



PS AUDIO

# Owner's Reference

Owner's Reference PerfectWave DAC

## Instructions for use



## PerfectWave DAC

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15-054-01-1-DOM-B  
Introduction i



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## Important Safety Instructions



Read these instructions  
Heed all warnings  
Follow all instructions



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

Clean only with a dry cloth. For the Piano Finish Top refer to the instructions on page 12 of the Quick Start Guide.

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

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

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

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

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

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

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

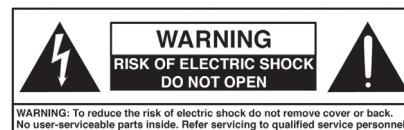
This product is manufactured in the United States of America. PS Audio® is a registered trademark of PS Audio International Inc., and is restricted for use by PS Audio International, Inc., its subsidiaries, and authorized agents.



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



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





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# Introduction

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## Welcome

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 System

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.

The PWD you have just purchased represents one of the best sounding bit perfect and fully asynchronous digital to analog converters ever made. Every component and system in the PWD has been listened to, labored over and the results are rather spectacular. We trust you'll enjoy music through this beautiful audio product we are proud to place our name on.



# Getting Started

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## Installation Considerations

### 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.

### USING 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: The Network Bridge, XLR (AES/EBU), RCA and TOSLINK (S/PDIF), USB as well as I<sup>S</sup>. All inputs, including USB, are capable of accepting high-definition digital audio signals. The TOSLINK and USB inputs are capable of 96kHz, 24 bit audio and all other inputs are capable of handling up to 192kHz 32 bit data.

The PWD uses an HDMI cable to transfer I<sup>S</sup> 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 I<sup>S</sup> format incorporated does not comply with the HDMI standards. The HDMI connector and cable were chosen to carry the I<sup>S</sup> 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 I<sup>S</sup> 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.



## Unpacking and Connections

- 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](http://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.

## Connecting the PWD

### 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.

1. PS Audio Network Bridge. This optional slide in card connects your PWD to your home network.
2. I<sup>2</sup>S. (Pronounced "I squared S") This is the next best performance option. This connection method will only work with a similarly equipped I<sup>2</sup>S 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.
3. USB. Universal Serial Bus. This is used when connecting a computer. The computer will automatically recognize the PWD if it is a Mac. If you have a Windows computer you will need to download and install the driver available through [www.psaudio.com](http://www.psaudio.com) This USB input is capable of 96kHz 24 bit data.
4. XLR. This is a balanced 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.
5. RCA. Coaxial single ended S/PDIF encoded input. This input is capable of 192kHz 32 bit data.
6. Optical. TOSLINK optically connected S/PDIF encoded input. This input is capable of 96kHz 24 bit data.

Whatever input you use, make sure the connecting cable is of the highest quality and shortest distance.



## CONNECTING TO A DIGITAL SOURCE

There are four methods of connecting the digital inputs of the PWD: Through the home network, SPDIF, USB and I<sup>2</sup>S. The home network option is the best sounding option and requires the addition of the optional PS Audio Network Bridge be installed. 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 direct-to-computer connection and the PWD is capable of processing up to 96kHz 24 bit USB data. Connect the PWD to your computer using a well regarded USB cable and make sure to set the output of your computer to the higher 96kHz 24 bit standard. Once connected, your computer should automatically install the PWD as a new device. 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.

I<sup>2</sup>S is available through several manufacturers as well PS Audio equipment such as the PerfectWave Transport. I<sup>2</sup>S is a parallel data connection with separate clocks and data and transferred via an HDMI cable. I<sup>2</sup>S 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 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



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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.

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.



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

### Ready Mode

The front panel PS logo button, located on the far left hand corner of the unit, is the Ready/Operation Mode control for the PWD. This control has two modes: Ready Mode and Operational Mode. Ready Mode is designed to keep power on to critical internal circuitry including power supply capacitors, thermally sensitive semiconductors and integrated circuits.

Press this front panel button to activate the Ready Mode or to place the PWD in Operational Mode. When pressed to activate the Ready Mode, the display as well as the outputs are turned off, but all the unit's critical internal circuitry remains active.

If you wish to conserve energy consumed by the PerfectWave DAC it will be necessary to use the rear panel power switch. Using this rear panel switch will remove power from critical components and in order to gain maximum performance levels you will need to turn the PerfectWave DAC's power on at least 3 hours before use.

### 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 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 I<sup>S</sup> 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 settings 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 I<sup>S</sup>2 and 192kHz for RCA, the SRC will automatically switch to that setting when you change inputs.

The PWD offers a wide assortment of digital filters. Digital filters are necessary and used in



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## Filter

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.

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

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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

1. 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.
2. Filter 1 MP APOD. Minimum phase Apodising filter. Low pre-ringing, minimal group delay, minimized post ringing, good phase vs. frequency, sharper filter cutoff.
3. Filter 2 MP SOFT. Minimum phase soft knee filter. Low pre-ringing, minimal group delay, minimized post ringing, good phase vs. frequency, soft cutoff.
4. Filter 3 LP APOD. Linear phase Apodising filter. No group delay, perfect phase vs. frequency, minimal post ringing, some pre-ringing, sharper filter cutoff.
5. 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.
6. 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.

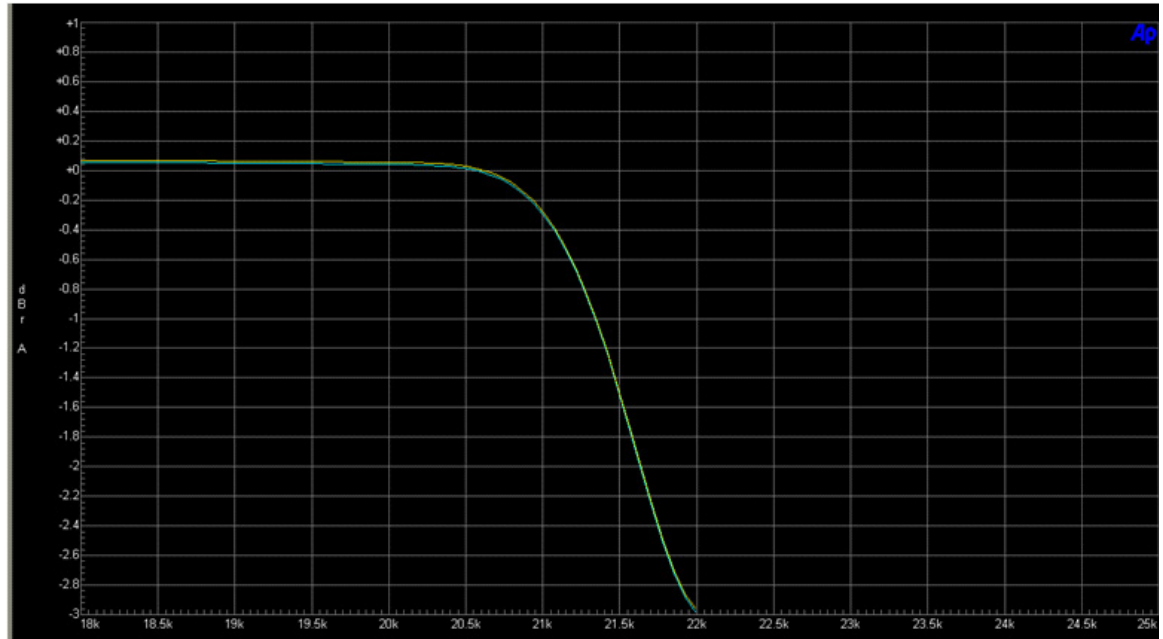


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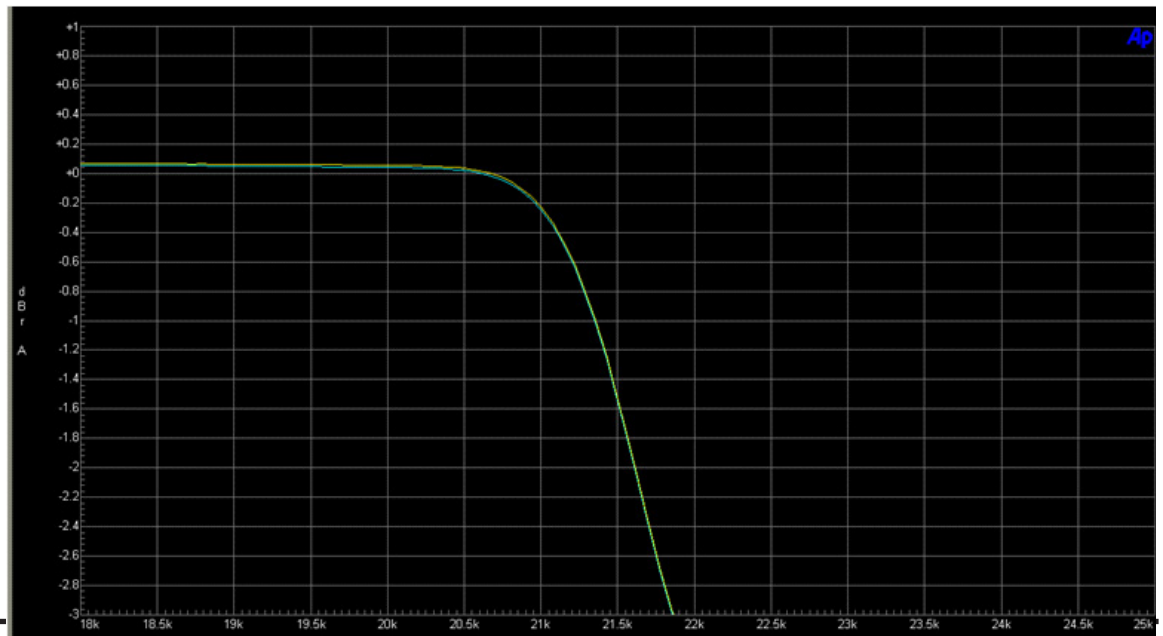
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Filter 1 MP Apodising



Filter 2 MP Soft



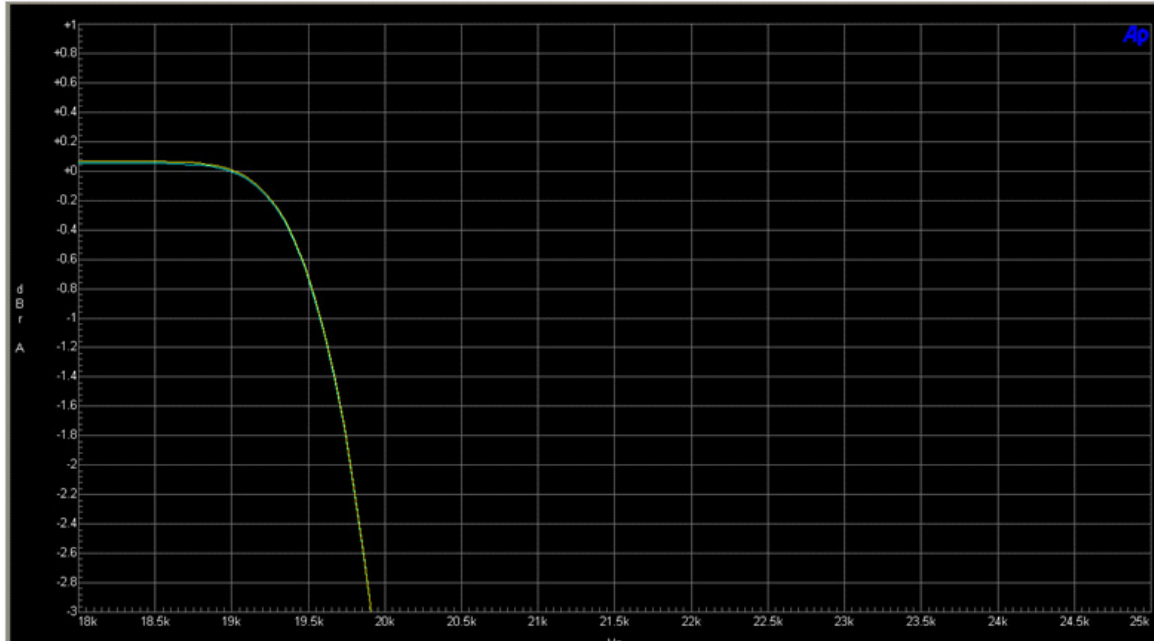


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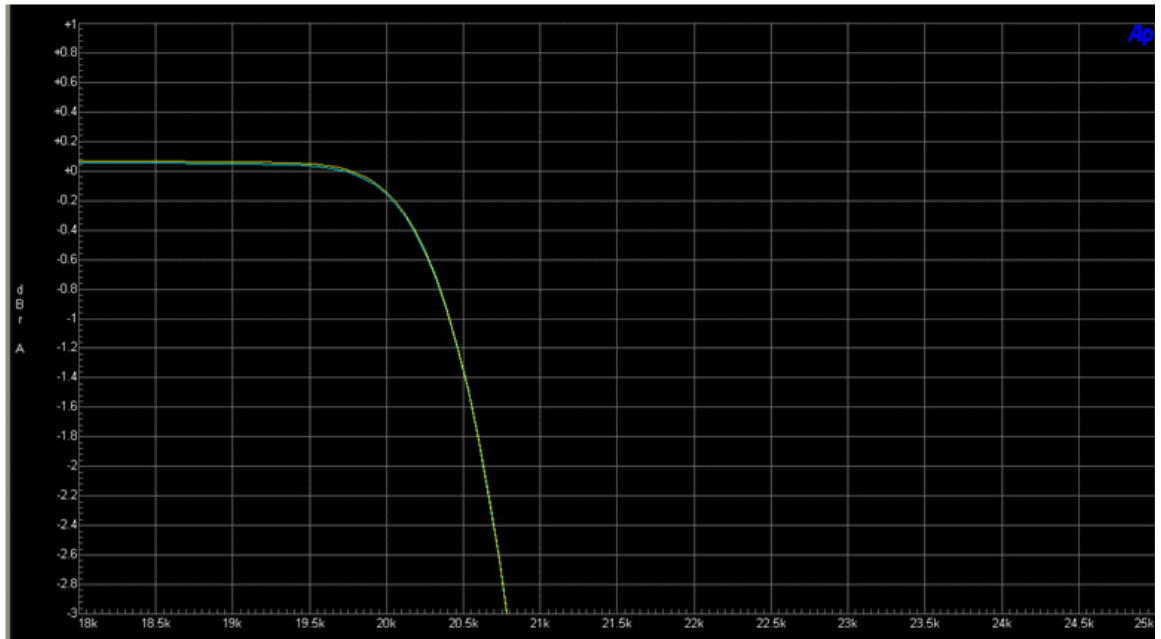
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Filter 3 LP Apod

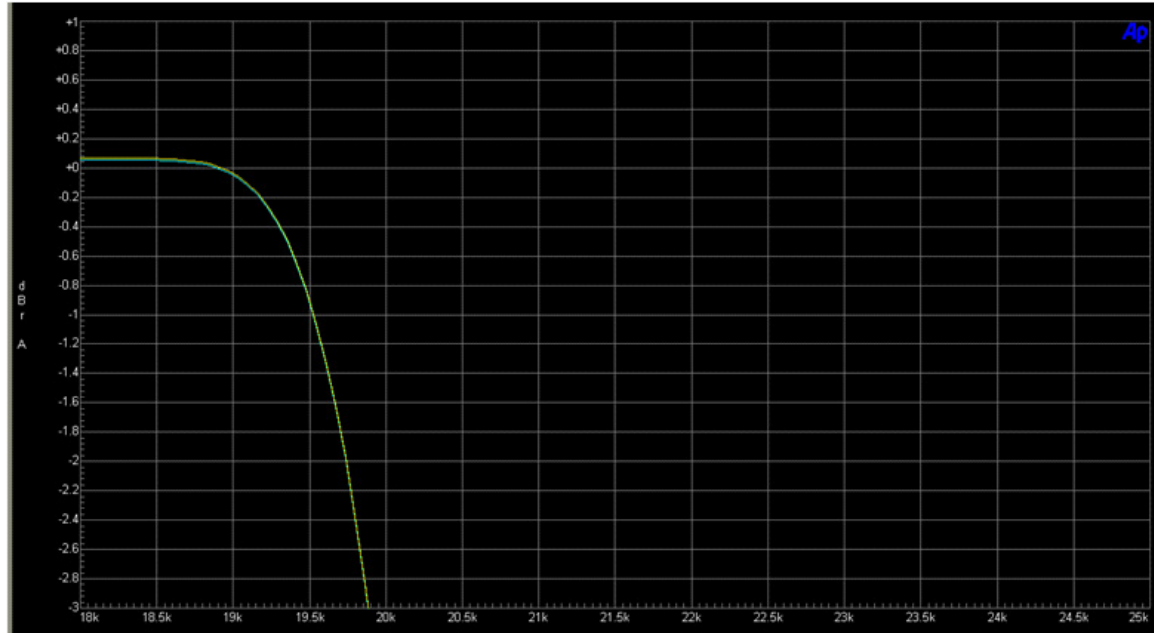


Filter 4 LP Soft





Filter 5 MP 1/2B



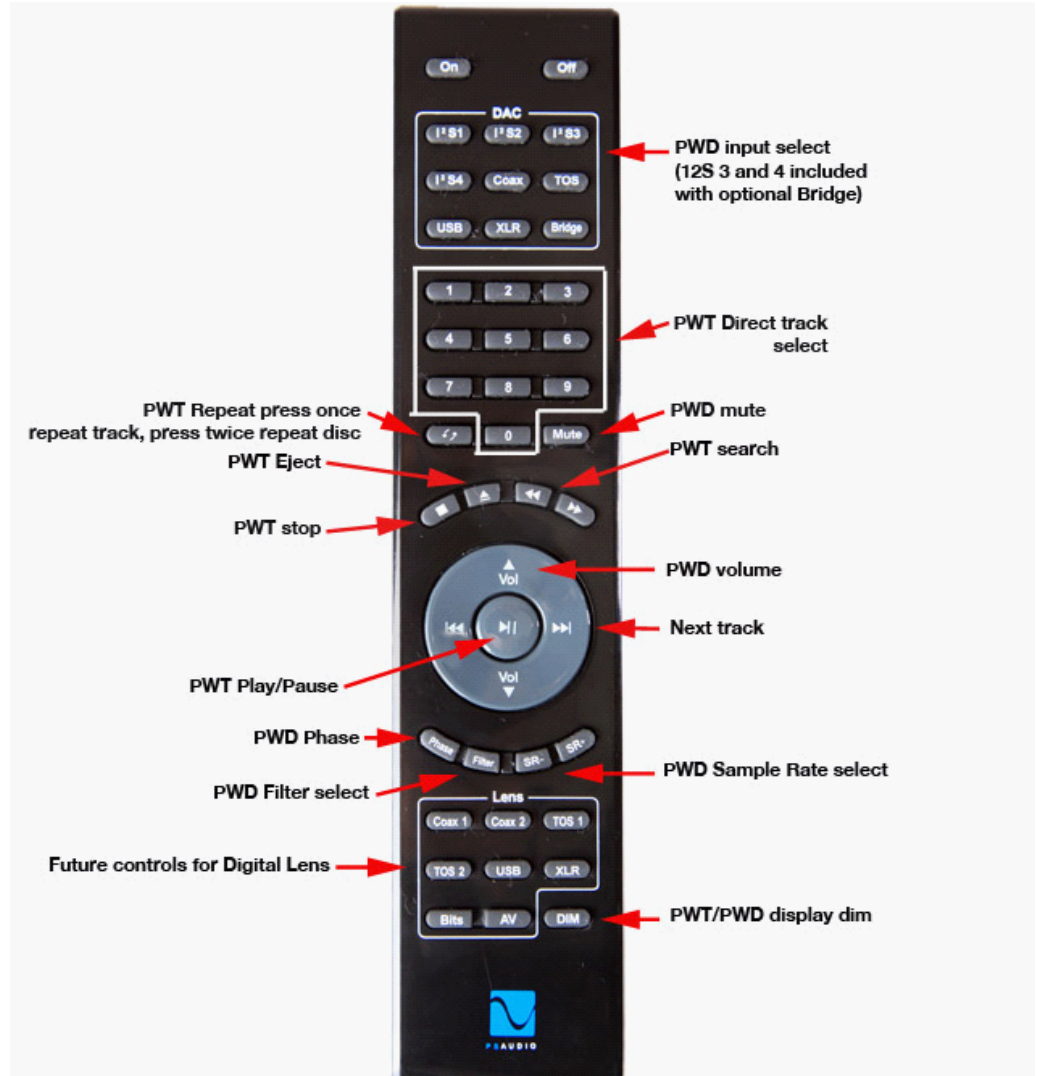
## Phase (Polarity)

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.



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## 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."

## 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 will slip 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.

## Checking the Version Number of the Firmware

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). 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.

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

## Cleaning

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.





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# Troubleshooting

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## 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 remove 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" select "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 label "PS Audio 24/96 USB AudioLink" if you do not see this, 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.



# Warranty

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## 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](http://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.

- a. The product must be packaged and returned to PS Audio or an authorized PS Audio repair center by the customer at his or her sole expense in the original packing material. PS Audio will pay return freight of its choice for original purchasers.
- b. Return Authorization Number (RA Number) is required before any product is returned to our factory for any reason. This number must be visible on the exterior of the shipping container for PS Audio to accept the return. Units shipped to us without a Return Authorization Number or without a visible RA Number on the exterior of the shipping container will be returned to the sender, freight collect.
- c. RETURNED PRODUCT MUST BE ACCOMPANIED BY A WRITTEN DESCRIPTION OF THE DEFECT.

## Remedy

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

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

## 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](mailto:customerservice@psaudio.com); Voice 720-406-8946; FAX: 720-406-8967.

## Outside the US

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

If you require service in North America

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

Obtain an RA number

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

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

To contact the PS Audio Service Department:

Contact information

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

If you are in the United States

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

1. Obtain a Return Authorization Number (R/A number) and shipping address from the PS Audio Service Department.
2. Insure and accept all liability for loss or damage to the product during shipment to the PS Audio factory and ensure all freight (shipping) charges are prepaid.

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

Use original packing

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

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

If you are outside the US

If you are outside the United States and require service you must contact your country's dealer or distributor for instructions. PS Audio 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](mailto: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





