

# PS Audio NuWave Digital Analog Converter (DAC)

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in DIGITAL



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Until very recently, my use of digital audio files was limited to playing MP3 files from iTunes using an iPad by snapping the iPad's USB cable directly into the front of my Marantz CD 6004 player (a very convenient feature of the CD player). But given the higher-end quality of my recently upgraded stereo system as a whole, it seemed a good time to explore using a DAC so that I could play higher resolution files starting with the standard 16bit/44.1kHz resolution of a ripped CD, and moving beyond. Further — entirely practical — motivation speeded up my decision to acquire a DAC. My young 2 year old daughter had ruined my previous CD player (by forcing 6 CDs into its tray) as well as damaging some of my CDs themselves, and my wife was pregnant with another child due within 2 months. My history of organizing books, CDs and other physical objects versus computer files did not instill confidence in anyone who knows me. So, the possibility of playing all my music and getting outstanding sound quality from digital files and a computer rather than from a CD player (let alone a turntable) was intriguing and extremely attractive to me given my situation.

I honed in on the new PS Audio NuWave DAC because it has an enticing low price (\$995), and the company has a reputation for making outstanding power cords and power conditioners as well as their already well received and low priced previous model of DAC, the PS Audio Digital Link III DAC (now discontinued). The NuWave also uses, as its heart, the Burr Brown PCM1798 24 bit DAC chip, from Texas Instruments, a well regarded chip by both audiophiles and musicians alike.

Before I committed to buying the NuWave model, I called PS Audio for further information such as what kind of power cords and what format of USB cables (from computer to NuWave) were possible to use. They were very kind and helpful. That was reassuring. Finally, I have been an avid Apple Computer user since 1986, for both work and pleasure, and felt that it would be a relatively easy transition for me to use a Mac computer as a music server for the NuWave. Not only does the NuWave work with a Mac without any additional driver required for USB connection, but even modern software such as Pure Music is available specifically for using Apple computers with a DAC and does so with a virtual iTunes interface. Moreover, with the free application Remote from iTunes, one can control all the playing of the music wirelessly from an iPad, or even from an iPhone, using a virtual iTunes interface.

The die was cast: I bought a black version of the NuWave DAC; it also comes in silver. When you take it out of the box, it looks mysterious and sleek, like a miniature of the black monolith from the classic Stanley Kubrick film 2001: A Space Odyssey. But don't worry, no ear - piercing, screeching noise is emitted from this unit. It is completely silent when on. Although its length of 14" and weight of 12 lbs are in the same ball park as a typical CD player, the NuWave's height of 2.75" and width of 8.5" are about one half that of a CD player. Nice. It also offers both XLR and RCA connection to a preamplifier. Nice, again. Whatever RCA interconnects you are already using for your CD player can be used for the NuWave. PS Audio does, however, recommend using XLR with the NuWave for best performance.



Besides USB, the NuWave also offers alternative digital connections (TOSLINK optical, or RCA coaxial) but for connection to a computer it is the USB port that is recommended. It features an XMOS based,

asynchronous 192kHz/ 24 bit input. Thus, I only used USB for this review via a Mac Mini as server running Pure Music. I also used the NuWave's Native Mode option for all my testing/playing — no upsampling. In PS Audio's own words from their website, the NuWave's 'Native Mode decodes any resolution audio from 192khz/24bit and down, to its full integrity with no processing added by bypassing the NuWave's upsampling processor completely; the resulting improvement to sound quality sets new levels of performance for DACS anywhere near this price.'

Once you choose your interconnects, USB cable, and the native mode option, there are no other controls or options on the NuWave to worry about. The front panel simply displays small round blue lights indicating the USB and native selections. The power switch is on the back, and it is recommended that you always keep the unit powered on, except when changing cables.

After a recommended 100 hour burn-in period for the NuWave, I was ready for some serious listening. My self-assigned 'Phase I' of testing involves using only Apple Lossless 16bit/44.1kHz files created directly from my CDs using iTunes. To play this resolution on the NuWave does not require special software such as Pure Music. I was astounded at the resulting quality. The sound ranged from as good as to better than a CD player on my system. Anything from classical to jazz to rock sounded rich, clean, spacious, and warm when appropriate; more like I would expect from vinyl when there are no scratches on the record. The attack and decay of percussion instruments such as cymbals was exemplary. Bill Bruford's rendition of the classic Max Roach piece, The Drum Also Waltzes sounded amazing on the NuWave. Every drum and cymbal in his kit sounded as it should, with the appropriate resonance and echo, and his renowned delicacy and elegance. Ditto for Ginger Baker's drum solo on the track 'Do What You Like' from 'Blind Faith', except replace 'delicacy and elegance' for African-influenced rhythmic pounding with booming double bass drums and loud floor tom toms.

My wife was getting fed up with my constant playing of loud percussion at all times of the day, and she was probably concerned it might lead to eviction from our apartment, so it was time to move on to other (more peaceful) things for testing. The track 'A Thousand Years', from Sting's 'Brand New Day' is gorgeously displayed by the NuWave; mysterious and haunting, with Sting's unique expressive, raspy voice. And, who would of thought it possible to be caught listening to Julio Iglesias? There I was, enjoying his rich, smooth, full and romantic voice because it sounded so real and warm through the NuWave. I finished Phase I by listening to a wide range of other music such as Jacintha, Beethoven, Bob Sneider and Joe Lock, Gabriele Tranchina — who I have had the great pleasure of hearing sing and play guitar live to my daughter in our apartment at her second birthday party — Sergio Mendez, and Bach, among others; all with the same consistently excellent results. The consequence of Phase I? I disconnected my CD player — no longer needed.

It was time to start listening to 24 bit FLAC files. I started slowly, particularly since the cost of the highest resolution files (192kHz/24 bit) is expensive, at about \$25 for an album, and they are huge in size, 1-2 GB each; you must be sure to invest in several terabytes of external hard disk space in advance, and be mindful of backing up. If you can settle for 96kHz/24 bit, then the price drops to about \$18, and the file size drops to about 750 MB.

I found that the improvement in detail exposed by the NuWave with 24 bit files as compared to the CD quality 16 bit is apparent and pleasing in almost all cases as long as the mix used for the recording used to create the file is decent enough to begin with, and no artificial upsampling has been done. (Upsampling is like taking a digital photograph of a digital photograph of an object and expecting the second photo to display higher resolution of the object than the first photo.) In general, the acoustics sound sharper and more natural with better imaging, and the higher frequencies are very precise and smooth.

For initial testing purposes, I tried out a short (3:46) FLAC file at 96kHz/24bit: Nikolai Rimsky-Korsakov, Snow Maiden Suite - Dance of the Tumblers. I played it through the NuWave and was dazzled — it sounded like the best of vinyl. I then stumbled across an interesting Norwegian website that offers free, short 192kHz/24bit FLAC file samples for download. I downloaded a 3:57 minute sample, Bøhren/Åserud Blågutten from Quiet Winter Night — An Acoustic Jazz Project by the Hoff Ensemble. Same result. I was convinced that my journey to higher resolution files was well worth it. So, I eagerly moved on to more serious testing of high-resolution FLAC files.

A shining example is the Dave Brubeck Quartet's Time Out at 176kHz/24bit; astonishing clarity, detail, warmth and placement of the instruments are displayed by the NuWave. As a comparison, I also tried the 88kHz/24bit version and I was surprised to find that a difference could be detected using the NuWave. The 176kHz/24bit version has more clarity, warmth and better placement of the instruments. This was not expected. Perhaps the higher resolution file was made from a different mix? Is it really possible to hear the difference between a 176kHz and an 88kHz, when they both are 24 bit sampled? These are interesting and important questions.

Another fascinating example is the third movement of 'Summer' from 'Recomposed by Max Richter - Vivaldi: The Four Seasons', 96kHz/24bit. This is a non-traditional rendition with (at least to me) a powerful, eerie and haunting ambience; it keeps you on edge while weaving back and forth between the original rendition and something else altogether and ends with an unexpected, almost silence containing some odd percussion in the background. One gets the feeling of being in Gotham City, with Batman battling a dangerous foe! The clarity and naturalness of the sound of the strings coming from the NuWave was top notch. I tried a variety of further examples yielding similar results: Norah Jones, Johnny Cash, Beethoven's 5th Symphony, Duke Ellington, The Eagles, and Steely Dan. Wow.

A nice drumming/percussion example that also has a story attached — Billy Cobham's performance on solo drums in the first 1.5 minutes of track 2, 'Searching for the right Door/Spectrum', from his album 'Spectrum', Audiophile 96kHz/24bit, displays superb sound quality from the NuWave DAC. I was intrigued by what I thought I heard coming from the right channel, a tastefully used 'Chinese' style cymbal which is generally described as having an explosive sound with a fast decay. As an amateur drummer, I used to own such a cymbal — they come in many forms/sizes and are made by different companies. Out of curiosity I wanted to know exactly what cymbal it was. I was almost certain from its very quick sound decay that Cobham was also using the cymbal upside down instead of right side up. Late that evening when I could not sleep thinking about that cymbal. My insomnia convinced me to email Cobham and ask. To my astonishment, when I woke up the next morning he had responded, and confirmed that it was a Chinese style cymbal. So, not only does the NuWave replicate Cobham's extraordinary use of his many tom toms, sweeping back and forth with beautiful timbres from high to low, and with random explosive riffs mixed with delicate quiet, but it also allowed me to hear his unique use of the Zildjian 22" Chinese 'Swish Knocker' cymbal — placed upside down on its stand — coming from the right channel. Tremendous.

The PS Audio NuWave DAC is an outstanding DAC with no unnecessary whistles and bells. Simplicity. And, its price is truly a bargain. Highly recommended.