



PS AUDIO

Owner's Reference

Owner's Reference
Perfect Wave DAC

Instructions for use PerfectWave DAC





P S A U D I O

Important Safety Information

Owner's Reference
Perfect Wave DAC

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with the mounting brackets specified by the manufacturer, or sold with the apparatus.
- 13) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



PS AUDIO

Table of Contents

Owner's Reference
Perfect Wave DAC

INTRODUCTION	2	Remote Control	14
GETTING STARTED	3	Dimming the Display	15
Unpacking the unit	3	Checking the Firmware Version Number	15
Register the unit	3	Cleaning	15
Location	3	NETWORK AUDIO PLAYBACK	15
Stacking with a PerfectWave Transport	4	The Bridge	15
Digital Inputs	4	Introduction to a Network Audio System	16
AC Power	4	The PerfectWave Network	16
CONNECTING THE PWD	4	Building the Network	17
Choosing the Connection Method	4	Understanding the Controller	17
I2S	5	tagNplay	17
USB	5	Preparing the iDevice	17
AES/EBU	5	Install tagNplay	18
Coaxial Digital	5	Understanding the Server	18
Optical	5	The UPnP based server	18
Connecting to a Digital Source	5	Setting up the Server	19
Connecting PWD with Bridge to the Network	6	Supported Formats	19
Ethernet Connection to Router	6	Installing the Bridge	20
Wireless USB Dongle	6	Test by Playing Tracks	20
Wireless Ethernet Adapter	6	Controlling the PWD and Bridge with tagNplay	21
Connecting the PWD Output	7	Introduction to tagNplay	21
CONTROL AND OPERATION	7	Using tagNplay	21
Powering the PWD	7	Library Selection	21
ON/OFF button	8	Player Selection	22
Select the Input	8	Server Navigation	22
Input Naming	8	Track Selection	25
Sample Rate	8	Now Playing Screen	26
Filter	9	Artist Info	27
AUTO.	11	Playing Internet Radio	28
Filter 1 MP APOD	11	Queue Management	29
Filter 2 MP SOFT	11	Accessing Saved Playlists	31
Filter 3 LP APOD	12	TROUBLESHOOTING	32
Filter 4 LP SOFT	12	WARRANTY	33
Filter 5 MP 1/2B	13	SERVICE	35
Phase (Polarity)	14	NOTES	36



P S A U D I O

Introduction

Owner's Reference
Perfect Wave DAC

The PS Audio PerfectWave™ Digital To Analog Converter (PWD) is a state-of-the-art D to A processor, preamplifier and media center. The PWD accepts PCM Digital Audio data and converts it to high-performance analog audio that can be fed directly to a power amplifier or preamplifier.

Your PS Audio PWD represents a major advancement in the art of recreating the musical event. The sense of being “there” at the original performance, hearing the warmth and immediacy of the live performance is unmatched. From the elegant physical appearance to its superb construction, your PS Audio DAC will provide you with years of musical enjoyment and pleasure. The PerfectWave series is a system – designed to be used together for best benefit - although each of the components within that system can be used as standalone pieces.

The system's philosophical beginnings centered on a somewhat radical concept: that we could create a high-end digital audio system that transcended the performance issues of storage, media type and data delivery. We reasoned that all digital audio data should provide the same level of performance regardless of whether it was stored on optical discs, hard drives, solid state memory or even, for that matter, over the internet. After all, “bits-is-bits”. But we knew that “bits- aren't- bits” because they sounded differently; CD's sounded different than the same recording ripped to a hard drive, or streamed over the internet. We knew that from a theoretical standpoint this shouldn't be and set out to design a system that transcended these limitations. We first experimented with modified PC motherboards and output cards to extract and manage the data from both a hard drive and a ROM drive. These experiments quickly convinced us that no PC equipment could be used as their environments were too noisy and the peripherals (sound cards and interfaces) measured well but relied on massive data manipulation and sample rate conversion to achieve low jitter. Had we stayed the course with using computer parts placed in a nice high-end audio chassis, we would have been to market a year earlier and competed with those manufacturers that have chosen this route. But our goals were loftier than this and we trudged onward from the ground-up with a custom solution which you now are about to enjoy. No computer parts were used in the building of this remarkable system.

The DAC you have in your possession is the first primary piece in that system demonstrating this concept's successful conclusion. Two years in design and thousands of hours of programming later we are pleased to present the world's best digital audio pieces.



PS AUDIO

Getting Started

Owner's Reference
Perfect Wave DAC

Unpacking the unit

Carefully unpack the unit. Your new PerfectWave DAC comes wrapped in a soft organic cotton bag to protect its beautiful finish. Use the included cotton gloves to remove the unit and place in the chosen location. The piano black top cover has a protective plastic film. Remove this film. Connect the PWD to your digital sources using the appropriate connections. Connect the AC cable into the receptacle in back and plug the unit into your power conditioner or into the wall.

Register the Unit

PS Audio products come from the factory with a 90 day warranty. An extended 3 year warranty is available in exchange for registering your product with PS Audio. Registration takes just a few minutes, helps us inform you about future upgrades and allows us to maintain the highest standards of product quality of any company. To register your new unit, look on the back panel of the PWD and note the serial number. Using any web browser, go to www.psaudio.com and click on Register Products. Once you have completed the registration process you can then go to the PS website and look at the My Registered Products page. The link to this page is located at the top right hand corner of the website. If you do not have web access you may register the unit via mail or phone. Notification of software upgrades to this product will be available only to registered owners via the web.

Location

A good location for your DAC is in a cabinet or on a shelf at an easily accessible height. The receiver for the remote is located to the left of the Touch Screen. A direct line of sight will ensure optimum operation, as the IR receiver in the PWD has a relatively narrow range of view. If the PWD is to be in a visually restricted space it might make sense to add an optional IR booster near the PWD to increase the range of the remote control.

Stacking with a PerfectWave Transport

The PWD and PWT were designed to stack on top of each other if they are not placed on separate shelves. To do this, remove the feet from the unit you wish to place on top of the stack. Carefully place the top unit so it rests on the bottom unit. You will note that the bottom of the corners of each PerfectWave piece is specially designed to mate with the top corners of another PerfectWave.

Digital Inputs

The PWD offers multiple digital input choices including: XLR (AES/EBU), RCA and TOSLINK (S/PDIF), USB as well as I2S. All inputs, including USB, are capable of accepting high-definition digital audio signals. The USB and TOSLINK are capable of 96kHz, 24 bit audio and the other inputs are all capable of handling up to 192kHz 32 bit data.

The PWD uses an HDMI cable to transfer I2S data. This data can only be used with another compatible PS Audio component, such as the PerfectWave transport, and will not work in other HDMI equipment as the I2S format incorporated does not comply with the HDMI standards. The HDMI connector and cable were chosen to carry the I2S signal because of their superior high-speed data transmission capabilities for multiple clocks and data lines.

As in all high performance audio applications, the quality of the cable is important to the overall sound, although any manufacturer's cables can be used. PS Audio manufactures two models of approved I2S ready HDMI cables, either of which are highly recommended for this application. No HDMI cable was included with the PWD and to get started it is OK to use an off-the-shelf HDMI cable.

AC Power

Your new PS Audio DAC is supplied with a removable AC Power cord. While the supplied cord is of good quality, it is recommended that you replace it with one of PS Audio's matching PerfectWave AC power cords for optimum performance. It is also recommended that you connect your new PWD to one of PS Audio's award-winning AC power products such as the Power Plant Premier.



PS AUDIO

Connecting the Pwd

Owner's Reference
Perfect Wave DAC

Choosing the Connection Method

The PWD has multiple digital inputs and accommodates multiple products connected to it. For best performance it is advisable to use the highest performance inputs for the products you use most. In order of preference, from a high-performance standpoint, here are the recommendations for connecting the PWD to your source equipment.

I2S

(Pronounced "I squared S") This is the best performance option. This connection method will only work with a similarly equipped I2S input using the HDMI connection. This will not work into a standard HDMI connection and must go into a PS approved type such as that found on the PerfectWave Transport. This input is capable of 192kHz 32 bit data.

USB

Universal Serial Bus. This is used when connecting directly to a computer. The computer will automatically recognize the PWD and install the appropriate driver. This USB input is capable of 96kHz 24 bit data.

AES/EBU

This is a balanced, or XLR type, S/PDIF encoded input that complies with standards set by the AES/EBU (Audio Engineering Society/European Broadcasting Union). This input is capable of 192kHz 32 bit data.

Coaxial Digital

Coaxial single ended, or RCA type, S/PDIF encoded input. This input is capable of 192kHz 32 bit data.

Optical

TOSLINK optically connected S/PDIF encoded input. This input is capable of 96kHz 24 bit data. Whatever input you use, ensure the connecting cable is of the highest quality and shortest distance.

Connecting to a Digital Source

There are three methods of connecting the digital inputs of the PWD: SPDIF, USB and I2S. SPDIF is a serial digital interface available as an optical source (TOSLINK), coaxial source (RCA) or balanced source (XLR).

Connect to your digital sources with any of these three cable types. USB is the preferred method of connection for a computer or computer type equipment and the PWD is capable of processing up to 96kHz 24 bit USB data. Most DAC's are capable of only 48kHz, 16 bit data over USB. Connect the PWD to your computer using a standard USB cable and make sure to set the output of your computer to the higher 96kHz 24 bit standard. Once connected, your computer (Windows or MAC) should automatically install the PWD as a new device. The device will read "PS Audio 24/96 USB Audio Link." If the device

is not recognized or your are unable to obtain output through the PWD it is possible that there is a driver conflict on your computer. Please see the Troubleshooting section for further assistance on playback issues via USB. I2S is available (at the point of this writing) only through other PS Audio equipment such as the PerfectWave Transport or the upcoming PS Audio Digital Lens. I2S is a parallel data connection with separate clocks and data and transferred via an HDMI cable. I2S will always provide a better performance standard than any serial data stream such as S/PDIF or AES/EBU.

You can connect one or all four inputs at the same time. For instance, you can connect the USB input to your computer and the coax input to your CD player. Then you can simply choose which one to listen to from the front panel touch screen (or the remote) that selects the input. The USB does not need a driver but it does need to install it's own driver. If you are using USB, make sure both the computer and the PWD are connected and powered up. The computer should recognize the new hardware and self install the necessary drivers.

Connecting the PWD with Bridge to the Network

The PWD when outfitted with the PerfectWave Network Bridge will connect directly to your Network to allow playback of Digital Audio files stored on hard drives within the network. There are three methods for connecting the PWD with Bridge to the Network, each is listed below in order of preference;

Ethernet Connection to Router

Using a Category 5 or higher cable to connect the Ethernet connection of the Bridge directly to the Router. This is the most reliable solution and allows for the highest level of bandwidth between the router and the Bridge.





PS AUDIO

Connecting the Pwd

Owner's Reference
Perfect Wave DAC

Wireless USB Dongle

Available sometime in late 2010, from any PS Audio Dealer, the USB Wireless Dongle will allow you to connect your Bridge to your Wireless Network. Insert the USB Wireless Dongle into the USB host input on the Bridge at the rear of the PWD, then follow the instructions included with the USB Wireless Dongle. This Wireless solution has been specially designed to ensure extremely low latency network connectivity and is second in preference to a wired connection.

Wireless Ethernet Adapter

Wireless Ethernet Adapters connect to your Wireless Network and provide a Ethernet connection to the Bridge. Such devices are available from a wide range of manufacturers. Setup of the device is usually performed on a computer prior to connecting it to the Bridge via a Category 5, or higher, Ethernet cable.

More details on the Network setup can be found in the Network Audio section of this user guide.

Connecting the PWD Output

The PWD is designed to drive a power amplifier or preamplifier directly. The outputs of the PWD are high-performance, high current outputs that can drive long lengths of interconnect cable without degradation.

Our recommendation is to use the PWD directly into your power amplifier and bypass the preamplifier. "There's no preamplifier like no preamplifier". Certainly this is your choice but we believe the fewer pieces of equipment in the chain the better performance of the system.

The PWD has two types of analog outputs, balanced XLR or single ended RCA. You may use one or both outputs at the same time. Be aware that most amplifiers and preamplifiers will produce 6dB more level with the balanced outputs as opposed to the single ended outputs. If you are using both outputs be advised they will be at different levels.

If the PWD has a gain mismatch with your power amplifier, you can use the balanced outputs and achieve 6dB more gain or choose the single ended RCA outputs for lower gain.

RCA or single ended inputs will be the typical inputs as many preamplifiers, surround processors receivers, integrated amplifiers and power amplifiers have only this standard type of input.

Plug either the RCA or the XLR outputs of the PWD into a line level input on the preamp, integrated, Amplifier or Receiver. Do NOT plug the output of the PWD into a phono or equalized input of any type.

Once everything has been connected, use a high quality AC cable to power the PWD. DAC's in particular are quite sensitive to AC power and produce a bit of line noise themselves. Make sure you have a high quality shielded power cable to power the PWD.

PS Audio produces an entire line of high quality shielded power cables that are generally accepted as being one of the best in the industry.



PS AUDIO

Control & Operation

Owner's Reference
Perfect Wave DAC

Powering the PWD

Turn the AC power switch in the rear of the PWD to the ON position. The power switch is located just above the AC inlet. As soon as the switch is activated the front panel touch screen will display the initializing screen. This screen shows when the PWD's internal "engine" is being loaded with the firmware that runs the PWD.



POWER BUTTON

After the INITIALIZING SCREEN, you will see the main screen of the PWD.

ON/OFF button

The front panel PS logo, located on the far left hand corner of the unit, is the on/off standby control for the PWD. Press this button to turn the unit on/off. This is a "soft" power button. When pressed, the display as well as the outputs are turned off. All the unit's internal circuitry remains active and ready for play. Press the PS logo button to activate the unit when you wish to play music.

Select the Input

The first step is to select the input you wish to play. The input select is on the far right hand side of the touch screen. Touch the input selector icon (or use the remote) and the input selection list appears. Scroll through the list and touch the input you wish to play. The screen reverts back to the main screen and the selected input is displayed. Each input, with the exception of USB and Media Bridge, has a lock light associated with it. The lock light has two states: connected (green) and not connected (red). This lock light indicator is located in the upper right hand corner of the input icon.

Input Naming

For greater convenience it is possible to assign a custom name to each input such as PerfectWave Transport, Apple TV, etc. To name each input, touch the input icon from the main screen. The input list appears. Touch the small edit icon of the input you wish to name and the edit screen appears. Type in the name of the product and touch "SUBMIT". If you wish to return to

the default input name, go to the second keyboard screen (accessed by pressing the numeric key labeled 123/!) and touch "Restore Default".

Sample Rate

The PWD offers both NATIVE as well as multiple up and down sample rate options through the Sample Rate Converter (SRC) icon. Touch the SRC ICON or use the remote keys labeled SR- and SR+ to change the sample rate. NATIVE is the original untouched sample rate as transferred from the digital source. Use this mode whenever you are using an I2S input, a high-resolution audio file or, as your listening experience would suggest. Many people feel that NATIVE is a cleaner and more natural presentation of audio that does not rely on the digital manipulation found in the SRC. Nearly all DACS use sample rate converters (SRC's) for elimination of jitter inherent in the S/PDIF conversion process as well as to help the audio sound better. When using the PWT alongside the PWD, there is very little to no jitter to be concerned with so it is questionable whether you might want the SRC in the picture at all. Thus we added, on the touch screen of the PWD, Native mode. Native simply means that there is no sample rate converter used and we receive whatever the source is producing natively.

If you are playing a CD, native gives you 44.1kHz (the native sample rate of a CD). Playing a high-resolution audio disc, you get that sample rate (96kHz to 192kHz). Native mode is one of the stronger features of the PWD and experimenting with the system will show off its qualities. Increasing or decreasing the sample rate is a matter of personal preference and these setting should be determined through listening. The NATIVE sample rate for CD's is 44.1kHz. Sample rates for computer audio is either 48kHz or 96kHz depending on your computer setup and source material. You probably do not want to down-sample for any reason. Therefore, choose at least the native sample rate for any input. The PWD will memorize the last setting chosen for the input you are on. So, for instance, if you choose NATIVE while on input I2S2 and 192kHz for RCA, the SRC will automatically switch to that setting when you change inputs.

Filter

The PWD offers a wide assortment of digital filters. Digital filters are necessary and used in all modern DACS but few are as sophisticated as those in the PWD. The problems with any filter, whether it is analog or digital, are the effects they have on the passband (usable audio frequencies).

Filters leave several types of negative artifacts: group delay, phase and ripple errors. Some filters minimize phase and group delay errors while others minimize ripple errors. Each error is minimized at the expense of the other; thus, there is no such thing as a perfect filter and, as with many things in electronics, each is a tradeoff with good and bad points.



PS AUDIO

Control & Operation

Owner's Reference
Perfect Wave DAC

The PWD has two basic types of filters with several combinations of the two available. The two filter types are: Linear Phase and Minimum Phase as well as Recursive Non-Half Band (which is basically a combination of the first two). Within these two main filter types (Linear phase and Minimum) there are several variations to choose from on each filter, including Apodising and Soft Knee Filters.

From a user perspective, we recommend choosing whichever filter sounds the best to you without being overly concerned about understanding these extraordinarily complicated subjects. Our favorite on the PS system is Minimum Phase Apodising "MP Apod" on the touch screen.

A brief explanation of each filter type appears below.

Linear Phase and Minimum Phase filters

Linear phase filters have been widely used in DACs for over 20 years because they introduce no group-delay distortion, minimize post ringing and have a phase response that is the same for all frequencies but at the cost of pre-ringing. Conversely minimum phase filters have some group-delay distortion, some minimal phase shift with frequency but little pre-ringing.

Most DAC digital filter designs tend to focus on the frequency response and neglect the time domain response. However there is now an increasing interest in the effect that time-domain properties of these filters have on the perceived audio quality, thus the PWD offers a choice between 5 different filter types described in this section.

Generally speaking, linear phase filters are focused on maximizing the frequency domain while minimum phase filters are designed to maximize the time-domain performance. Group delay is a time domain issue where different frequencies arrive slightly out of time with the other frequencies. A filter with no group delay (such as a linear filter) means that all frequencies arrive at the same time. The issue from an audibility standpoint is then how much group delay is audible and acceptable? Research has shown the ear is relatively insensitive to group delay distortion of several milliseconds for low frequencies (less than 1kHz) and insensitive to +/-0.5ms over the 1-5kHz band. Other work shows that the sensitivity to group delay distortion falls after 4kHz and therefore group delay distortion in the upper regions of the audio band is much less audible. For a typical minimum phase filter designed for 44.1kHz the group delay distortion up to 10kHz is under 2 samples (less than 46µs) and may be inaudible. The minimum phase filters used in the PWD have group delay that we feel is inaudible.

Pre-ringing (or Pre-echo) is an interesting type of distortion. It is a type of additive distortion to the waveform that occurs before the actual event (sound) occurs and is a product of linear phase FIR digital filters. The ear appears to be very sensitive to

this type of pre-echo because re-ringing rarely occurs naturally. As you can imagine it is very rare to hear the artifacts of the distortion before the originating sound reaches the listener. Apodising and slow roll off response

The PWD offers both linear and minimum phase filter choices, along with a Recursive Non-Half Band type, which is a combination of both. Within each choice of linear and minimum phase filters the user has the ability to choose either Apodising or Soft Knee choices.

An Apodising filter is one that can be used to control the time smear of a whole recording and reproducing chain. This type of filter can reduce the pre- and post-ringing of the impulse response in both linear as well as a minimum phase filter choices.

Soft Knee filters take advantage of the larger transition band to reduce the dispersion and delay through the filter. Instead of the classic "Brick wall" filter approach of cutting everything above the passband off very sharply, a soft knee filter does this in a gentler fashion, thus minimizing group delay problems.

Three of the filters (LP Apod, MP 1/2B, LP Soft) will have a slight high frequency roll off within the audio band (20kHz) when you are using 44.1kHz modes (Native and 44.1) and playing 44.1kHz material (CD's). We have included graphs of the frequency response of every filter for you to see. The audible effects of this roll off are minimal at best. The most extreme roll off in the series of filters is LP Apodising, which is -0.2dB down at 19kHz and -3dB down at 20kHz.

All 3 filters will display ruler flat frequency response to 20kHz, while playing 44.1kHz material if you increase the sample rate to a minimum of 48kHz although we do not believe this is necessary or warranted.

While no Audiophile wants to hear that there is anything lost in the music, the facts are pretty clear: these small frequency deviations with different filters at the lower sample rates have very minimal impact on performance.

The filter choices:

AUTO.

This will automatically choose filter MP Soft for 44.1kHz and LP Soft for any higher sample rates. These are the choices we believe work best.

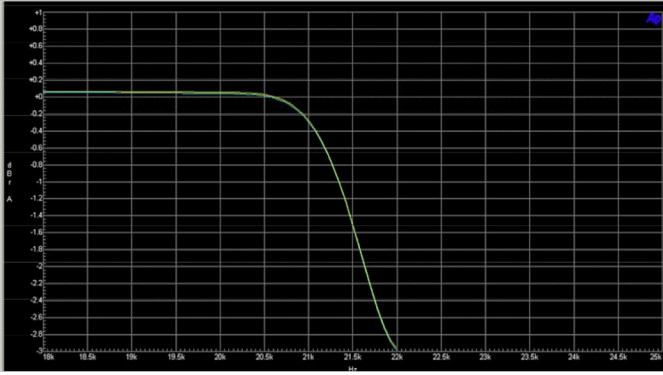


PS AUDIO

Control & Operation

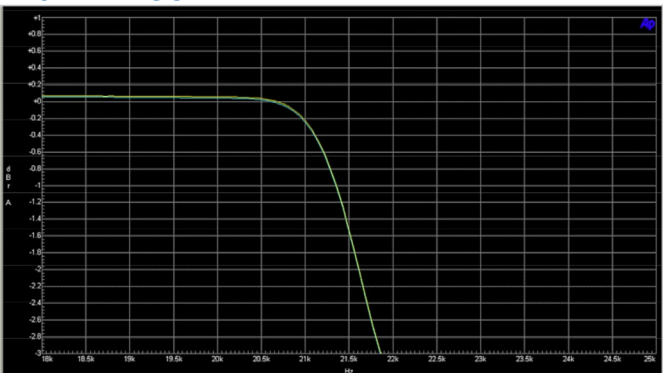
Owner's Reference
Perfect Wave DAC

Filter 1 MP APOD



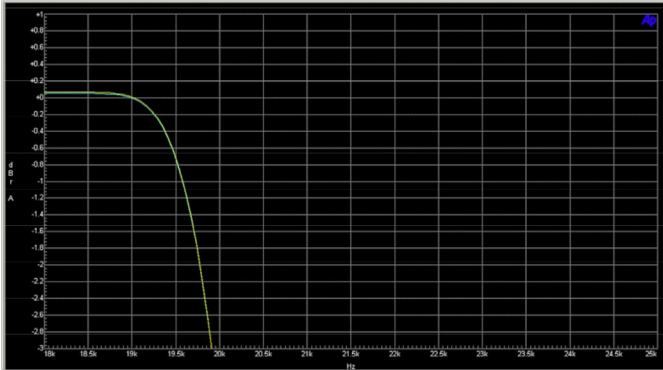
Minimum phase Apodising filter. Low pre-ringing, minimal group delay, minimized post ringing, good phase vs. frequency, sharper filter cutoff

Filter 2 MP SOFT



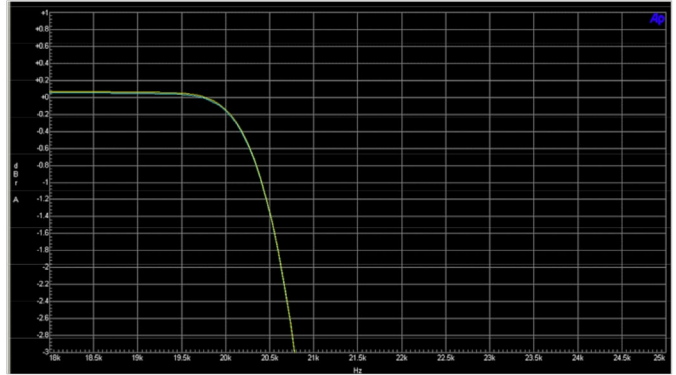
Minimum phase soft knee filter. Low pre-ringing, minimal group delay, minimized post ringing, good phase vs. frequency, soft cutoff.

Filter 3 LP APOD



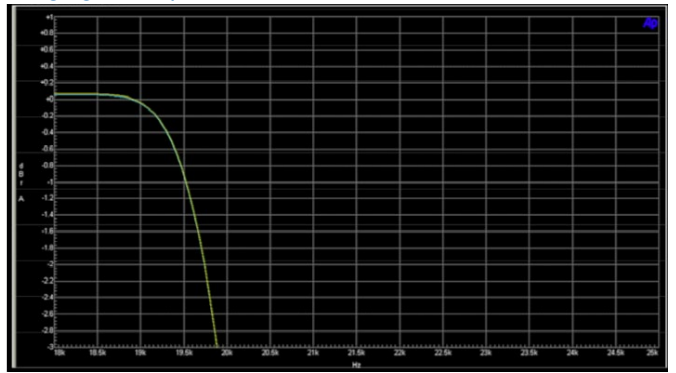
Linear phase Apodising filter. No group delay, perfect phase vs. frequency, minimal post ringing, some pre-ringing, sharper filter cutoff.

Filter 4 LP SOFT



Linear phase soft knee filter. No group delay, perfect phase vs. frequency, minimal post ringing, some pre-ringing, softer filter cutoff.

Filter 5 MP 1/2B



Minimum phase recursive Half Band symmetrical filter. Minimized pre and post ringing, good group delay, good phase vs. frequency response, sharp cutoff.

Phase (Polarity)

Touching this control on the front panel touch screen (or the remote) will invert the absolute phase (polarity) of the audio signal. This is the same thing as reversing the loudspeaker inputs, placing + to - and - to +. Phase reversal happens on many recordings, sometimes even within the same CD or DVD. If the track sounds a little "off" try reversing the phase with this control to see if the CD track gains a bit of proper perspective. If it does, chances are good that it was recorded out of polarity.

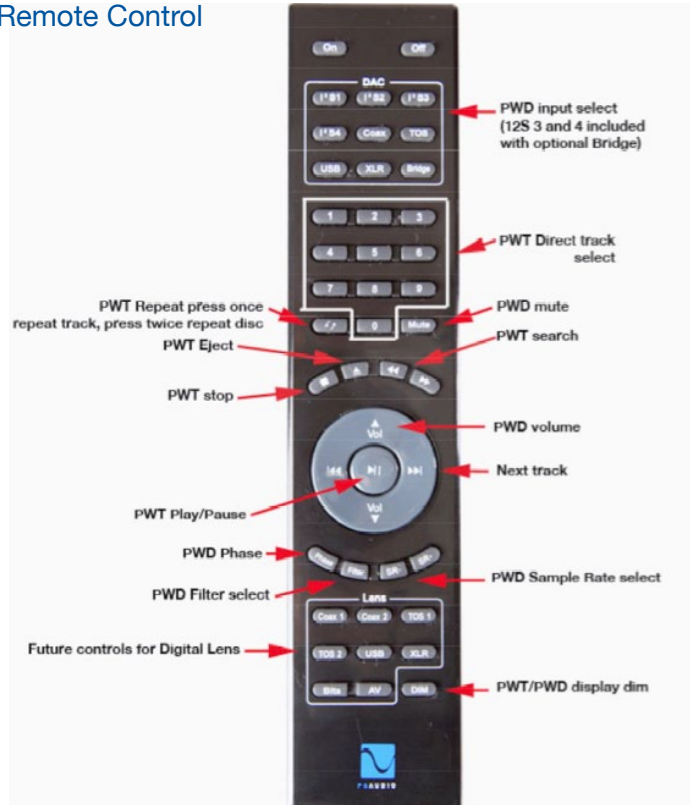


PS AUDIO

Control & Operation

Owner's Reference
Perfect Wave DAC

Remote Control



The "ON" and "OFF" buttons are at the top of the remote. Use them to turn the PWD ON and OFF. The rear panel AC power switch must be on for this to work. Right below the section labeled "DAC" is a numeric keypad. This is used for controlling the PWT. The top of the large center ring is for VOLUME UP and the bottom is for VOLUME DOWN.

Dimming the Display

The unit will automatically dim to adjust to light levels in the room. The display can be turned off by pressing the button labeled "DIM" located at bottom right of the remote. When you are in the DIM mode, the screen will come back on when you touch it or press a remote key. To turn the DIM feature off, press "ON."

Checking the Firmware Version Number

These units operate from sophisticated software that is built in to the device, but upgradable by the user through the rear panel mounted SD card. To check for the current firmware version follow these steps. First, turn off the rear panel power switch. Wait for 10 seconds, then turn the rear panel switch back on. As soon as the touch screen displays the "Initializing" screen, touch the PS logo in the middle of the initializing screen until the version screen appears.

Cleaning

The PWD does need some care and is appreciative of being fed proper AC power. A Power Plant Premier is recommended for this task.

Should minor scratches occur, simply purchase any type of high quality automotive scratch removal polish such as Kit's Scratch Out or McGuire's products. Car finish polish and wax can both be used on this surface for a beautiful luster.

The top cover is a beautiful piano black painted surface over MDF (wood).

The front panel touch screen can be cleaned with Windex or similar spray on glass cleaners. To clean, spray the cleaner on a soft lint free towel and carefully clean. Do not spray cleaner directly on the unit.



PS AUDIO

Network Audio Playback

Owner's Reference
Perfect Wave DAC

The Bridge

The PWD can become far more than a high-performance stereo DAC. An optional network Bridge can be added that connects the PWD to any home network. The Bridge allows playback data from a source not directly connected to the PWD.

The network Bridge incorporates the exact same Digital Lens™ technology found in the PWT – without the input to the Lens being from a connected source. Instead, the input to the internal Lens of the Bridge is over a network: addressable through an Ethernet connection. Music stored on a hard drive or even an Internet radio service are all accessible via this network Bridge.

Once installed, the Bridge will be accessed as another input.

There will be no quality or performance issues on the Bridge for the same reason as the PWT: the built in Digital Lens and output asynchronous clocks of both devices ensure bit-perfect performance.

The Bridge slips right into the slot on the back of the PWD and can be added in less than 30 seconds by the owner. Simply remove the rear cover plate, insert the Bridge and you are done.

The front panel touch screen software will be updated at the same time as the Bridge installation allowing full access to music stored on a Network Attached Storage Device (NAS hard drive).

The Bridge is currently available from any authorized PS Audio dealer, distributor or integrator.

Introduction to a Network Audio System

In any digital audio system there are three central requirements:

1. A place – storage – for the digital audio data
2. A player
3. A controller

In the original digital audio system (a CD player), the source data was stored on an optical disc called a CD, the player (an optical disc reader and a DAC) were built into the CD player, and the control functions were handled with either the player's front panel or a hand-held remote control.

In a computer-based digital audio system, a hard drive or flash memory takes the place of the CD. Reading the stored audio information requires a special program to interpret the files as an audio signal. Often this program resides on the computer, but can also live in a device attached to the computer via a USB or Firewire cable. Control is usually handled through the computer's video screen, a keyboard and a mouse.

In a network digital audio system there are a many more options for storage, including (but not limited to) a computer, an external drive, and even the Internet itself. The player (or players) can be connected to the audio source throughout the home

and controller options may range from a computer, to remote devices such as webpages, wireless handheld touch screens, and smart phones.

The network audio approach offers the best choice for delivering music throughout the home. Using the PerfectWave DAC and Bridge ensures there are no limitations to quality, performance, format, or resolution of the recorded audio.

Let's take a closer look at the basic network audio system requirements for connecting your PS Audio Bridge to music.

The PerfectWave Network

In the PS Audio PerfectWave Network Audio system there are four central requirements:

1. A Network to stream the media between the source and the player (based on a router)
2. A Controller (typically an Apple iDevice like the iPod, iPad, or iPhone running PS Audio's tagNplay app available from the iTunes app store)
3. A place – storage – for the digital audio data (computer, NAS)
4. A player (this is the PWD and Bridge)

In the PS PerfectWave system, the piece of equipment that ties all four of the above-required components together is the home network router. Here is what a typical system looks like.

The PS Audio network based high-resolution audio system has its roots in something called UPnP or Universal Plug and Play. UPnP is really nothing more than a way for network equipment to talk to one another. The beauty of UPnP is everything is enabled with no setup.





PS AUDIO

Network Audio Playback

Owner's Reference
Perfect Wave DAC

Building the Network

You'll need a Network for all the data to communicate back and forth. This is the central nervous system of the Bridge. The Network is used to transfer data from storage to the Bridge and out to the Internet to get nice things like Album art.

If you plan on using an iDevice (iPhone, iPod, iPad) to control the system you'll need to have wireless access on the Network.

In order to display album artwork and provide detailed artist information a connection to the Internet is required.

Understanding the Controller

The controller communicates via the network to discover available Servers and Players. The Controller accesses the available music on the Server and enables the user to play the music through a player.

In the PerfectWave System the Bridge operates on DLNA and UPnP standards. This is an open standard and allows the Bridge to be controlled by any DLNA/UPnP Controller. PS Audio suggest the tagNplay controller application for use with the Bridge.

tagNplay

tagNplay is a DLNA/UPnP application that has been developed by PS Audio for Apple iDevices to provide powerful, yet simple and fun use, interface between the Bridge and their network content. The tagNplay application is available through psaudio.com or from iTunes.

Preparing the iDevice

If you use an iDevice as a controller, make sure the iDevice can talk to the wireless router. There may be a password the router wants before it can let the iDevice talk to the router. Make sure this is in the iDevice so whenever the iDevice gets into range of the router it 'talks' to the router. Once the router password is set into the iDevice you don't have to enter the password every time you start your music session, but you do have to set it up for the first time. You may have to manually go to the 'settings' button on the iDevice to tell it to select the router that has the Bridge and your server on it. If you have been using another wireless network you may need to go into the settings on your iDevice and tell it to forget the old network.

Install tagNplay

Now that the iDevice is working on the same Network as the Bridge we can install 'tagNplay' on the iDevice. This can be done by accessing the App store via the iDevice or through iTunes.

Understanding the Server

A network audio system has the advantage of offering a big choice: do you want a computer involved or not? It is certainly possible to eliminate the computer entirely in a network audio

setup like PS Audio's PerfectWave system now, or anytime in the future.

The first thing you need to think about when considering the Server options is where you're going to store your music: inside or outside your computer or even if a computer is involved. Storing inside your computer is a reasonable option for small to medium music collections (2800 albums or less) as long as you make sure you use some type of external portable storage to back up the library and as long as you don't mind having the computer on all the time.

Storing outside your computer with a portable storage device is best for medium to large libraries (2800 albums or more), as it can easily be backed up and allows for unlimited growth of the library and doesn't require a computer.

Accessing your stored media, placing it on the home network and making sure the media is delivered to the chosen player is the job of the Server software. This software needs to be installed on your computer, NAS or DLNA/UPnP router and operates in the background.

There are multiple options for server software available, among them PS Audio's own (upcoming) tagNPlay Server, available for MAC, Windows and Linux near the end of 2010. In the meantime, we must choose server software and install it on our computer if we are going to be able to play music over our network. The exception to this is if you have a DLNA/UPnP capable NAS or UPnP router to access your music.

[The server must be a DLNA/UPnP based server.](#)

The UPnP based server

The PS Audio network based high-resolution audio system has its roots in something called UPnP or Universal Plug and Play. UPnP is really nothing more than a way for network equipment to talk to one another. The beauty of UPnP is everything is enabled with no setup.

Plug a component onto the network and it announces itself to any other UPnP device and the two do what's known as a handshake and they are instantly communicating together.

The heart of this UPnP based system is the UPnP server. Once installed on your computer, NAS or router, it will find all your media, find the PS Audio Bridge, and make itself, as well as all your media, available to the PS controller on the iPod/iPhone/iPad.

Until the PS Audio tagNPlay server is ready for downloading, we recommend you install Twonky if you are using your computer to store the music. Twonky is available for both MAC and Windows, is very efficient, and works well for the PS PerfectWave system. Its downside is a crude user interface, but once you install Twonky on your computer, setup is easy and it just works.



PS AUDIO

Network Audio Playback

Owner's Reference
Perfect Wave DAC

Twonky Server is available for \$19.95 and available for download here: <http://www.twonky.com/products/twonkyserver/>

There are other UPnP based servers available such as Asset <http://www.dbpoweramp.com/asset-whs-manual.html> and James River, but these are only available for Windows. Windows 7 Media Center is also a UPnP based software program, but it is more difficult to set up and not recommended.

Until PS Audio's tagNPlay Server is released, we recommend Twonky for its universal appeal and ease of setup. The Twonky Server should be set to always start up with your computer so it is always running in the background when your computer is on.

Setting up the Server

No matter what type of DLNA/UPnP Server you use, you will need to turn on the DLNA/UPnP sharing and point the software to the folders where you will store your music.

The Server must be connected to the same Network as the Controller and Bridge. Although the connection can be wireless or hardwired, it is highly recommended to use a hardwired connection whenever possible. For best results it is suggested that the Server and Bridge be hardwired to the same Router or Network Switch.

If you use the iDevice, power up the Server, router, and iDevice then launch tagNplay (available on the iTunes app store). At the bottom of the screen on your iDevice you'll see a series of tabs ('music,' 'radio,' 'queue,' 'library,' and 'player') Touch 'library.' If all is working right, you'll see the name of the Server that's storing your music. Flip through the list until that device is highlighted, then press 'Done.' tagNplay should then lock onto this server.

At the bottom of the screen, select the 'music' tab. All your music should now be seen by tagNplay. Go through the menus, say pick 'albums' and then a desired album you want to hear, then a track. Everything up to this point can be accomplished before you install the Bridge so you can become familiar with launching tagNplay and getting into the music library. If you choose to play any music files they will stream and playback via your iDevice.

Supported Formats

There are three ways to store your music on your computer's hard drive: raw, lossless or lossy. The PerfectWave system handles sample rates up to 192kHz and bit depth of 32 bits for any format. We recommend lossless for storing your library. The PerfectWave is designed to produce bit perfect performance for any of the three lossless formats available.

Raw storage formats available for the PerfectWave system are:
Waveform Audio File Format (WAV)

Audio Interchange Format (AIFF)

Lossless bit-perfect storage formats available for the Bridge include:

Apple Lossless (ALAC)

Free Lossless Audio Codec (FLAC)

Windows Media Audio (WMA) (not available with the first release of the Bridge. Will be implemented in future releases of firmware)

The PS Audio PerfectWave system also supports a number of lossy formats as well, such as MP3. These do not provide bit perfect results and are not recommended for music storage. Storage is cheap and there's no reason to degrade the performance of your library by storing in a lossy format.

Installing the Bridge

Now that we have built the foundation for your high resolution Audio Network FOLLOW THE INSTRUCTIONS included with the Bridge to install it properly. An instructional video is also available at <http://www.youtube.com/watch?v=mKLq8aFHeKk>.

Prior to touching the Bridge please be sure the grounding wrist strap is connected to the center prong of the power connector on the rear of the Perfect Wave DAC (PWD) and worn around the wrist.

Install the Bridge and SD card per the instructions and then makes sure the PWD loads the new firmware and boots fully.

Once the system is booted up, connect a hardwire Ethernet cable from the Bridge's Ethernet connector directly to the router from step 1.

Test by Playing Tracks

IF YOU HAVE iDEVICE/tagNplay: go to the main screen and select the 'player' tab. You should see "PWD DAC xxxxxx" as one of the 'player' options. Select it, and press 'done.' Go to your music menu, select an album, then a track. The pop-up screen will ask you what you want to do. Select "Play now." The music should start to play. Adjust volume level on the Bridge (after a reboot it will default to level '25' so you may have raise the volume, either with the remote, the front panel display, or using the volume slider on tagNplay on the 'playing now' screen.

You should be hearing music at this point.

IF YOU DON'T HAVE AN iDEVICE; You may still use the Bridge to playback, but you will need to use the built in controller of your UPnP Server software. Please see the documentation for your Server software for setup and control information. As mentioned above, make sure the volume on the Bridge (front panel of the PWD or using the remote) is set to the proper level.



PS AUDIO

Controlling PWD & Bridge with tagNplay

Owner's Reference
Perfect Wave DAC

Introduction to tagNplay

tagNplay is a specially designed application for use on Apple's iPhone, iPod Touch and iPad (iDevices) to wirelessly control the playback of digital audio files from the network through the PerfectWave Network Bridge. The tagNplay application is the controller link between the Bridge and the DLNA/UPnP Server that stores the digital audio files. tagNplay has been designed to be simple and more importantly FUN to use.

Below is an illustration how the tagNplay connects in the PerfectWave system.



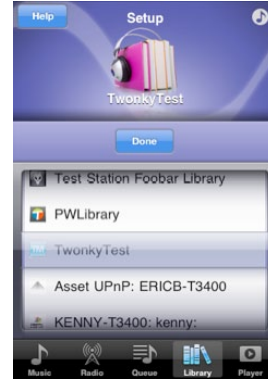
Although tagNplay was designed for use with the PS Perfect-Wave system it works on DLNA and UPnP standards and as a result is capable of controlling virtually any DLNA/UPnP compatible audio player.

Using tagNplay

In order to use tagNplay you must be connected wirelessly to the same network as your Server and PS Audio Bridge via a wireless connection. Once connected simply open the application and enjoy.

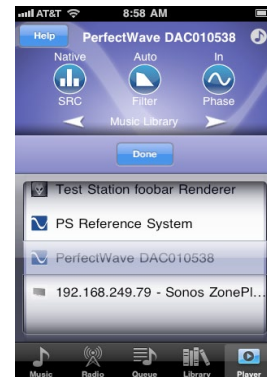
Library Selection

Within the tagNplay application touching the Library icon will launch the Library Setup page. The page will list all of the available DLNA/UPnP Servers on the network. Scroll through the list to find the desired server and touch 'Done' when complete.



Player Selection

Within the tagNplay application touch the 'Player' icon to view and select the desired Player. Scroll through the list to highlight the desired Player. When selecting the PerfectWave DAC you may also change the input, sample rate, filter and phase settings by touching the corresponding icons. When satisfied with the displayed selections touch 'Done'.



Server Navigation

Selecting the Music icon will allow you to browse the selected Server. As you begin to browse you will find that you may drill down, similar to browsing folders on your computer. When you reach the track level you may select a single track or the entire "folder"

The navigation within the Music menu is dependant upon the Server Software running on your computer, NAS or Router. Most Server Software does not allow for much, if any, customization of this music navigation. The exception to this is the forthcoming PS Audio tagNplay server software.

To help illustrate the navigation of the music section and track selection below is a guide for selecting a desired track from an Artist.

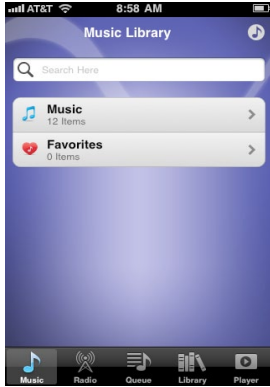
Starting from the Music Library opening screen of the Server:



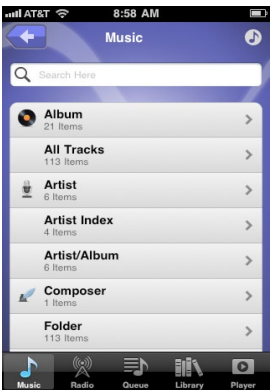
PS AUDIO

Controlling PWD & Bridge with tagNplay

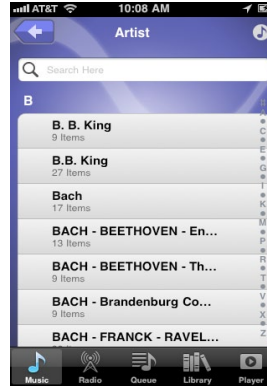
Owner's Reference
Perfect Wave DAC



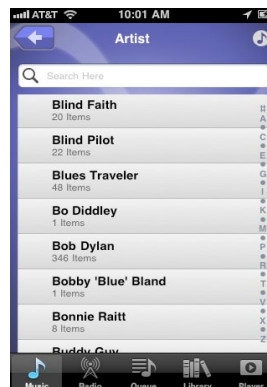
In the case of this server we now select Music. Once in the Music folder we can see multiple options for deeper navigation:



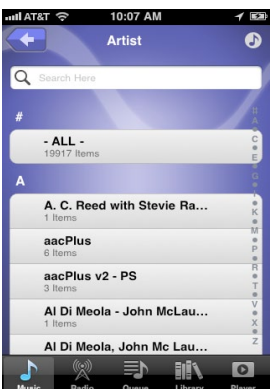
At this point we select Artist since we know the name of the artist. After selecting Artist we are presented with a list of Artists from the Server.



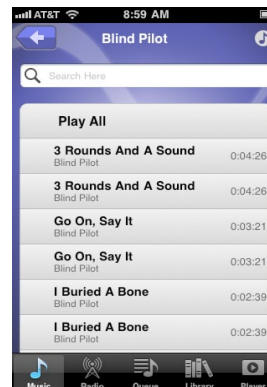
Artist 'Blind Pilot.'



After drilling down to the Artist we are presented with a list of tracks by the Artist.



We can now use the quick navigation letters at the far right of the screen to quickly scroll to the first letter of the Artist name.



From this point you may select Play All or any track individually.

Then slide up and down to find the



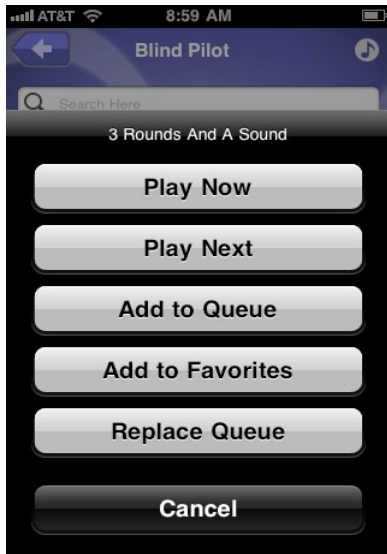
PS AUDIO

Controlling PWD & Bridge with tagNplay

Owner's Reference
Perfect Wave DAC

Track Selection

Selecting any track will give you several options:



Play Now: Inserts the track(s) into your Queue at the current playing track's position and begin playing the new track(s) immediately.

Play Next: Inserts the track(s) into your Queue immediately following the track that is currently playing. The newly inserted track(s) will begin playing immediately following the playback of the current track

Add to Queue: Adds the track(s) to the end of your Queue.

Add to Favorites: Adds the track(s) to the Favorites folder.

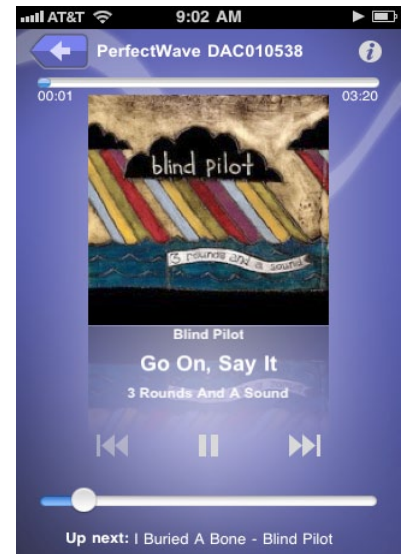
Replace Queue: Removes all tracks in the Queue and adds the new track(s) and begins playback.

Shuffle Now: Inserts the selected tracks into the Queue and begins playback in a random playback order. Shuffle Now is only available when 'Play All' has been selected.

Pressing the Music icon at any time will return you to the beginning page of navigation for your server.

Now Playing Screen

When playback begins track position, cover art, transport control, volume control, and details of the next track in the queue are all displayed as part of the 'Now Playing Screen'.



Track Position

The playback position of the file that is currently playing is illustrated in the form of a status bar. The time into the track is displayed on the left hand side of the status bar, while the remaining time is displayed on the right. Beginning with tagNplay version 1.1.0, you can scroll forward or backwards to any location with a track using the status bar. Simply slide your finger and go wherever in the track you wish.

Transport Controls

Skip Back: Allows you to replay the current track with a single press, or go farther back in the Queue with multiple presses.

Play/Pause: Allows you to pause or resume playback of the current track

Skip Forward: Allows you to navigate forward through the Queue

Volume Control

The current volume is displayed in the form of a status bar. By sliding the current position indicator you may adjust the volume higher by sliding to the right or lower by sliding the bar to the left.



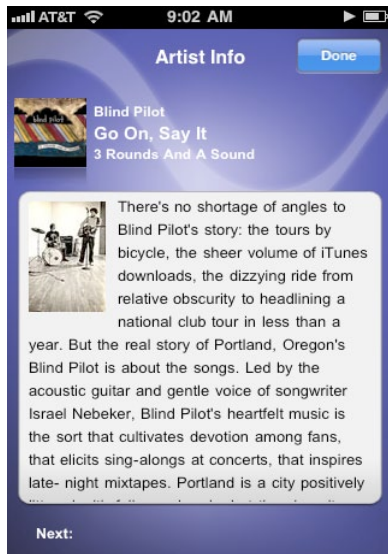
PS AUDIO

Controlling PWD & Bridge with tagNplay

Owner's Reference
Perfect Wave DAC

Artist Info

One of the benefits of your connection to the PS Audio Global-net site is the automatic delivery of cover art and detailed artist Metadata. At anytime during playback detailed artist information can be accessed by pressing the 'Musical Note' in the upper right hand corner of the 'Now Playing Screen'.



Here you will find artist bios and further engage yourself in the music experience.

Playing Internet Radio

Internet radio is a great way to discover and enjoy music that may not already be a part of your music collection. To enjoy Internet radio begin by pressing the 'Radio' button at the bottom navigation bar.



From 'Radio' you may select from various sources for Internet radio.

eTracks: Enjoy our extensive music library with our exclusive eTracks radio station. We've taken the utmost care with the music in our library and hand selected tracks to play for your listening pleasure. eTracks features various formats including Jazz, Classical and Rock and Pop throughout the day.

Public Radio: Here you will find public radio stations sorted by the states in which they broadcast.

Staff Picks: Walk around PS Audio and you'll hear music streaming from most desks, cubicles and offices. We've listed our favorite stations for you to enjoy as well.

Favorites Folder: Place your favorite radio stations in this folder. Choose this from the playing menu when it pops up to select a station. To delete from within the Favorites folder, simply swipe your finger to the right to access the delete function.

Internet Radio: Every Internet based radio station we could find has been listed here.



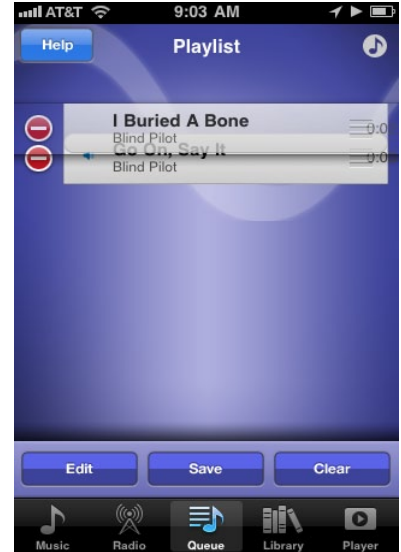
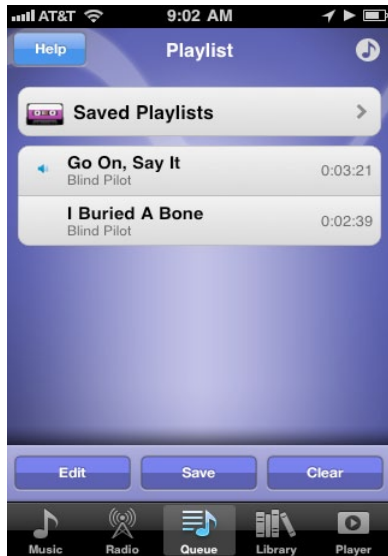
PS AUDIO

Controlling PWD & Bridge with tagNplay

Owner's Reference
Perfect Wave DAC

Queue Management

Touch the 'Queue' at the bottom navigation bar and you will find a list of what you are currently playing. From Queue page you may edit the Queue, save the Queue as a Playlist or clear the Queue. Saved Playlists are also available and can be accessed by touching the 'Saved Playlists' button (selecting, editing and playing Saved Playlists is covered in the Accessing Saved Playlists section of this user guide).

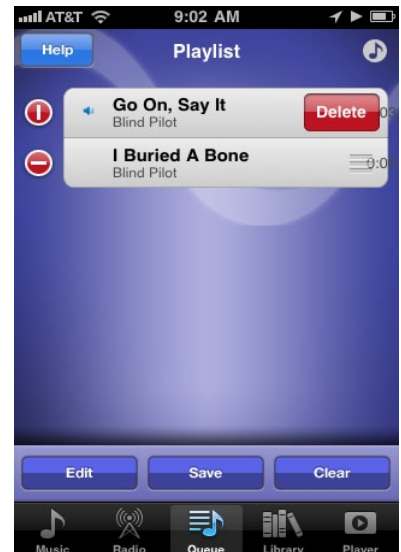


To remove a track from the Queue you first unlock the track by touching the vertical line to the left of the track. When the line is horizontal the track is unlocked and can be deleted by touching the delete button.

Editing the Queue

Touching the 'Edit' button will allow you to rearrange the Queue and or remove tracks.

To rearrange the Queue touch and briefly hold the 3 grip lines of the track you would like to move. While touching the grip lines move the track to the desired positioning the Queue.





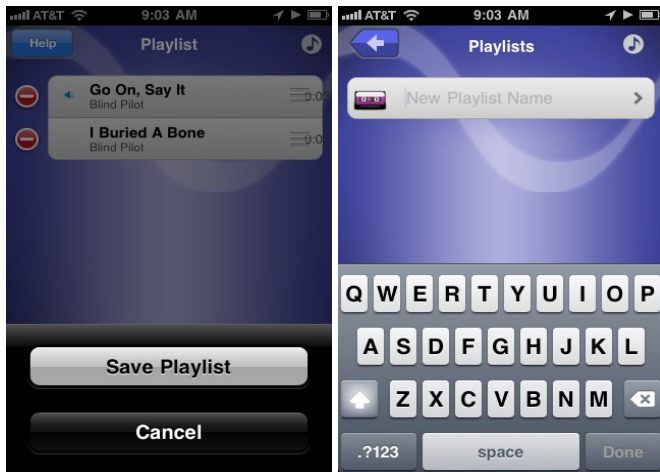
PS AUDIO

Controlling PWD & Bridge with tagNplay

Owner's Reference
Perfect Wave DAC

Saving the Queue

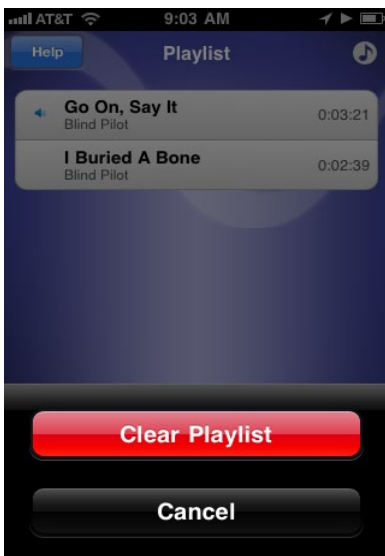
Building a great Queue fun. If you would like to save the Queue you have built simple touch the 'Save' button.



Confirm that you would like to save the playlist and then name the playlist.

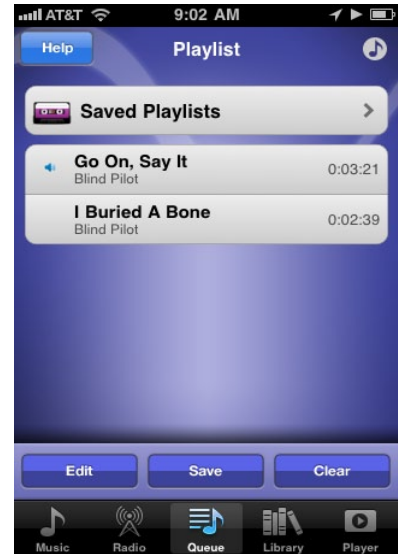
Clear the Queue

If you would like to clear the Queue touch the 'Clear' button.

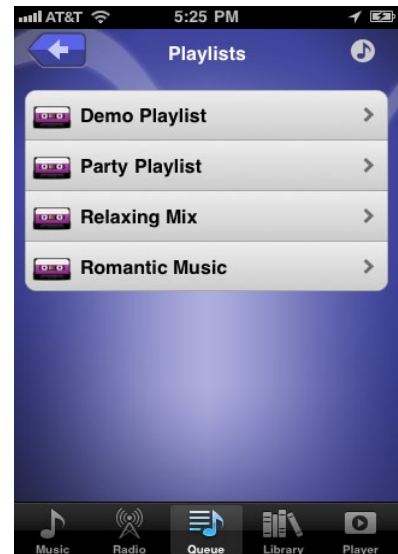


Accessing Saved Playlists

Saved Playlists can be accessed through the Queue Screen.



Playlists are listed in Alphabetical order. From here touch the desired Playlist.



Once selected you can choose to add the Playlist to the Queue by selecting 'Play All'. Like any other navigation screen you may also select a specific track to play by touching the desired track. Editing can be performed by touching the 'Edit' button and making the desired changes as outlined in Queue Management above.



PS AUDIO

Troubleshooting

Owner's Reference
Perfect Wave DAC

USB – PWD not recognized, or no sound via USB

If you are unable to obtain sound via USB on a Windows based device it is most likely the result of a partial or incorrect driver installation. You may have also experienced a pop-up window asking you to provide the correct Driver. In any of these cases the remedy is quite simple. We will removed the device and force Windows to reinstall the Device. On a Windows based machine right click on MY COMPUTER and select PROPERTIES. This will populate a window titled "System Properties". From "System Properties" selects "Hardware" -> "Device Manager". Once in "Device Manager" look for "Sound, Video and game controllers". If the PWD is correctly installed you will see a Device labels "PS Audio 24/96 USB AudioLink" if you do not see this instead you will see a warning symbol next to a device with an incorrect or missing Driver. Right click on the symbol and select "Uninstall". Once complete you can unplug the USB connection for 10 seconds and then reconnect. The Driver should now install correctly.



PS AUDIO

Warranty

Owner's Reference
Perfect Wave DAC

Terms and Conditions | PS Audio provides a 90 day manufacturer's warranty on all new PS Audio components. PS Audio offers an optional extended 3 year warranty in exchange for completing a valid product registration. This optional extended warranty is available for new products, when that product is registered through PS Audio with the serial number and name of the authorized dealer or distributor that sold it to you. This optional extended 3 year warranty is available only under the above terms and conditions. The extended warranty is optional and sold worldwide in exchange for your registration information. Failure to register your product will preclude PS Audio from selling you its extended warranty. Products can be registered either on the web at www.psaudio.com, via the mail, or by calling PS Audio directly with the information.

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.

1. 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.
2. 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.
3. 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.

Transfer of Warranty | This Warranty is for the benefit of the original purchaser of the covered product and may be transferred to a subsequent purchaser of the product.

Extended warranty policies:

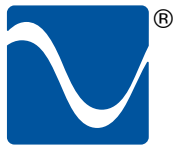
1. By registering this product, via mail or internet, within 90 days of purchase, the warranty period will be extended to 3-years from the date of purchase.
2. To qualify for the extended warranty the Product must be purchased through an authorized PS Audio dealer or distributor.
3. All of the policies of the extended warranty are the same as the limited warranty.

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 United States | 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.



PS AUDIO

Service

Owner's Reference
Perfect Wave DAC

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:

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

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 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 United States and require service you must contact your country's dealer or distributor for instructions. PS Audio warrants 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

