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# A Sound System as Resonant as a Concert Hall

By ROY FURCHGOTT SEPT. 12, 2012

Chances are, your sound system isn't very good at math. It would sound a lot better if you could make it a little smarter, and you can.

You see, music travels to the ear as a smooth wave of sound. But digital music — CDs or MP3s on a music player — stores only bits of information taken at intervals along those sound waves.

Later, your sound system will play a sophisticated game of connect-the-dots to turn that choppy data back into a wave. That takes math. How authentic the playback sounds depends largely on how well the system turns digital dots back into the original wave.

That de-digitizing is done by a computer chip and software combination called a digital-to-analog converter (or DAC) — and here is a little secret of the audio industry — to keep prices down, manufacturers often scrimp on that part. That means mediocre math.

But you can upgrade your processor to make your music sound much more as if it were live, and it doesn't take any soldering. Just plug an undistinguished box called an outboard DAC between your digital music player (like an iPod, CD player or computer) and an amplifier. (The devices use a USB, optical, 30-pin or coaxial cable or RCA connector cable.) It does better math to make better sound.

They can cost more than \$15,000, though some are only \$100.

But spending a lot of money won't necessarily guarantee better sound. Any sound

system is only as good as its weakest link, so a \$500 DAC isn't likely to improve a really rudimentary receiver. And because of variances when you mix audio components, a specific DAC may sound very different in your system than in your buddy's.

Despite all those caveats, it's not hopeless. After hours of testing several DACs on my 30-year-old home hi-fi and many more hours in a modern high-end system at Soundscape, an audio store in Baltimore, a rotating listening panel of employees and customers came to as close as a consensus as you'll find among audio buffs. We listened to a stereo wired so we could switch between an \$1,800 CD player and a computer playing the same song using a DAC. We also listened to the song on the computer without the DAC. The listeners didn't know which they were hearing.

Though we mostly listened to a variety of music converted to the Apple lossless format, which makes files smaller but preserves fidelity, we also tried out some MP3 files, which are lower fidelity but take up less space in a player.

We had previously tested low-priced DACs and were disappointed. We found that several costing around \$350 provided the best value.

### **MUSIC HALL DAC15.2 \$300**

Audiophiles like a big "soundstage" — their term for the impression that the instruments in the recording are spread apart, like a large orchestra on a wide, deep stage of a concert hall. The Music Hall seemed to increase the feeling of width, though not depth.

The most marked characteristic was the brightness it added to instruments in the higher ranges, which is what the company was going for. "If you can separate the instruments, especially in the higher register, you are doing something right," said Roy Hall, Music Hall's founder.

### **SCHIIT BIFROST \$350 without USB, \$450 with USB**

The crowd favorite, it has something rarely found in a \$350 DAC: a 32-bit analog processing chip. That helps the converter reconstruct those sound waves better. The Bifrost can also be upgraded, so if USB or processor technology changes, Schiit can install an update.

The outstanding difference was that the Bifrost reliably made the soundstage larger in each dimension. Ed Dorsey, co-owner of Soundscape, said that switching from the DAC while listening to a CD of “All Right Now,” a classic rock song by Free, “was like going from stereo to mono.”

“Wow,” he added.

### **HRT MUSIC STREAMER II+ \$350**

The HRT, the smallest DAC tested and the one with the sleekest case, is the only one powered by a USB cable, not an outside power supply. The company said that this helped eliminate noise from a power supply, but I suspect you’d have to have a sensitive sound system (and sensitive ears) to hear it.

Of the DACs, it sounded closest to the original CD versions. “My approach is to create a product that doesn’t editorialize the sound,” said Kevin Halverson, the company’s chief technical officer. Over all, listeners preferred the bigger sound from the HRT DAC over the CD.

### **CAMBRIDGE AUDIO DACMAGIC 100 \$370**

This was an odd case. It did better on orchestral music than rock songs, more so than the other DACs. But that is in line with the company’s goals. “We have, at Cambridge, always used live unamplified acoustic music as what we design for,” said John Bevier, national sales and product manager at Cambridge Audio. Those tend to be the recordings that audiophiles are most interested in, he said. Rock doesn’t do as well, he said, because its sound is engineered for the lower fidelity systems it is most likely to be played on.

### **NUFORCE ICON HDP \$450**

This demonstrates why audio is so subjective. No single aspect of the NuForce stood out as the best, yet the listeners gave it high marks.

Audiophiles use an exasperatingly ambiguous word, “involving.” It basically denotes how much the sound draws you in. After hearing “All Right Now” countless times over five hours, I found myself unconsciously tapping my foot. That would qualify as involving.

One customer, James Rosenthal, said the soundstage was wider, but less deep than that of the CD player, but he also thought the instruments sounded livelier. A worthwhile trade-off, he said. We agreed that it added some of the smooth richness of tube equipment.

At any listening party with audiophiles, be prepared for an argument. These guys nearly come to fisticuffs arguing over the best method of wiring a DAC. Certainly tweaks can optimize performance, like setting the computer to play at the appropriate bit rate to your DAC (\$10 software called BitPerfect automates the process for Macs; it can be set manually on some PCs).

While deliberating details, Mr. Dorsey reminded everyone of a crucial fact. “The bigger point here,” he said, “is these things made your computer sound as good as an \$1,800 CD player.”

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