



Owner's Reference

Owner's Reference NuWave DAC

Instructions for Use



NuWave DAC

Important Safety Instructions



Read these instructions
Heed all warnings
Follow all instructions



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

Clean only with a dry cloth.

Do not 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. 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 fuses inside this product.

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.

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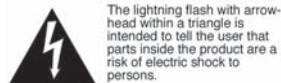
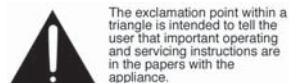




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PS AUDIO

Introduction

Owner's Reference NuWave DAC

Thank You

Thank you for your purchase of the NuWave DAC.

The NuWave DAC (NWD) is a state-of-the-art Digital to Analog Converter (DAC). It can accept any USB or S/PDIF digital input from a transport, CD player or computer and will output two channel stereo analog. The input can be selected from the front panel.

Native or 192kHz

The NWD features PS Audio's exclusive Native Mode which bypasses the internal sample rate converter for improved sonics reflecting the native sample rate of the source. The NWD can also handle 192kHz with improved sonics over the NWD's predecessor, the DLIII. The NWD features the PCM1798DB balanced D to A converter at its heart. This generation of 192kHz processors from Burr Brown features 24-Bit resolution and 123dB dynamic performance.

100% Discrete Class A Output

The NWD has a 100% discrete analog output stage and IV converter for a warm and rich sound. No IC op-amps are used in the signal path for the NWD.

High Current

The NWD features a large, high current analog power supply for great performance benefits.

Low Jitter Clocks

The NWD features the same low jitter fixed clocks found on the world famous PS Audio PerfectWave DAC for improved sonics and low jitter performance.

Asynchronous USB 192kHz 24 Bit Input

USB performance of the NWD is state of the art, featuring the XMOS based asynchronous 24 bit 192kHz USB input and its I2S output directly into the balanced D to A converter. The asynchronous driver used to route the USB signal to the NWD is the acclaimed Thysecon driver for both Mac and Windows operating systems.



Getting Started

Owner's Reference NuWave DAC

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- Location** Once your new NWD is unpacked, you'll need to find a convenient place to set it.
- There are several ways to mount the NWD: on a rack shelf, or on a shelf near your preamplifier, computer and or transport or CD player.
- Cautions** If your transport is located a long distance from the preamplifier, it is best to run a long digital interconnect and place the NWD close to the preamp. If you are connecting through USB there is a limit to the length of USB cable you can use, typically no greater than 5 meters for USB 2.0 but 2 to 3 meters is safer. The quality of the USB cable matters.
- Isolation** The NWD can benefit from aftermarket isolation devices such as a PS PowerBase, cones, spikes, or Sorbothane pads.
- Power Cables** Once you have chosen the location for the NWD you can use the supplied AC power cord to connect it to the AC wall receptacle or you can use an aftermarket power cord and receptacle.
- We strongly recommend the use of a PS Audio AC series cable. While the supplied power cable is adequate for the task it is not going to provide the best performance. Choosing a well regarded high-end power cable will make a significant performance improvement over the stock power cable.
- Conditioners** We recommend the use of power conditioning equipment, such as a PS Audio Power Plant, Dectet or PowerBase from PS. We do not recommend the use of simple AC filter power conditioners not made by PS Audio as most of these will "bleach" the sound and rob the music of life and dynamics. If you do not use PS Audio power conditioning equipment, choose wisely based on your experience. Power conditioners and the quality of the AC power delivered to the NWD can make a significant difference in sound quality.

Once you have decided on the location and chosen the appropriate power cables, you are ready to install the NWD.

Power Down First We would recommend that you power the entire system down before attempting to insert the NWD.

Insert the NWD into the system. Make sure the NWD is unplugged from the AC source or the master power switch on the rear panel is off.

Connect the Inputs There are two methods of connecting the digital inputs of the NWD: S/PDIF and USB. S/PDIF is a serial digital interface available as either an optical source (TOSLINK) or a coaxial source (RCA). This is the typical output you would find on a CD player, DVD player, or even a few computer products.

Any type of S/PDIF input is most likely going to be fine for the NWD. If you are connecting a computer for the digital input, you can use the optical output if it has one.



The preferred method of connection for a computer is USB. Connect the NWD to your computer using a well regarded high-end USB cable as short as possible. If you have a Mac the required driver is already installed. If you are using a Windows computer you will need to download and install the driver. See the Troubleshooting section for details.

“Bits Ain’t Bits” Please note that “digital bits aren’t just bits”. The quality of your digital interconnect cable, or USB cable can have a major impact on the sonic performance of your NWD. Make sure you invest some time and money in choosing the right digital interface cable.

Choose Your Input You can connect one or all three 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 button that selects the input. The USB input requires a driver which is already installed on a Mac computer but will need to be installed on a Windows computer as of this writing. The computer should recognize the new hardware once the proper driver has been installed. <http://updates.psaudio.com/MarkIIUSBdriver/USB-2.0Driver-V1.22.0.zip>

Autoscan Autoscan is the default mode for the input selector. This means that when you power the NWD up, it will automatically step to the first input with a digital signal and lock onto that input. You can tell when it is locked because the front panel locked light will be illuminated.

If you wish to override the autoscan feature, simply manually select the input you want and this will disable Autoscan. To re-enable, scroll to the last input and press and hold the input select button for 3 seconds. This will enable the Autoscan feature.

There are two types of audio outputs on the NWD, balanced (XLR) and unbalanced (RCA).

Balanced

To use balanced requires a preamp, integrated or Control Amp that has a balanced Input. These outputs are the preferred method of connection as a balanced XLR type of output allows the lowest noise connection between NWD and preamp, and allow owners to take advantage of the high common mode rejection characteristics of balanced. Be sure to use a high quality well shielded and well regarded interconnect for this critical link.

Unbalanced

RCA or unbalanced inputs will be the typical inputs as many preamplifiers, surround processors, receivers and integrated amplifiers have only this standard type of input. Be sure to use a high quality well shielded and well regarded interconnect for this critical link.

Plug either the RCA or the XLR outputs of the NWD into a line level input on the preamp, integrated, Control Amplifier or Receiver.

Select Native or Upsample

Select the sample rate you wish. There are two choices available on the front panel: Native and 192kHz. What comes out of your transport, CD player or computer can be 44.1kHz 16 bit up to 192kHz 24 bits in its native mode. The NWD will use the native sample rate as presented if you select Native mode. If you select the 192kHz mode, the digital music will be upsampled to a higher sample rate of 192kHz. Choose which mode you wish by listening and deciding which sounds best on your system. Our recommendation is Native Mode.



You can select between Native Mode and Upsample mode while the music is playing to compare the sound. Please note that in Native mode the native sample rate will always be used. In upsample mode, all sample rates will be upsampled to 192kHz 24 bit.

Use Only a High Quality Shielded Power Cable

Once everything has been connected, use a high quality AC cable to power the NWD. DACs 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 NWD, such as a PS Audio AC Series cable.



Questions And Answers

Owner's Reference NuWave DAC

Should the unit be on all the time?

The NWD is best left powered on at all times. The current draw is negligible and keeping it powered on will make sure the internal AC capacitors stay working properly and the sound quality is perfect.

There is no harm in leaving the unit on at all times as the lifespan of the NWD will be unaffected by leaving it on.

Are there any internal fuses?

There is an internal fuse in the NWD which we recommend leaving alone. There may be improvements to be gained by replacing the internal fuse with an aftermarket high-end fuse but this should only be attempted if you are comfortable working inside the unit. The components inside the NWD have lethal voltages when powered. Capacitors inside the NWD can retain an electrical charge after the unit has been powered down. Do not attempt to get inside the unit for any reason unless power has been removed and you are fully aware of the inherent dangers of doing so. Should the NWD cease to function, contact your dealer or PS Audio's service center for help.

Placement?

Placement of the NWD is not critical. Placement with respect to other equipment can be important. In general, place the NWD close to the transport, CD player or computer as possible. It is always preferable to have long digital interconnects and short audio interconnects if there is a distance problem unless you are connecting to a computer through USB. USB cables should be of the highest quality and the shortest distance possible for best result. Long USB cables may display signs of skipping, dropouts or static.

Isolation?

Isolation through the use of a PS PowerBase, spikes, cones or Sorbothane feet is recommended for the NWD if space and budget allows. Isolation of any piece of high-end stereo and theater equipment is always recommended wherever practical.

Do cables make a difference?

Yes, cables make a difference. It is important to use the best power cables, digital interconnects and audio interconnects when operating the NWD.

Power Switch

The master power switch is located on the rear panel of the NWD next to its AC inlet.

Which sample rate is best?

Native mode, which bypasses the internal SRC of the DAC, is the recommended listening mode. You will always enjoy music in the sample rate it was mastered in if you leave it in Native Mode. Upsampling to 192kHz can benefit some material on some systems. Listen carefully to your choices to see which one sounds more like live music to you. It is fine to select this while you are playing music.

How do I manually select an input?

You can easily select any of the three inputs manually or let the Autoscan feature of the NWD work for you. The default or factory setting is Autoscan and if you only have one input connected to the digital in, we recommend leaving the NWD in the default Autoscan mode. The Autoscan feature will look for which input has a digital signal and automatically go to that input and lock on it.

You can simply turn your CD player, computer or digital source on or off and Autoscan will figure it out for you and go to the proper input.

If you have multiple sources connected to the digital inputs and you wish to use the front panel input

selector manually, simply using it in this manner will disable the Autoscan mode.

What if I can't get a lock light?

If you do not get a "locked" light on the front panel, check and make sure your digital source and digital interconnects are working properly.

Do I need to install a software driver for the USB?

You do not need to install a driver for the USB connection if you have a Mac but it will be necessary if you have a Windows based machine. The Windows USB driver is available for download on the PS Audio website www.psaudio.com and go to our FAQ Knowledge Base section for the link or simply go to <http://updates.psaudio.com/MarkIIUSBdriver/USB-2.0Driver-V1.22.0.zip> and download. Unzip the file and then install the driver. Make sure the computer is booted properly and on then install the driver. Make sure the NWD is on and then connect a USB cable between the NWD and the computer which should indicate it recognizes a new device has been installed and should install the appropriate software drivers to operate it. You can then choose to play music to the PS Audio NuWave DAC. Detailed instructions are available in this manual's Troubleshooting section.

What voltages can the NWD run on?

The NWD is specific to your country's voltage. Do not use the NWD on a voltage higher than it is rated for. For instance, do not take a 120 volt rated NWD and attempt to use it in a 230 volt country. Failure to observe this cautionary note will void your warranty and may damage the DAC. If you need to operate the NWD at a voltage other than the voltage it was designed for, contact your dealer, distributor or the factory.





Troubleshooting

Owner's Reference NuWave DAC

No sound comes out of the system

If no sound comes out of the system with the NWD connected, there are several areas to check. Either you are not getting an audio signal into the preamplifier, or you don't have a good digital source feeding the NWD.

Check the input

First, check to make sure your preamp, integrated, receiver or Control Amplifier is switched to the same input the NWD is connected to. Test the connection and the cables to make sure. Keeping the input selected and using the same cable, connect this input to a known good source like a tuner or the direct analog output of a CD player. If that works, then it is most likely not a connection problem between the NWD and the preamp, integrated, receiver or Control Amplifier.

Try another source

Next step is to check and see if the digital input is properly connected. Look on the front panel of the NWD to see if the locked light is illuminated. If it is not, this is most likely the problem. You can troubleshoot this by making sure the NWD is on the proper input and that you have connected the input correctly. If this fails, try replacing the digital interconnect or try using another type. For instance, if you are using a coax connection, try using the CD player's optical output instead or try replacing the cable.

If you suspect a USB problem or need help installing the Windows driver

If you are using a USB connection, it is necessary for the computer to recognize the NWD as a connected device through a driver. If you are using a Mac the driver is already installed and if you're using a Windows computer you will need to install the driver (see below). If you have the driver installed and cannot play using USB, check in the computer's control panel under USB devices and see if the NWD is recognized (it will be called PerfectWave). If not, with both the NWD and your computer powered up, remove the USB cable from the computer and then re-insert it. Watch the computer monitor for an indication it has found the hardware.

If you need to install the driver

The new 192kHz asynchronous USB input on the NWD will require a driver to work.

If you are running on a Mac, this driver is already built in. Just plug the USB from the Mac into the NWD and you should be fine although you will have to go to System Preferences->Sound and select the PerfectWave device to play to it. The NWD uses the PerfectWave driver and thus the computer recognizes it as a PerfectWave device.

For Windows users, download this file to your desktop, then follow the instructions:

<http://updates.psaudio.com/MarkIIUSBdriver/USB-2.0Driver-V1.22.0.zip>

A couple things to consider here regarding this driver:

- This driver is specifically designed to work with your NWD.
- This driver is designed to work on all Windows XP, Vista and Windows 7 computers.
- If you have a Mac running OS X Snow Leopard 10.6.3 or later, your computer already has this driver built in, and you're good to go. 10.6.3 was released in March of 2010.

Please note that this walk-through is only for computers running Windows 7.

1) Download the PS Audio USB Audio 2.0 Driver file located at <http://updates.psaudio.com/MarkIIUSBDriver/USB-2.0Driver-V1.22.0.zip>

- Note that this driver will download as a zipped (compressed) folder that contains 15 individual files.

2) Once downloaded, unzip the folder. This is done by right-clicking the folder and selecting 'extract all' from the list of options.

- This will create a new folder containing the uncompressed files you will need.

3) Open the new folder you just created and double-click the file called 'Setup'. This will begin the installation process.

- There are two files named 'Setup'. The one that needs to be clicked has an icon that looks like a computer with a black screen. It is the only file with this appearance.

4) After a couple of minutes, you will be prompted to connect the device you want to install. At this time, connect your NWD to your computer. Shortly after, your USB driver installation will finish.

5) To complete the entire process and begin listening to music, click Start > Control Panel > Sound. Select the speaker icon that says 'PS Audio PerfectWave' as its description. Now click 'Set Default' and check 'Default Device'. Click OK. This driver was developed for the PerfectWave DAC and the USB input on the NWD is identical to the PerfectWave DAC and thus named "PerfectWave".

6) Next and while still in the Control Panel click on-> Speaker Properties so the window appears, click the Advanced tab and select the highest resolution you will be playing over the USB connection and click OK.

If you have hum or buzz

If you experience a hum through the speakers this can be caused by several things. The first is the source. If there is an excessive amount of buzz or noise from the loudspeaker, it may be caused by a ground loop, a light dimmer in the home, poor AC power, or any number of causes. The quickest way to determine where to start your search is to simply turn the preamplifier, integrated, receiver or Control Amplifier off, disconnect the audio cables between it and the NWD, and see if the hum goes away when you turn the preamplifier, integrated, receiver or Control Amplifier back on. If it does, it's most likely a ground loop or buzz from a dimmer.

Process of elimination

If this doesn't solve the problem, reconnect the NWD and follow these easy humbusting tips.

The easiest way to figure out where ground loop problems lie is by the process of elimination. You need to determine where the hum or buzz is coming from within your system.

If the hum/buzz goes away when you remove the inputs to the power amp, your next step will be to reconnect the amp and move further down the chain. If you were working with a receiver or an integrated amplifier, you will need to jump to step 4. If you have a preamp, or processor that is feeding

the power amp, your next step would be to disconnect all inputs to the preamplifier or processor. Once these are disconnected, and the preamp or processor is connected only to the power amplifier, turn the system on and again, listen for hum. Should the hum now appear, it is a problem with your preamp or processor or their interaction with the power amp. Before returning the preamp or processor to the manufacturer, try a cheater plug to break a ground loop. Cheater plugs are simple devices that convert a three prong AC plug into a two prong AC plug and in the act of converting three prongs, to two prongs, they disconnect the ground from the wall socket. Try one of these on the preamp, or the power amp, or both.

Finding a ground loop

If you determine that there is still no hum present when the preamp, processor or receiver is connected with no inputs, then selectively begin plugging in your various inputs one at a time. After each connection, check for hum until you discover the humming culprit.

It could be the cable TV

VCR's, surround processors, and any device that is connected to a television cable or satellite dish can cause a loud buzz and should always be suspect. If, by the process of elimination described above, you determine it is a component like a VCR that is causing the hum/buzz to occur, and using a cheater plug doesn't help matters, it may be necessary to isolate the cable connection (CATV) with an isolation transformer. This inexpensive device is available at most Wal Mart, Radio Shack or department store type outlets and is sometimes called a 'matching transformer'. If you have problems finding one, call your local cable TV company for advice. The matching transformer will be placed between the cable TV cord and the VCR, TV or processor.

Just remember, take the system down to its simplest level of connection. Find a way to hook the system up with as many pieces of the system missing or not connected. Keep it simple and get it to the point where the hum's gone. Then start adding back components one at a time until the hum returns.

Finding the problem is 9/10th of the work in finding a solution.



Warranty

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Limited Three Year Warranty

Registering

Should I Register My Product?

- Registering your product validates the warranty start date.
- If you do not register your product within 30 days of service, a copy of your purchase receipt from an authorized PS Audio dealer may be used as a proof of purchase to establish the warranty start date.
- If no proof of purchase from an authorized PS Audio dealer or registration is provided, the production date of the product will be used to determine the warranty start date.
- Registration can be completed online, by phone, by mail, or by email.
- You may wish to sign up for PS Audio's monthly newsletters, specials, product updates, and/or Paul's Daily Posts.

Coverage

What Does this Warranty Cover?

This warranty covers defects in material and workmanship for products purchased from PS Audio or its authorized dealers and agents.

What Will PS Audio Do to Correct the Problem?

In the event your product fails your sole remedy under this limited warranty shall be to return the product to PS Audio or an authorized PS Audio repair center. The product will be repaired without charge for parts or labor, replaced, or the purchase price refunded through the original point of purchase, at the option of PS Audio.

What is the Period of Coverage?

This limited warranty is in effect for 3 years from the date the unit was first purchased from PS Audio or its dealers and agents.

Shipping

Who Pays for Shipping?

You are responsible to pay for the safe and proper shipment of the warranted product to PS Audio or its authorized repair center.

The PS Audio authorized repair center will pay the cost of returning the repaired or replacement product to you under this warranty.



Warranty

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Not Covered

What Does this Warranty Not Cover?

This warranty does not cover damage due to:

- Accidents, carelessness, improper transportation, misuse, neglect, or abuse
- Failure to follow the operating instructions that are provided by PS Audio in the owner's manuals (available for download at psaudio.com)
- Use in any manner inconsistent with PS Audio's operating instructions (available for download at psaudio.com)
- Lack of routine maintenance
- Connection to an improper voltage supply
- Alterations or modifications to the unit
- Improper or unauthorized repair, including repairs not authorized by PS Audio or a PS Audio authorized repair center
- Fire, lightning, flood, "acts of God," or other contingencies beyond the control of PS Audio
- Products purchased through an unauthorized source (if you have questions as to whether or not a dealer is authorized, please contact customer support at psaudio.com)
- Products with a factory-applied serial number that has in any way been altered, defaced, or removed

Limitations

Limitations on PS Audio's Obligations Under this Warranty

- In no event will PS Audio's liability to you exceed the original purchase price of the unit.
- This warranty does not cover the cost of custom installation, customer instruction, setup adjustments, or signal reception problems.
- This warranty does not cover consequential and incidental damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.
- In the event your warranted product cannot be repaired, PS Audio will replace or refund the unit. We reserve the right to replace any out-of-stock, discontinued, or limited edition products with a comparable product. Discontinued products may not be available for warranty replacement.

Warranty Transfer

How Can the Warranty be Transferred?

This warranty is for the benefit of the original purchaser of the product. The warranty may be transferred to a subsequent purchaser during the 3 year warranty period. To do this, you must contact PS Audio directly to set up transfer of registration.



If You Require Service in North America

How Do I Get Warranty Service?

To locate an authorized PS Audio repair center, for service assistance, or for help with the operation of a product or just for information, please contact PS Audio customer support.

Warranty Service Within the US

Obtain an RMA Number

- You must first obtain a Return Merchandise Authorization Number (RMA#) to receive warranty service and prior to returning any item. Contact PS Audio or an authorized PS Audio repair center to receive an RMA#.
- You must put the RMA# on all returns. If it is not clearly marked, PS Audio will return the package back to you, freight collect.
- You should include a description of the problem, along with the RMA# inside the packaging.
- Original packaging should be used for the safe transit of your PS Audio unit to the repair center. If you do not have the original packing, PS Audio can sell and ship to you replacement packaging.
- You are responsible for the cost of shipping the product to a PS Audio authorized repair center. You should insure the product for its full retail cost in the event it gets lost or damaged in transit. PS Audio is not responsible for damage incurred in products sent to us.
- Shipping your product in non-PS Audio packaging may void this warranty. PS Audio reserves the right to charge you for new factory packaging to return your product after a repair.

Use Original Packing

State Law

How State Law Applies

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Warranty Service Outside of the US

If You Are Outside the US

PS Audio has authorized distribution in many countries of the world. In each country, the authorized importing distributor has accepted the responsibility for warranty of products sold by that distributor. Warranty service should be obtained where the product was purchased.



Service

Owner's Reference NuWave DAC

Changes to Our Products

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 products without notice or obligation to any person.

Your Serial
Number

Your Purchase
Information

Date of Purchase