.

If purchased through an authorized PS Audio dealer or distributor, the RA number must be obtained by the dealer or distributor. If the product was purchased from PS Audio direct, this can easily be obtained by calling PS Audio at **720-406-8946** or by contacting us via E-mail at service@psaudio.com.

up the P1000. If the Filtered AC outlets still do not pass AC, please contact your dealer for additional service.

The P1000 seems to be working, but the display is blank

The P1000 may be in the display blanking mode. Press the Mode Up or Down buttons on the front panel and the display should turn back on.

My turntable or fan based equipment is not operating normally

Any turntable or equipment with AC synchronous fans should not be used with MultiWave II or AutoWave. These products must be used with 60Hz SINE mode or be plugged into the Filtered AC outlets.

The P1000 shut down but the display is blank and the fuses are not blown

The P1000 has redundant thermal protection that will shut the unit down in the event the internal temperature is too hot. If airflow is inadequate or room temperature is very warm and the P1000 is run near 100% capacity for very long periods of time this type of shut-down may occur. The P1000 will automatically turn back on when it has cooled sufficiently. If this occurs the load should be lessened on the P1000 or else improve the airflow around the P1000.

Note:

The following display messages apply only to the regenerator circuit. The Power Port receptacle dedicated to the built in High Current Ultimate Outlet will continue to pass AC.

The display is flashing "HOT!"

The P1000 will turn itself off and flash "HOT!" on the display if it detects an internal temperature that exceeds safe operating limits.

The P1000 will not power up during the cool down process. The P1000 is ready to be reactivated only after it returns to safe operating temperature, at this time the power button will become active.

Please use this time to reduce the load that is connected to the Regenerated AC outlets of the P1000. This message will be displayed when the

P1000 is being overworked.

The display is flashing a percentage

The P1000 will turn itself off and flash a percentage (for example, "184%") on the display if it detects an over-current condition.

If the current draw exceeds 100% of the P1000's maximum recommended capacity for more than 3 seconds, it will power down and display the over-current amount.

If the current draw exceeds 200% of the P1000's maximum recommended capacity, it will instantaneously power down and display the over-current amount.

Press the front panel power button once to clear the flashing display and again to turn the unit back on. If this message continues to appear, you must reduce the load on the P1000.

The display is flashing "SHORT"

The P1000 will turn itself off and flash "SHORT" on the display if it detects an electrical short, which means a product connected to the P1000 is trying to draw too much current. This could be related to a defective power cable that is plugged into the back of the P1000.

Press the front panel power button once to clear the flashing display and again to turn the unit back on. If it continues to flash "SHORT" disconnect all output connections from the back of the P1000 and power it up again. Be sure to check the power cables for any defects before plugging them back in.

If the display continues to read "SHORT" please contact your dealer for additional service.

The display is flashing "FAULT"

The P1000 will turn itself off and flash "FAULT" on the display if it detects a general hardware or software error. It is highly unlikely that the P1000 will ever experience this condition, but FAULT indicator has been built-in to ensure proper and long-term product reliability.

If this message is displayed, simply turn the P1000

Quick Start Guide

1. Place the P1000 in a rack or on a shelf in the audio/video system. If placed on carpet it is necessary to use isolation or accessory feet to elevate it above the carpet 1 inch. Failure to do so could compromise the power regeneration capabilities of the P1000.

2. Connect audio/video equipment to the P1000. There are five electrically isolated duplex receptacles on the P1000, which are oriented vertically.

For optimum performance, we recommend that equipment with medium wattage power requirements be plugged into the "Regenerated AC" receptacles (2-ch preamps, AV processors, DVD/CD players, Satellite receivers, PVR's, D to A converters, low power solid state amplifiers, etc).

Equipment with extremely high wattage power requirements should be plugged into the "Filtered AC" receptacles (direct view TVs, plasma or projection displays, multi-channel, tube or high powered amplifiers).

3. Plug the P1000 into a power source such as a wall outlet. Use the supplied AC power cable, or an aftermarket power cable. We would strongly urge the use of an xStream Power Cable.

4. Turn on the P1000 by pressing the power button located on the center of the front panel. The Regenerated AC zone will become active. The Filtered AC zone immediately becomes active when the P1000 is plugged into a live outlet.

5. If desired, select a MultiWave II setting or allow AutoWave to adapt to the power needs of your system using the front panel controls.

Default settings

The P1000 comes from the factory with standard default settings that should work well for most situations. The type of power delivery can be configured to achieve the optimal performance for any system.

- Up to 1000 watts power delivery - depending on load requirements.*

- Next generation MultiWave II technology featuring AutoWave and TubeWave.

- Independent power zones keep power for analog, digital and high current equipment electrically isolated.

- Regenerated AC delivered through 8 Power Port outlets.

- Filtered AC by High Current Ultimate Outlet™ delivered through 2 Power Port outlets.

- Front panel display for systems monitoring and user interface.

- Front panel displays waveform setting, output voltage, wattage and percentage of maximum power output.

- Massive heat sink for silent operation

- Reduction of AC line noise by more than 70dB.

- High voltage surge suppression devices for surge and spike protection.

- Lower AC impedance for better transients.

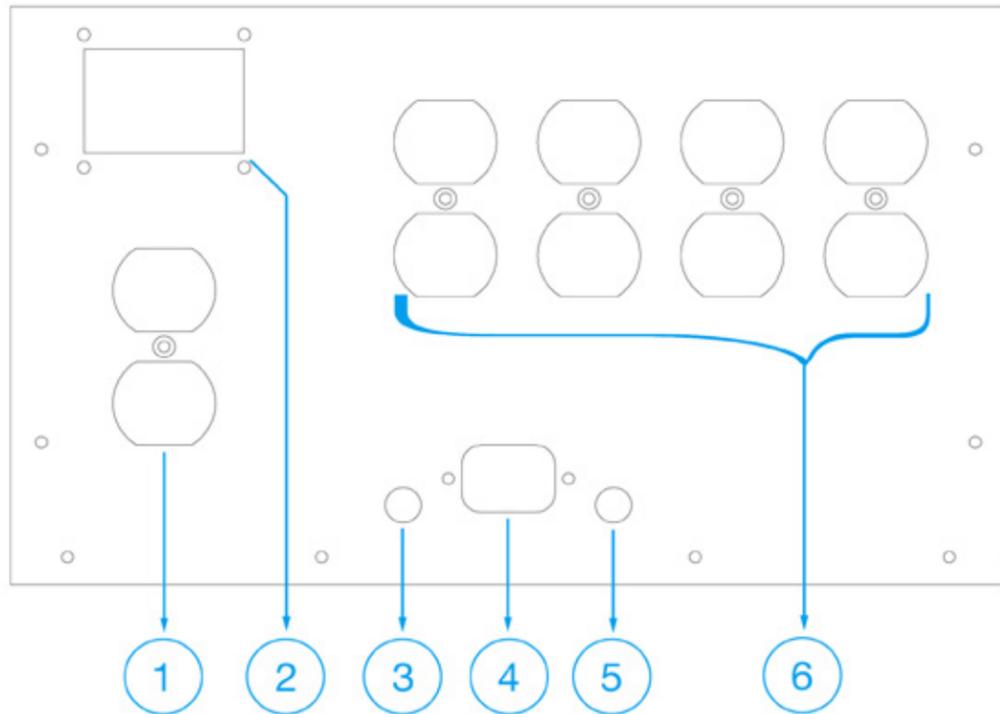
- Insane toroidal transformer for extended headroom.

- PS Audio's brushed aluminum classic chassis.

- PS Bus for communication with other PS Audio devices.

*** Note about power consumption:**

The P1000 is capable of delivering up to 1000 watts into a reactive load and up to 700 watts into a resistive load. Examples of a reactive load are: most solid state equipment and video products. An example of a resistive load is: tube based equipment.



Rear Panel Layout

1. Filtered AC zone

One Power Port duplex receptacle provides two outlets for filtered AC. The filtered AC zone will pass as much current as a 15 amp wall receptacle can provide, up to 1800 watts.

The controls for frequency, voltage, and MultiWave setting do not affect the Filtered AC zone outlets.

This power zone should be used for very high current draw products which require more power than the Regenerated AC zone will provide.

The Filtered AC zone will always pass power regardless of the front panel power status or fault status.

2. PS Bus

The P1000 comes equipped with a built in PS Bus. The PS Bus allows other PS Audio products equipped with a PS Bus to communicate via standard RJ11 “twisted end” crossover cable.

3 & 5. Main and Protection Fuses

The main fuse is a 15 Amp slow blow. The protection fuse is a 1 Amp fast blow. Both can be removed by inserting a flat device into the fuse holder and twisting counter-clockwise.

4. IEC AC Power Inlet

15 Amp IEC standard male socket.

6. Regenerated AC zone

Four Power Port duplex receptacles provide eight outlets for regenerated AC. The Regenerated AC zone will produce up to 1000 watts peak power depending on the type of load.

The Regenerated AC zone will only pass power if the front panel power switch is on and the P1000 is not in a fault status mode.

MultiWave II and the associated TubeWave and AutoWave waveforms are only available through the Regenerated AC Zone outlets.

[AUTO] AutoWave

This revolutionary new process automatically computes the best MultiWave II setting for a particular power load as presented by the connected equipment. The beauty of this system is its ability to instantly change the power setting of the AC regenerator with the dynamic load variations the equipment presents.

AutoWave automatically selects MultiWave™ 2-4 depending on the dynamics of the power load. The selection is made continuously as the power factor changes.

Music is a dynamic medium as is video. One MultiWave II setting may be the best when an audio/video system is reproducing low level information and another MultiWave II setting may be better when higher levels of power are delivered to either the loudspeaker or to a video monitor.

AutoWave solves this problem by selecting the exact waveform combination based on the equipment’s dynamic needs.

Notice of MultiWave II operation:

Any turntable or equipment with AC synchronous fans should not be used with MultiWave II or AutoWave. These products must be used with 60Hz SINE mode or be plugged into the Filtered AC outlets.

Servo System

The Power Plant P1000 provides a virtual Servo System to continually correct for any DC offset. This will reduce hum from problematic or sensitive transformers as the Power Plant produces pure AC waveforms indefinitely without the need for calibration.

Troubleshooting Guide

The Power Plant P1000 sets a new mark for performance and protection. It has been designed to bring forth the absolute best from the connected equipment. In addition to the audio and video improvements, the P1000 will also provide long-term product reliability and the piece of mind that connected equipment is safe from electrical disturbances.

In the event of abnormal operation with the P1000, please refer to the following suggestions:

Unit will not turn on

1. Check the obvious. Is it plugged in and is the AC wall outlet live? This can easily be tested by using a functional lamp. Plug the lamp into the wall outlet and see if the light works. If not, the P1000 may be plugged into a switched outlet, or perhaps the circuit breaker feeding the outlet has tripped and needs resetting.

2. After plugging the unit into the wall, the display will read “WAIT” for several seconds to initialize its circuitry. The P1000 will only become activated after pressing the front panel power button. Be sure that the unit is both plugged into the wall and turned on by the front panel power button.

3. Check the Main Fuse. The chances of the Power Plant’s main fuse being blown are very remote. However, if the Main Fuse is blown, the P1000 will be completely inoperable. To check the fuse locate the section of the back panel labeled “Main Fuse.” **Unplug the unit from the wall**, remove the fuse and check its conductivity. If necessary, replace the fuse and try powering up the P1000. If the main fuse is blown and a replacement fuse does not solve the problem, please contact your dealer for additional service.

The Regenerator outlets are passing AC, but the Filtered AC outlets are not functioning

Check the Protection Fuse. To check the fuse locate the section of the back panel labeled “Protection Fuse.” **Unplug the unit from the wall**, remove the fuse and check its conductivity. If necessary, replace the fuse and try powering

MultiWave II

MultiWave II is a technology available exclusively on the newest PS Audio Power Plant series of AC Regenerators. The P1000 includes MultiWave II and also features AutoWave and TubeWave. There are 4 MultiWave II waveforms as well as TubeWave, AutoWave and SineWave mode. MultiWave II is only available at the Regenerated AC outlets.

Any turntable or equipment with AC synchronous motors, such as some cooling fans should not be used with MultiWave II. This equipment must be used with 60Hz sine mode, or connected to the Filtered AC zone outlets.

We recommend the use of the SineWave [SINE], or TubeWave [TWAVE] with any type of tube based audio products.

[SINE] SineWave

In the SineWave mode the Power Plant will generate a perfect SineWave (50-120Hz).

[TWAVE] TubeWave

TubeWave is specifically designed to optimize the performance of tube based audio products.

TubeWave uses the same pseudorandom generation of frequencies as MultiWave2 waveform, however it generates more tube-friendly frequencies.

[MWAV1] MultiWave1

MultiWave1 is a single 60Hz SineWave with a minute amount of 3rd Harmonic SineWaves mixed together to form a single partial square MultiWave. This is an improved version of PS2 from the original MultiWave™ series.

The partial square wave setting improves the power supply's ability to charge the capacitors in equipment by extending the length of time available to "top off" the capacitors' voltage. Use this setting to enhance the performance of both source and power equipment.

[MWAV2] MultiWave2

MultiWave2 is a 60Hz SineWave that incorporates a pseudorandom collection of frequencies which are dithered from 55-65Hz.

Using this slightly random frequency deviation is similar to adding dither on a digital audio source. Power supply dithering can lower the perceived noise floor and help remove apparent glare on the audio signal.

[MWAV3] MultiWave3

MultiWave3 is a combination of Multiwave1 with a slight degree of 3rd harmonic addition (MultiWave1).

Try this setting and see how the audio sounds and the video looks. All systems can respond differently to each MultiWave pattern.

[MWAV4] MultiWave4

MultiWave4 is full combination of MultiWave1 and MultiWave2. It generates a pseudorandom collection of frequencies, however instead of generating SineWaves it generates the same waveform as MultiWave1.

Again, try these setting on your system to see which one has the highest perceived benefit in terms of performance.



Front Panel Controls

There are five buttons on the front panel of the Power Plant P1000.

1. Power
2. Mode Down
3. Mode Up
4. Edit Down
5. Edit Up

Power On/Off

The power button will activate the front panel display and output AC power to the Regenerated AC zones. Power will continue to pass through the Filtered AC power zone as long as the P1000 is plugged into a live AC outlet.

Mode

The Mode Up and Mode Down buttons cycle through the available display modes.

Edit

The Edit Up and Edit Down buttons cycle through the available options within each display mode.

Display Modes

There are six available display modes on the front panel of the P1000. The Mode Up and Mode Down buttons cycle through the following six modes:

1. Waveform setting
2. Frequency generated
(SINE mode only)
3. Voltage produced
4. Wattage produced
5. Percentage of maximum power output
6. Display blanking mode

Waveform setting

This mode will display the name of the waveform presently being delivered through the Regenerated AC outlets. In the SINE mode the P1000 will generate a perfect SineWave (50-120Hz). Each of the successive Multiwave modes will gener-

ate a different series of frequencies through the Regenerated AC outlets.

For more information about each of the MultiWave™ settings, see the MultiWave II section of the manual.

Frequency generated

This mode will display the frequency the P1000 is generating, while in SINE mode. The frequency can be adjusted in 1 hertz increments from 50Hz to 120Hz by using the Edit Up and Edit Down buttons. The default setting is 60Hz.

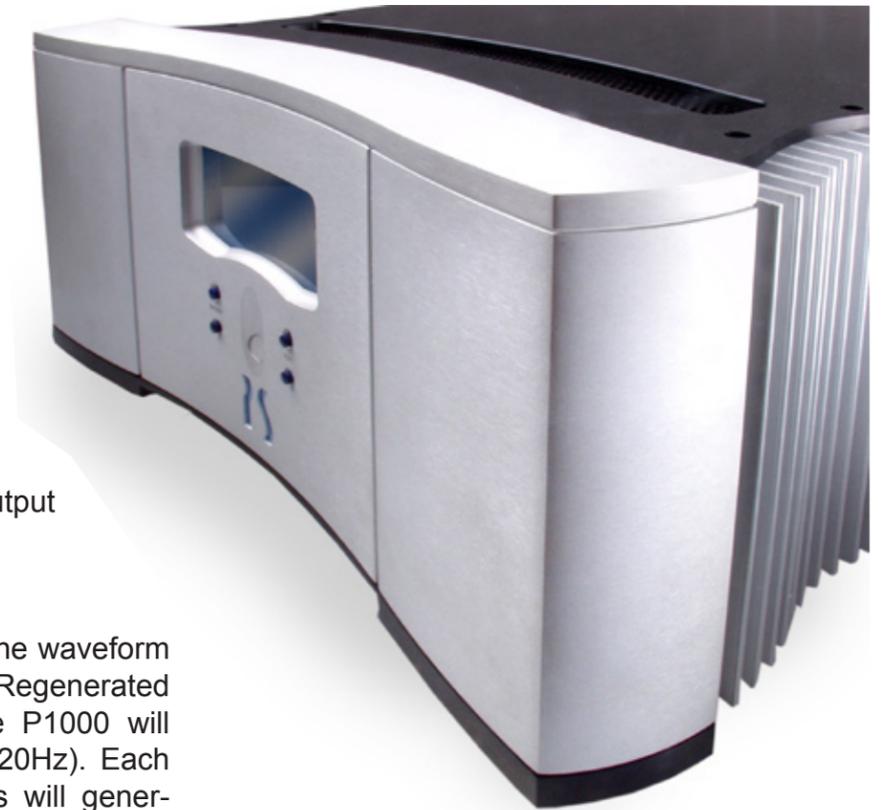
The frequency setting will only be displayed if the Waveform menu is set to SINE.

Voltage produced

This mode will display the output voltage of the Power Plant at the Regenerated AC outlets.

Note: the voltage figure will be flashing.

The output voltage can be adjusted in 1 volt increments by using the Edit Up and Down buttons. The range varies depending on the Power Plant model:



Additional Display Notifications

- 100 volt model ranges from 95 - 105 v
Default setting is 100 volts.
- 120 volt model ranges from 100 - 120 v
Default setting is 117 volts.
- 240 volt model ranges from 220 - 240 v
Default setting is 240 volts.
(adjustments in 2 volt increments)

As long as the voltage to the Power Plant does not deviate more than 10% below normal it will continue to output the voltage displayed on the front panel.

Wattage produced

This mode will display, in real-time, the wattage the P1000 is generating. The P1000 is capable of delivering up to 1000 watts for short amounts of time, however if over 1000 watts is drawn for too long or peak wattage is too large then the P1000 will go into protection mode. The watt meter will **only** show the total wattage produced for the zone labeled Regenerated AC.

Percentage of maximum power output

This mode will display, in real-time, the percentage of total power currently being used by equipment on the Regenerated AC outlets. This reading will factor the type of load into the percentage of maximum power output. The percentage of maximum power output is not necessarily proportional to the wattage produced, as it will vary with the type of load.

It is possible that the display will show over 100% for short amounts of time during heavy current draw. This will typically occur during loud or very dynamic passages of music or very bright scenes in video. The P1000 will not maintain 100% output power continuously.

Display Blanking

This mode allows discrete front panel operation by blanking the display. The PS logo will continue to illuminate in blue to indicate that the unit is operational.

HOT! - If the P1000 exceeds safe operating temperature the front panel display will flash "HOT!". The Regenerated AC outlets will stop generating AC until the P1000 returns to safe operating temperature. The power should not be disconnected at this time. See troubleshooting guide if problem persists.

PERCENTAGE - If the equipment connected to the Regenerated AC outlets draws current over 100% for more than 3 seconds, or over 200% for any amount of time, the display will flash the over current percentage (ex. 184%) and the P1000 will shut down. If the behavior continues the load should be reduced. This can be done by moving some of the equipment powered by the Regenerated AC outlets to the Filtered AC outlets. See troubleshooting guide if problem persists.

SHORT - If the P1000 detects an electrical short either internal or external the front panel display will flash "SHORT". If turning the unit off and back on again from the front panel does not correct the problem then the power cable should be removed and reinserted. See troubleshooting guide if problem persists.

FAULT - If there is any other type of operational error the P1000 will flash "FAULT" in the display. The same procedure should be taken as in SHORT mode. See troubleshooting guide if problem persists.

Note About Operation:

In all of these situations the Regenerated AC outlets will not produce power, however, the Filtered AC outlets will continue to pass power. If the P1000 is in display blanking mode the above notifications will still be displayed.

Setup Display Mode

There are 5 additional parameters that you can access in the setup display mode.

The setup display mode can be activated by pressing the Mode Up and Mode Down buttons simultaneously while powering on the P1000.

Pressing Mode Up/Down will scroll through the 5 setup parameters. The 4-setup parameters are:

1. Software version [VER.]
2. Network Address [N ADR]
3. Network Group [N GRP]
4. Network Power On/Off [N PWR]
5. Reset [RESET]

To exit the setup menu at any time, power down the P1000 and all changes will be saved.



Software version

This mode will display the current version of the P1000 operation software. Press the Edit Up/Down key to display the version number. This mode cannot be edited.

Network Address

If more than one piece of PS Audio equipment is used in a system, then each piece connected to the PS Bus must have a unique Network Address. In this way, each piece of PS Audio equipment can easily be recognized and identified in the Network Bus. There are 8 possible Addresses (1-8) which can be selected by pressing the Edit Up/Down buttons when in the Network Address mode.

If no Network Address is set then the P1000 will operate independently of any other PS Audio equipment on the PS Bus.

Network Group

It is possible to assign the P1000 to a unique Network Group. There are 3 possible groups which can be selected by pressing the Edit Up/Down buttons when in the Network Group mode. If it is necessary to have more than one Group on the PS Bus then, all PS Audio products can exist on the same PS Bus yet communicate in separate groups.

Network Power

The Network Power setting will alter which PS products will be affected by the power status of the P1000. It can be set to Power or Global.

If set to Power, the P1000 will control the power status of other PS Audio "power" products on the same Network Group. If set to Global, it will control the power status of all products on that Network Group. The default setting is Power.

Reset

If at any time it is necessary to reset all of parameters of the P1000 to their default settings, it can be done by pressing the Edit Up/Down button twice while in RESET mode. See Also the troubleshooting guide.