

Audioengine D1 DAC/ Headphone Amp (Playback 54)

<http://www.avguide.com/review/audioengine-d1-dac-headphone-amp-playback-54>

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March 7th, 2012 -- by Steven Stone

Source: Playback



Audioengine D1 DAC

For many older audiophiles, their “conversion moment” when they discovered the world of high-quality sound began when they heard their first piece of affordable high-performance audio gear, such as the NAD 3020 integrated amplifier. But what about today’s audiophiles with computer-based systems? Is there a new piece of kit that’s likely to lure them into the fold? I think the Audioengine D1 might just do the trick.

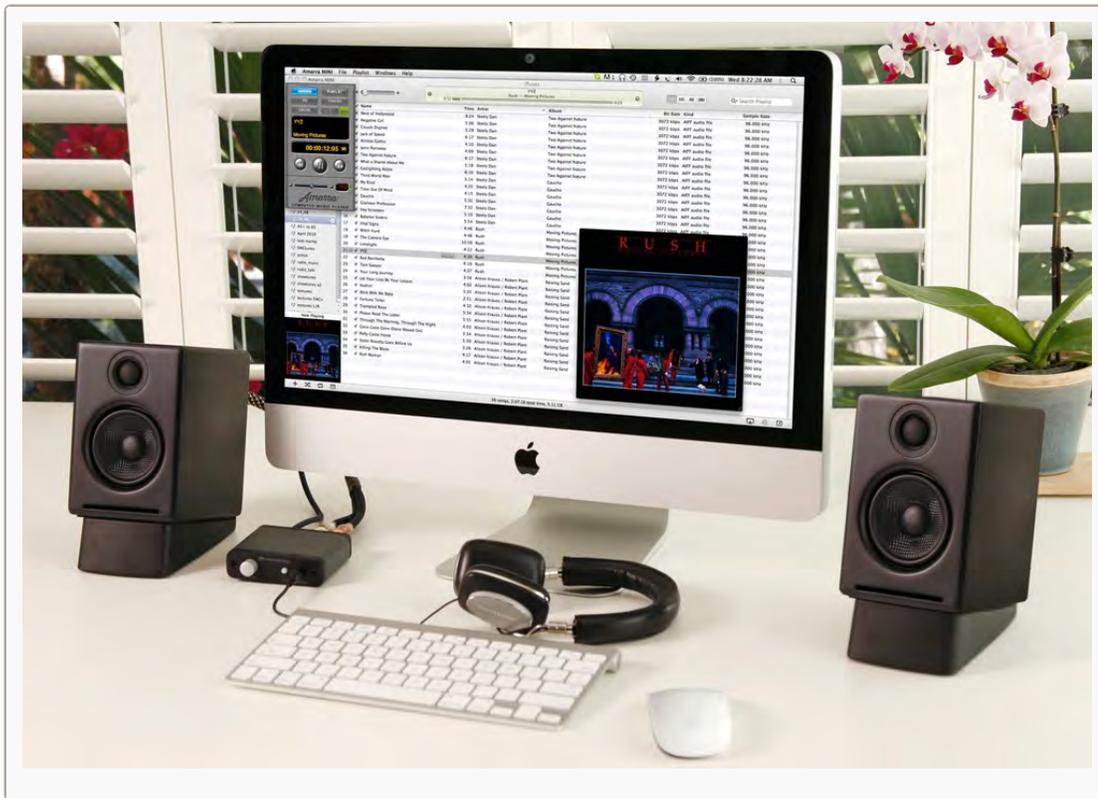
For \$169 (street and list price) the Audioengine delivers a level of fidelity that only a couple of years ago was unthinkable for anything near its price. Along with great sound, the Audioengine also serves up a tasty feature set, all contained in a box only slightly larger than a pack of cigarettes (you do remember what a pack of cigarettes looks like, right?).

FEATURES/TECHNICAL HIGHLIGHTS

- The Audioengine D1 uses an AKM AK4396 24-bit/192kHz digital-to-analog converter.
- Supported sample rates include USB: up to 96kHz, and optical digital: up to 192kHz at 24-bit depth.
- Built-in high-performance headphone amplifier (20 ohm to 300 ohm optimal headphone impedance).
- A built-in driver for USB connection.
- Powered by USB connection—no need for external power supply when connected to a USB source (using the optical input requires optional AC USB power adapter or connection to a computer's USB port).
- Double regulated USB power ensures that USB power variations, if any, do not affect audio output.
- Compact design for portability.
- Inputs/Outputs/Controls:
 - o 1 USB (Type B) input for connection to a PC.
 - o 1 optical digital (Toslink) audio input.
 - o 1 pair of high-quality RCA audio outputs.
 - o Mini-jack (3.5mm) headphone output.
 - o Illuminated front-panel on/off switch.

SET UP AND USE

The Audioengine is essentially a plug-and-play device. With its built-in driver, both my Mac and PC recognized the D1 almost instantly and it could be selected from my control panel's list of audio output devices. For most of the review the D1 was tethered to my Apple Mac Pro tower via its supplied USB cable. The D1 has a standard USB connector so I was able to use it with premium USB cables from AudioQuest, Wire World, Locus Designs and Synergistic Research without any issues.



Audioengine D1 DAC in typical desktop audio setting (shown here driving Audioengine A2 self-powered speakers or B&W headphones)

iTunes, Pure Music, Amarra, Audirvana, AudioGate, and Audirvana Plus all worked with the D1 without any ergonomic or compatibility issues. Most critical listening was done through Pure Music for standard resolution and MP3 files while Audirvana Plus was employed for higher resolution files. Pure Music and Audirvana Plus were used because both have provisions for changing output devices that only require about fifteen seconds for the changeover, making them most convenient for matched-level A/B listening tests.

Fortunately for audiophiles who already own some premium analog single-ended RCA interconnect cables, the D1 not only accepts standard RCA connections, but has its connectors far enough apart that even interconnects with larger diameter barrels, such as Cardas Clear, fit without any problems.

The Audioengine's rotary volume knob controls both the headphone and line-level outputs. When you attach a pair of earphones to the front mini-jack the line-level output is muted. While this option makes perfect sense for a standard set-up where most users would like to use either headphones or speakers, it does limit some possible uses, such as driving one set of speakers (or subwoofer) from the headphone jack while a second set gets a signal from the standard RCA outputs.

The volume control uses a standard audio taper, meaning that most of the volume gain will occur during the first ½ turn. After that point the volume increase will be minimal. One small oversight is that

Audioengine did not include any marks on the volume control of the D1, making it difficult to match levels. I put a couple of magic marker dots on my review sample's volume knob so I could repeatedly matched volume settings.

The headphone amplifier, based around a TI NE5532 low noise op-amp, should be able to drive most standard headphones. I had more than adequate volume with AKG K701s, Ultimate Ears In Ear Reference Monitors, and Grado RS-1 headphones, as well as Shure SE215 and HiFiMAN RE-272 in-ears.

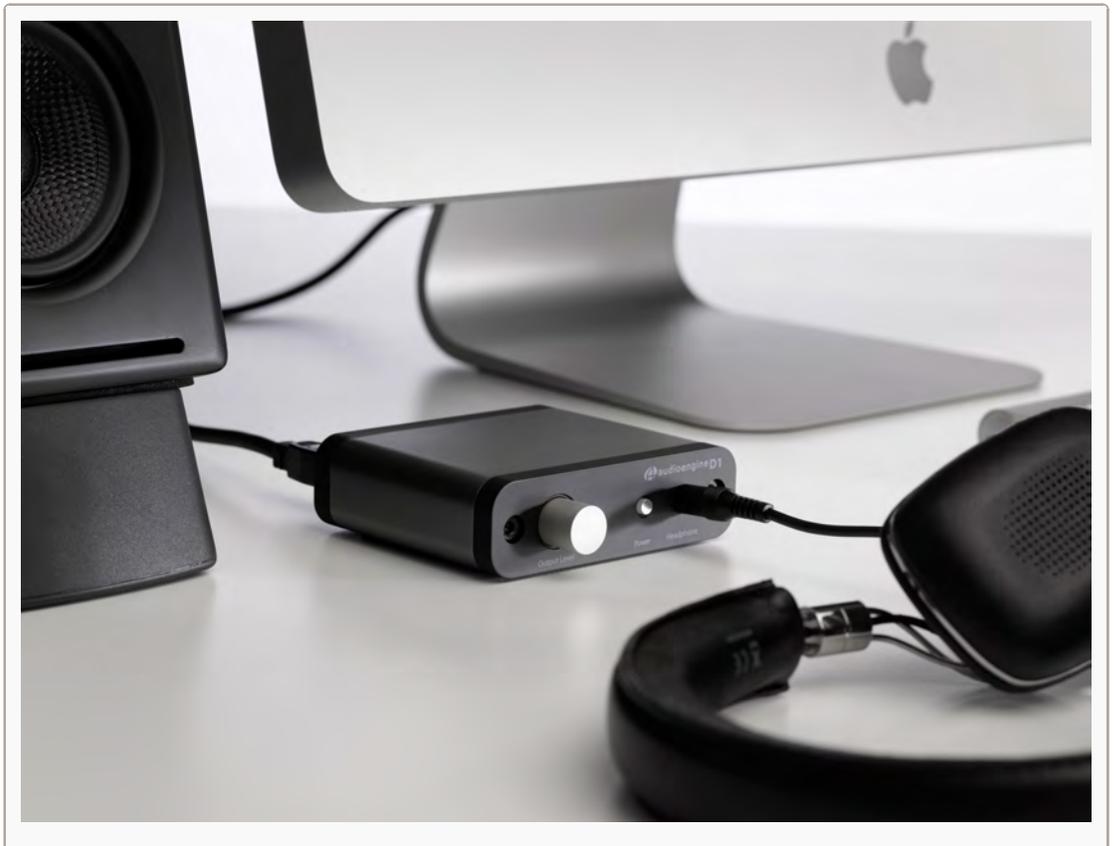
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Near the end of the review period I had some issues with noise on some of my own 96/24 and 192/24 (downsampled on the fly) recordings played back through the D1. Problems occurred on my Apple Mac Pro Tower when multiple programs were open, and began as faint clicks that increased in intensity and volume till the selection stopped playing completely. Closing and then re-opening the music playback software usually solved the problem, but it occurred on multiple occasions with all of the music playback programs I use regularly including Audirvana, Pure Music, and Amarra.

SONIC CHARACTER

Given its price and Audioengine's reputation, I was expecting good, but not necessarily great, sound from the D1. My expectations were shattered (in a good way) after only a few minutes of listening. The D1 was easily better than good, and while it didn't outperform the \$3200 April Music Eximus DP1 DAC/Pre or \$1495 Wyred4Sound DAC2, it did deliver nearly their level of sonic finesse. Music heard through the Audioengine D1 doesn't sound merely decent but also is emotionally involving.

The D1's overall harmonic balance is surprisingly neutral with little in the way of sonic bromides or extra warmth to make the sound warmer or more musical. And while the D1's harmonic signature doesn't warm up the sound, its lack of coloration, especially in the upper registers, makes for a very low-fatigue yet revealing presentation. For listeners who are used to the hyped-up upper registers of many inexpensive DACs the D1 may seem dark or lacking in upper-frequency



air. However, I found the D1's treble presentation to be spot on, especially on my own live recordings.

Imaging specificity and overall soundstage size through the D1 were among its best characteristics. Soundstage width equaled more expensive DACs, including the Musical Fidelity V-DAC II (\$379), while the D1's depth and three-dimensionality were only slightly truncated in comparison. Lateral image specificity was also excellent, surrendering only a wee bit of edge definition compared to the Eximus PD1 DAC/pre. When listened to by itself, it was hard to fault the D1's dimensional rendition. Only in direct matched level A/B comparisons were the D1's shortcomings noticeable.

The D1's excellent lateral width and image specificity carried over to its headphone section. Imaging through both the AKG 701 and Grado RS-1 headphones was both spacious and precise. On densely populated pop recordings, such as George Harrison's "Cloud Nine" title cut from his 1987 solo effort [*Cloud Nine*, Capitol], each instrument maintained its locational identity regardless of how busy the mix became.

The D1's dynamics were impressive, but not in the ordinary way—that is, with wide volume swings and crushing crescendos. No, the D1 excels at the subtle micro stuff, which isn't usually a budget-priced DAC's forte. On big contrast swings the D1 is Okay, nothing that will make you spill your drink. But if you listen into the mix, the D1 has the ability to allow each instrument to dynamically breathe. Vocalists especially benefit from the D1's ability to retain and transmit even the smallest changes in their delivery's intensity.

The D1's special dynamic capabilities were readily apparent during headphone listening. Especially when I listened through the Pure Music or Amarra playback software, every instrument in a mix seemed to have its own independent dynamic energy. On the George Harrison cut I mentioned



earlier, each electric guitar, and I counted at least four, remained independent and dynamically unique as they moved, from the front to the back of the mix, with an almost human breathing motion.

Both through headphones and line level outputs, the Audioengine D1s overall resolving abilities were also worthy of special note. While not unkind to 320 kbps MP3 music files, with 44.1/16 bit and higher rez files the Audioengine D1 gets right down to the inner workings of the music. On the GoGo's rendition of "The Cool Jerk" off the band's *Greatest Hits* CD [A&M] each drum hit and vocal part has its own phase-shifted reverb trail. The D1 keeps all this low level stuff from homogenizing together.

MUSICAL EXAMPLES

On the Grateful Dead's *Aoxomoxoa* album [Rhino] there's a tune, "Doin' That Rag," that includes one of the more bizarre spatial effects I've ever heard. At 00:14 Jerry Garcia's disembodied voice comes floating out from WAY outside the right side and slightly BEHIND the listener's head. The first time I heard it I had to call in my wife, Suzanne, to sit down and listen, to find out, without telling her what to

expect, if she heard the same thing, to make sure I wasn't suffering from aural hallucinations. I'm sure it's a phase trick, but with better DACs Jerry's vocals seem to come simultaneously from three spots: left of center in the mix, outside the right-hand speaker and, most disconcertingly, from a location just outside your right ear. The Audioengine D1 does this eerie aural slight-of-hand trick as well as any of my reference DACs, including the Eximus DP1 tethered to the Empirical Audio Off-Ramp 4.

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On my own, far more conventionally done, live concert recordings, the Audioengine D1 delivered enough information to keep me fully involved, yet confident enough to make critical judgments about mic placement. Listening to my recordings of The Deadly Gentlemen through the same Ultimate Ears Reference In-ear Monitors I used when I made the recordings got me almost as close to the original event as the far more expensive Empirical Audio Off-Ramp 4/Stello Eximus DP1 DAC/Pre combo. Almost. Considering the price differential—\$169 verses around \$4500, that's scary-good performance from a piddly little box...

CONCLUSION

As I wrote at the beginning of the review, I fully expected the Audioengine to be good, but I never thought it would be as much of a sonic overachiever as it turned out to be. With a useful feature set that includes a very serviceable headphone amp, a variable output line level so it can be used without a preamp, 96/24 capabilities, and a price-tag under \$170, the Audioengine D1 is a fabulous first step towards great sound.

Consider this DAC if:

- Optimal sound quality on a budget is your primary criteria for purchase.
- Size and easy portability matter.
- You need a DAC that includes a headphone amp and variable outputs.

Look further if:

- You need a USB DAC that also has a Coaxial S/PDIF input or a digital output.
- You require a DAC capable of 192/24.
- You want a DAC with multiple analog outputs.

Ratings (relative to comparably-priced DACs):

- Design & Features: **9**
- Tonal Balance: **9**
- Timbral Purity: **9**
- Detail & Resolution: **9**
- Imaging/Soundstaging: **8**
- Dynamics: **8**
- Value: **9**

BOTTOM LINE

For less than what you'll probably pay for the cables to connect it to your power amp or powered speakers the Audioengine D1 delivers strikingly articulate and musical sound over a standard USB connection. As a first computer audio upgrade the D1 makes a savvy choice, especially for anyone who wants to assemble a far better than stock computer audio system on a limited budget.

SPECS & PRICING

Audioengine D1 DAC

Inputs: USB (type 1.1 or above)/Optical (SPDIF)

Outputs: One stereo analog (via RCA jacks) /one headphone output via 3.5mm mini-jack

D/A converter: AKM4396

Optical receiver: CS8416

USB controller: TI1020B

Full-scale output: 2.0V RMS (RCA and Headphone)

Output impedance: 47 ohms RCA, 10 ohms headphone

Power source: USB 5V, optional AC power supply

Power requirements: 200mA

USB power filtering: 2-stage redundant regulation

SNR: >110db

THD+N: <0.002%

Crosstalk: <-85db

Frequency response: 10Hz - 25KHz +/- 0.5db

Input bit depth: up to 24 bits

Input data rate: up to 192KS/s (optical), 96KS/s (USB)

Dimensions (H x W x D): 1" x 3.5" x 4"

Shipping weight: 1.0lbs (0.5kg)

Included accessories: USB cable, 2ft; Setup Guide; Microfiber bag

Warranty: three years—also 30-day money back guarantee

Price: \$169

Manufacturer

AUDIOENGINE

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www.audioengineusa.com