

Can Openers

Get the Most Out of Your Headphone Investment with a DAC/Headphone Amp Combo

By Mark Fleischmann



HEADPHONES

aren't just about mobile audio. They're also a cost-effective way to get good sound into your ears even when you're not on the go. If you have \$400 to spend on a set of speakers, your options are of limited fidelity, but the same money will buy you the Sennheiser HD600, one of the most popular high-end headphone models of all time. Try getting a comparably great-sounding set of surround speakers for that price.

The catch is that, like many of the best headphones, the Sennheiser requires high-quality amplification to work its magic. Having just bought an HD600, I was ready for the next step in my development as a headphone listener: a headphone amp.

Your smartphone or iPod may well be able to run a pair of high-end headphones, but whether it runs them *well* is another matter. The flea-sized amp built into a mobile device typically conjures thin, grainy, dynamically constrained sound, especially when forced to run near the top of its

volume range. An external headphone amp provides cleaner power and more of it, producing strain-free sound at higher volumes. It transforms the performance of your headphones, enabling you to get every bit of the great sound in which you invested.

Buying a headphone amp requires a few decisions. Would you prefer a solid-state amp or a vacuum tube one? All the models reviewed here are solid state. Tube amps often sound warmer, but their performance mutates over time, and the tubes need to be replaced once in a great while. For "tube rolling" enthusiasts, that's creative opportunity. However, this headphone-amp roundup will play it safe and stick with solid-state designs.

Another decision: Would you like your amp with or without DAC? Having a built-in digital-to-analog converter is more convenient, especially if much of your music is coming out of a computer's USB jack. But you might prefer to consider the DAC (and its sound) as a separate purchase, mating it to the amp to better optimize the sound—the computer audiophile's equivalent of tube rolling. All of the amps reviewed here have built-in DACs and are compatible with both Windows and Mac.

Having decided to buy a DAC with your headphone amp, you are also buying into its file-type compatibilities or lack thereof. All of the products in this roundup are compatible with PCM audio (but not DSD) up to 24 bits. Sampling rates vary: The Audioengine D3 is limited to processing

files at 96 kilohertz and will downsample 192 kHz files—while the NAD and Essence products process up to 192 kHz. Sample rate conversion is absent from the NAD, and optional with the Essence. The Audioengine pads all sample sizes to 24 bits, regardless of native bit depth. Critically, all the DACs operate in asynchronous mode, taking over the clocking function from your computer and stabilizing it to maximize sound quality and prevent glitches.

Lastly, a key consideration in headphones and headphone amps is impedance matching. Higher-impedance 'phones need more voltage to drive, more likely available from a good outboard amp. Lower impedance models require greater current drive, easier for the internal amp in a portable device to deliver, but still good candidates to use with most amps. Each amp reviewed here specifies a range of acceptable headphone impedances. You'll want to make sure your 'phones fall within that range.

The headphones I used for this roundup vary in impedance and price. The model with the highest impedance, thus demanding the most voltage, is Sennheiser's HD600 (\$400) with an impedance of 300 ohms. Sony's MDR-V6 (\$110)—the consumer-level version of the MDR7506 studio headphones (\$130)—and Audeze's LCD-X (\$1,699) have impedances of 63 and 22 ohms, respectively. In practice, all three amps drove all three 'phones to satisfactory levels (and then some), though the Sennheiser required higher volume settings. Incidentally,

in the listening notes, I may be in danger of reviewing the headphones as much as the amps—but exploring how the amps deal with different 'phones makes it worth the risk.

Other associated equipment included a Lenovo ThinkCentre M75 desktop PC running Windows 7, Foobar 2000 for playing FLACs, and Windows Media Player for other file formats, the latter including support for Apple Lossless via the DC-Bass Source Filter.

My free-wheeling, unstructured listening aside, I used the following test tracks with all three amps and all three headphones, and they received the most attention: Beethoven's Symphony No. 5, first movement, Carlos Kleiber conducting the Vienna Philharmonic, FLAC, 88.2-kHz/24-bit. Tchaikovsky, "Waltz of the Flowers," *The Nutcracker Suite*, Bernhard Klee conducting the Bruckner Orchester Linz, FLAC, 96/24. Scriabin, Piano Sonata No. 10, *Scriabin Sonatas*, Igor Zhukov, 16-bit ALAC ripped from CD. Led Zeppelin, "No Quarter," *Celebration Day*, 16-bit ALAC ripped from CD. The Beatles, "Norwegian Wood," *Rubber Soul*, 16-bit ALAC ripped from CD. Bob Marley & the Wailers, "Is This Love," *Kaya*, FLAC, 96/24. Nataly Dawn, title track, *How I Knew Her*, FLAC, 88.2/24. Otis Redding, title track, *The Dock of the Bay*, FLAC, 96/24. Thanks to HDTracks for the FLAC files.



● Audioengine D3 DAC Headphone Amplifier



● NAD D 1050 DAC Headphone Amplifier



● Essence HDACC DAC Headphone Amplifier

Flexible Flyer

By Mark Fleischmann

THE VERDICT

Essence's HDACC bridges the gap between Blu-ray music content and legacy audio systems with an extremely adjustable and great-sounding DAC.

Essence HDACC DAC Headphone Amplifier

PRICE \$699

THE MOST UNUSUAL PRODUCT IN this roundup is the HDACC HD Audio Center from Essence Electrostatic, a company that also markets flat-diaphragm loudspeakers. Like the NAD, it qualifies as a headphone amp, DAC, and stereo preamp. But its greater claim to fame is a pair of HDMI jacks, input and output, on the back panel.

Why add HDMI to what Essence refers to as a digital preamp? The company wants to build a bridge between high-res audio content on Blu-ray Disc and various kinds of pre-HDMI audio systems, such as those based on stereo analog preamps, older surround receivers, or older pre/pros. The HDACC unlocks that content by accepting HDMI input from a Blu-ray player, decoding the uncompressed PCM audio from the disc's lossless soundtracks, and feeding it to your headphones or audio system.

Between HDMI and computer-friendly USB, this little box should keep a digital audiophile busy. The Essence Website includes a diagram showing the HDACC fed simultaneously by Blu-ray, computer, CD player, media player, phono preamp, and mobile device—and outputting to headphones, video display, power amp, and active speakers. It could become the nerve center of a full and interesting listening life. I contented myself with USB (computer) and HDMI (Blu-ray player) input.

In addition to the HDMI jacks, the back panel plays host to a USB jack, XLR and RCA outputs to feed a stereo preamp, and various other ins and outs (coaxial, optical, and analog). On the front is a quarter-inch headphone jack. It's the only full-size headphone jack among these three products (the others use minijacks) and thus the only one to accommodate the quarter-inch plug of the Audeze 'phones without a jutting

AT A GLANCE

+ Plus

- HDMI input to access music on Blu-ray
- Headphone impedance switch
- Sampling rate adjust or defeat

- Minus

- Complexity

plug adapter. The front panel's analog minijack input patches in mobile devices without making you reach around to the back.

The unit is a breeze to operate, thanks to a clickstopped volume knob that's easy to twirl with fingers or even just flick with a thumb. I used it with pleasure. Power and mute buttons are on the top edge. Essence is the only one of these three manufacturers to provide a remote control. The mini-remote handles power, volume, mute, six-way input select, and—via menu and return buttons—menu navigation. Even if you lose the remote, the volume knob can be spun to cycle through the desired one.

The HDACC is the most full-featured of these three products. Burrow into the menu to select headphone impedance of 16, 32, 64, 200, 300, or 600 ohms. Even its lowest setting was sufficient to drive the demanding Sennheiser, but the correct 300-ohm setting allowed more headroom. You may also elect to set resampling on the ESS Sabre DAC to six rates from 44.4 to 192 kHz or just bypass sample-rate conversion altogether. Unlike the Audioengine and NAD, the HDACC provides explicit and correct sample-rate information on its

display. The headphone and line outputs can be fixed or variable.

Running warm but not alarmingly so, the HDACC aced the USB demos. It had even more top-end control than the NAD, but that didn't come at the expense of detail. Things that sometimes drove the Sony headphones into the discomfort zone with other amps—the Beethoven strings, the Scriabin piano trills, Jimmy Page's wah-wah guitar—remained civilized with the HDACC. George Harrison's sitar on "Norwegian Wood" was memorably tangy via the Sony and even tangier via the Sennheiser. With the Sennheiser and Audeze, the HDACC reconciled all the disparate elements in the Bob Marley track—the echo-enhanced lead vocal, loping bass, and grooving, chiming percussion, as well as the sweet vocal embellishments of the I-Threes—into a unified and natural vibe that must have been what the artist intended.

In the final act of the drama, the HDACC moved from my desktop and PC to my main system rack, where its HDMI input was connected to an Oppo BDP-83 Blu-ray player and its HDMI output sent video to a display. The two pieces of music that came in for closer scrutiny on Blu-ray Disc were Led Zeppelin's *Celebration Day* and Carlos Kleiber's recording of Beethoven's Fifth. Be warned that these might have been apples-and-oranges comparisons. For Zep, I was comparing a Blu-ray Disc's decoded DTS-HD Master Audio soundtrack with a CD-ripped ALAC file. For Beethoven, I was comparing a "Pure Audio" Blu-ray Disc's decoded Dolby TrueHD soundtrack at 96/24 with a FLAC download at 88.2/24.

In addition to formats and resolutions, mastering jobs also may have differed. This became clear on "No Quarter"



when Jimmy Page's guitar, immovable in the ALAC file's right channel, briefly panned from right to center to follow camera moves in the Blu-ray concert video.

Whatever the cause—be it the DAC or the source material—the final Zep demo was the best of all, with refinement and ease that spread across the three headphones.

Somehow this combination of hardware and software narrowed the performance gap between the Sony

and the more expensive Sennheiser and Audeze.

This might come as an unpleasant surprise for those who have paid \$1,699 for the Audeze, only to see the \$400 Sennheiser and \$110 Sony holding their own—though it also may fuel suspicion that the full potential of the Audeze in particular wasn't realized. (Whether the Audeze would prosper more with a headphone amp closer to its own price tag is a question I'll address in a future headphone amp review.)

On Pure Audio Blu-ray, the Beethoven track continued the train



ESSENCE HDACC DAC HEADPHONE AMPLIFIER

PRICE: \$699

Essence Electrostatic • (727) 580-4393 • essenceelectrostatic.com

SPECS Dimensions (WxHxD, Inches): 8.9 x 5.5 x 2 • Weight (Pounds): 1.8

• **Audio Inputs:** USB (1), HDMI 1.3 (1), coaxial digital (1), optical digital (1), stereo analog RCA (1), stereo analog minijack (1) • **Audio Outputs:** 1/4-inch headphone (1), HDMI 1.3 (1), coaxial digital (1), optical digital (1), stereo analog RCA (1), stereo analog XLR (1) • **Output Impedance:** Not available • **Compatible Headphone Impedances:** 16 to 600 ohms • **Sampling Rates:** Up to 192 kHz, 24 bits • **Sample Rate Conversion:** Up to 192 kHz • **DAC:** ESS Sabre 32 Reference 9012 (stereo version)



of thought, delivering orchestral immersion through all three headphones. The Sony's presentation was still ever so slightly more forward than that of the others, but it became sweet and euphonic, while the other two sacrificed a little instrumental detail for a more spacious concert-hall ambience, with more emphasis on reflected sound. I could close my eyes and imagine myself in the recording venue, Vienna's Musikverein. No, it wasn't a perfect reproduction of that gilded jewel box, but it meshed with my golden memory of the real thing.

The Essence HDACC is everything a good headphone amp and DAC should be, and then some. The addition of HDMI may be transformative for those looking for a way to get high-res Blu-ray soundtracks into a legacy system. But don't ignore its other talents. The HDACC is the only headphone amp in this roundup to offer selectable impedance matching, and the only DAC with selectable sample-rate conversion and bypass. It also performs admirably with a variety of headphones.

