

GUIDE TO AFFORDABLE HIGH-END AUDIO

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ART DUDLEY, STEREOPHILE MARCH 2013

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FROM THE Editor

Welcome to *The Absolute Sound Guide to Affordable High-End Audio*

To be candid, some might question whether the word “Affordable” belongs in the same sentence as the phrase “High-End Audio”, but those of us who have worked to create this Guide strongly believe the terms are—or can be—delightfully compatible. The high-end, please remember, is not a price point but rather a mindset that says, “Anything worth doing, such as listening carefully to the music that moves us, is worth doing well”—no matter how large or small our budgets might be. One purpose of this Guide, then, is to show how you can have superb music reproduction in your home without necessarily spending the proverbial “arm and a leg.”

Many readers of *The Absolute Sound* have made music listening (and the hi-fi systems that facilitate that listening) both the passion and hobby of a lifetime. And, sure enough, some of us have wound up investing significant sums of money in pursuit of the elusive ideal from which our publication draws its name—that is, *The Absolute Sound*. But remember this: whether our audio systems cost \$1000 or \$100,000 (or more), we all share a common goal. In the end, we are all, each in his or her own way, looking to recreate not only the sounds, but also the profound emotions, that we experience when we listen to the live music we love best.

The spirit underlying this Guide, then, involves a deep desire on our part to show readers—and especially newcomers to our hobby—how best to seek out audio components that will provide maximum musical enjoyment per dollar spent. We believe affordable high-end audio can be a reality for all to enjoy, and to this end our Guide includes:

- An excerpt from Editor-in-Chief Robert Harley’s book *The Complete Guide to High-End Audio* focusing on “How to Choose An Audio System”.
- An “On the Horizon” article showing soon-to-arrive affordable high-end products from 21 manufacturers.
- A collection of 16 “Affordable High-End Gems” hand picked by our editors.
- No less than 31 full-length reviews of high-value/high-performance audio components worthy of your consideration.
- A roundup of 6 ultra high-performance (yet not insanely expensive) high-end headphones.
- A special feature on high-value audio cables, complete with specific recommendations from 13 highly respected manufactures.
- A special, “Affordable High-End” edition of *The Absolute Sound 2013 Editors’ Choice Awards* article, which we think you’ll find useful as a reference.

If you do not yet have a high-performance audio system, we hope this Guide inspires you to acquire one, and if you already have a system we hope the Guide will help you make improvements that will bring you many hours of listening satisfaction.

Chris Martens

Click here to turn the page.

ON THE HORIZON

Affordable High-Performance Audio Components Headed Our Way

Chris Martens



BOWER & WILKINS
A7 AirPlay-enabled wireless, self-powered speaker system

Bowers & Wilkins Wireless Music Systems bring together over 45-years of audio expertise with intuitive AirPlay wireless streaming technology to create a system that gives all the convenience and freedom of wireless music, without compromising on sound quality. The class-leading A7 uniquely combines the audiophile-quality engineering and best-in-class electronics with wireless Apple AirPlay® streaming. A7 is a fully-fledged streaming hi-fi in a single, discreet unit. A7 features a 6" Kevlar-reinforced subwoofer for rich, deep bass and a bank of four high-quality stereo drivers to deliver excellent dispersion, for a natural and widely spread sound. Combined with five dedicated Class D amplifiers, A7 delivers truly impressive audio quality. If you want advanced acoustics, A7 is the obvious choice. **Price: \$799.99. bowers-wilkins.com**

CAMBRIDGE AUDIO
752BD universal/Blu-ray disc player

Looking for one component to handle most types entertainment source materials? If so, consider Cambridge's 752BD Universal Player, which delivers industry leading performance and simplicity. CD, DVD-A, SACD and HDCD discs are all brought to life with exclusive ATF Anagram up-sampling technology delivering stunning 24/196kHz resolution, while DVD, Blu-ray, and Blu-ray 3D discs are optimized with a Marvel QDEO video processor that yields stunning color, tack-sharp images, and can do 2D-to-3D upconversion on the fly. Expand content choices by connecting the 752BD to your home network and access audio/video/photos from UPnP/DLNA servers or NAS drives—via wired or wireless connection. Control this sophisticated entertainment hub via the included, backlit Azure remote control, which makes using the 752BD a simple pleasure. **Available now. Price: \$1299. cambridgeaudio.com**



ON THE HORIZON

DEFINITIVE TECHNOLOGY

Incline self-powered desktop speakers

Definitive Technology's Incline bipolar desktop loudspeakers are self-powered 11-inch tall mini-towers, perfectly sized to sit next to a computer monitor on a desktop or shelf.

Incline is the world's first bipolar desktop speaker. A 38 mm driver on the rear of the enclosure creates a huge three-dimensional image with life-like front to back depth. The front-firing 90 mm driver is coupled to a bass radiator for extended, high output bass. The active driver and the 19 mm dome tweeter are separately amplified and crossed-over electronically for low-distortion, wide dynamic range.

It features analog, TOSLINK and USB inputs for easy connectivity to any computer or audio source and a LFE output jack to feed an optional outboard subwoofer.

Projected availability: September 2013.

Projected price: \$299. definitivetech.com



FOCAL

Sub Air wireless powered subwoofer

The intense, deep sound of the Sub Air wireless subwoofer complements all Focal satellite-type speaker systems, adding drama to movies and supporting music's lowest notes. Wireless technology makes for easy integration while the Sub Air's flat, compact design enables it to fit all kinds of spaces. Conveniently, the Sub Air turns on at your command and off when no more sound is being produced. Focal's Sub Air isn't just about good looks and easy installation; using a powerful 150W BASH amplifier to control our precision manufactured 8" cellulose pulp cone we pull you into the center of your entertainment experience. Audition Focal's Sub Air at an authorized retailer and let them show you how extraordinary your home system can sound.

Available: April. Price: \$799. focal.com

GOLDENEAR TECHNOLOGY

Triton Seven floorstanding loudspeaker

The GoldenEar Triton Seven is a high-resolution passive tower that offers much of the technology and performance of our larger award-winning Tritons. Important design goals were lifelike, boxless three-dimensional imaging, excellent bass response (both in terms of depth and detail), exceptional clarity, great dynamic range, smooth natural frequency response and very extended silky smooth high frequencies.

It combines two cast-basket 5.25-inch bass/midrange drivers in a D'Appolito Array surrounding a high velocity folded ribbon tweeter and coupled to two side-mounted planar bass radiators. The cabinet is narrow, for excellent imaging and the front baffle is angled up for perfect focus and phase alignment for a seated listener's ears.

Availability is expected in July. Price: \$699/each. goldenear.com



www.theabsolutesound.com

ON THE HORIZON



HiFiMAN

HM-901 high-resolution portable music player/DAC

From HiFiMAN comes a new flagship portable music player, the HM-901. In addition to offering unrivaled sound quality, the new HiFiMAN player accepts a wide array of audio formats, is expandable and easy to operate. Three years in the making, this remarkable reference player sets the performance bar higher by incorporating:

- Dual Saber ES9018 32-bit DAC chips for highest sound quality
- Upsampling to 24/192
- Accepts most lossless audio formats, including Apple lossless
- Step potentiometer for the volume control
- TAICHI UI for fast response and simplicity of operation
- Sleek design with robust case made of high-tech composites
- Expandable including amplifier card
- Digital input/output and USB decoding through optional docking station
- WiFi Music Server and Gapless playback (via planned firmware upgrades)

Available in May 2013. **Price: \$999.** hifiman.com



X300A self-power desktop speakers/DAC

The X300A is a premium powered design offering the highest resolution digital music reproduction from a PC / Mac desktop or laptop computer via distortion-free USB digital input. A user can also connect an Apple® iPod®, iPhone® iPad®, Android®, Kindle Fire® or any other digital device direct to the system via analogue input. Unlike typical active computer speaker designs, each X300A speaker has twin-class AB audiophile grade amplifiers: one for HF and one for LF/MF. This configuration results in a much cleaner sound and greater control at higher levels. Each X300A also features high performance toroidal transformers, which minimize hum noise and electromagnetic interference, in keeping with the best pro audio monitors available today.

The KEF X300A is available now.
Price: \$799.99/pair. kefamerica.com



LEGACY AUDIO

Studio HD stand-mount loudspeaker

Experience high definition sound from Legacy Audio's Studio HD speakers.

The compact Studio HD speakers fit easily into small spaces yet can fill larger rooms with expansive sound. Powerful bass from the 8-inch woofer is mated with detailed highs of the 1-inch air motion tweeter. This folded ribbon squeezes air at four times the rate of a conventional tweeter bringing intricate details and emotion to life. Studio HD offers a big, detailed sound in a small, beautiful package.

The choice of mastering & recording professionals, Studio HD delivers the trusted Legacy Audio sound for dozens of GRAMMY award winning productions. Coupled with the Legacy Metro subwoofer, Studio HD offers a building block approach to true high-end audio.

Available now. **Price: \$1,575-\$1975, depending on finish.**
legacyaudio.com

ON THE HORIZON



MARTINLOGAN

MartinLogan Motion 40 floorstanding loudspeaker

The Motion 40 is the perfect blend between innovative audiophile-grade acoustical components and affordable performance. The Motion 40 features an advanced resolution Folded Motion™ tweeter and aluminum cone woofers that are paired with a rear-firing bass port for extra punch in the low frequencies. The enclosures have been designed with a luscious high-gloss piano black finish, a subtle angled-top cabinet with soft radius corners and signature MartinLogan perforated grilles. The result is a smooth, refined sound with stunning dynamic range, jaw-dropping clarity and gorgeous aesthetics at an unbelievable value. **Available now through authorized MartinLogan dealers globally. Price: \$1,899.90/pair. martinlogan.com**



NAD M50 digital music player

The three-product NAD Masters Digital Suite represents a bold step in digital musical reproduction, redefining high-end audio by eliminating all analog circuitry from the signal path. Together, these products download, store and stream music without adding or subtracting anything from the digital music source, including high-res music downloads. In particular, the M50 Digital Music Player and NAD's exclusive music management App is a music lover's dream, offering fast, intuitive control of even the largest music collections. The M50 forms the heart of a digital music system, managing and controlling access to music while eliminating the need for a computer. The M50 integrates perfectly with high performance audio systems, providing HDMI, USB, and Ethernet connectivity, plus Wi-Fi for Internet access. **Available now. Price: \$2499. nadelectronics.com**



NOLA

Boxer S1 stand-mount loudspeaker

NOLA's Boxer S1 is an optional, upgraded version of our entry-level Boxer stand-mount monitor, which continues in our line. Boxer S1 takes the basic design a step further with costly upgrades to some critical components.

Specifically, all input and output wiring has been replaced with the costly Nordost mono-filament solid core silver wire—the very same wire we use internally in our Reference Series models. Likewise, all crossover capacitors have been upgraded to polypropylene/oil types. Finally, the Boxer S1 also uses our maximum performance cabinet damping material.

The result of these component upgrades is significantly improved clarity, dynamics, focus, purity, resolution and bass response, while maintaining musicality. **Price: \$2500/pair in Piano Cherry or Piano Black. Available now. nolaspakers.com**

ON THE HORIZON



NUFORCE

**STA-100 stereo power amplifier
AVP-18 AV processor, MCA-18 multichannel amp, and MCP-18 multichannel preamp**

NuForce developed the STA-100 (\$695) amplifier for the audio enthusiast as an audiophile-grade stereo power amp housed in an elegant, modestly sized enclosure. Offering quality parts throughout and advanced, high-efficiency switching amplifier operation, the STA-100 completes the NuForce Home Reference series. The STA-100's size belies its power: a robust 160 Watts into 8-Ohms per channel. Sharing technology from NuForce's award-winning V3 mono amplifiers, STA-100 works with NuForce DACs (DAC-100 and UDH-100), preamp and headphone amp (HAP-100) to complete a high-end component system at entry-level price.

NuForce Home Theater series is designed for the dedicated AV enthusiasts looking for state of the art AV processing and fully customized performance. **AV Processor (AVP-18), Multi-channel amp (MCA-18) and preamp (MCP-18), are all priced at \$995/each. nuforce.com**



OPPO DIGITAL

BDP-105 universal/Blu-ray player/DAC with DSD playback firmware upgrade

Oppo's BDP-105 universal player is an excellent disc transport and high-resolution digital audio player. Now, a new firmware update brings native DSD (Direct Stream Digital) file playback to the BDP-103/105.

DSD files are at the forefront of the high-res audio revolution. Studios such as Blue Coast Records, Channel Classics and 2L are offering DSD master recordings via digital download. Previously, DSD playback required a computer with special software plus a DSD-compatible DAC. With the BDP-105, it is as simple as downloading the DSD files to a USB drive, plugging it in, and sitting back to enjoy the master quality music.

The new firmware should be available by press time. Interested readers should check Oppo's web site for release info. **Available now. Price: \$1199. oppodigital.com**



PARADIGM

MilleniaOne CT 2.1-channel audio system

Simple setup. Reference quality sound and build. MilleniaOne CT is a powered 2.1 audio/multimedia system that sets up in minutes—no receiver required. It boasts Dolby Digital sound (1.0 to 5.1) converted to 2.1. Pair it with a wireless streaming device like Paradigm's BD 1, Apple TV or AirPort Express to enjoy amazing sound quality wirelessly, with no complicated setup. Everything required is included in the box: 2 cast-aluminum speakers with table stands and wall brackets; an extruded-aluminum powered subwoofer with built-in amp; floor cradle and feet; a control box for connection to your stereo, TV, or A/V equipment; remote control with lithium battery; and all necessary hook-up cables (power, optical, 3.5-mm, speaker, and control box cables). **Available now. System price: \$1,199. paradigm.com**

ON THE HORIZON



PEACHTREE AUDIO

Decco 65 and Nova 125 integrated amplifier/DACs

Peachtree's Decco 65 and Nova 125 look similar to earlier-generation Peachtree amps, but under the hood everything's been upgraded. In the horsepower category, the Decco 65 (2 x 65Wpc) and Nova 125 (2 x 125Wpc) now boast amplifiers that can comfortably drive low-impedance (2 Ohm) speakers.

Both amps also feature new, 24/192-capable ESS Sabre DACs for digital inputs that allow a quick upgrade for any CD player, streamer, or digital source. Better still, both amps sport dedicated asynchronous USB inputs. Finally, Peachtree's true analog input allows for a turntable (via an outboard phono preamp), while the Alps volume control now has more accurate tracking and less crosstalk.

Price: Peachtree's Decco 65 (\$999) and Nova 125 (\$1499) are now dressed for any source or speaker. peachtreeaudio.com



PIONEER ELITE

N-50 networked audio player

Pioneer's Elite N-50 networked audio player is designed for "digital" music enthusiasts for playback of various music file formats including MP3, WMA,

AAC, as well as high-resolution 192kHz/24-Bit FLAC and WAV. The player is equipped with DLNA 1.5 and AirPlay wireless technology, for playback of iTunes music and AirPlay-enabled music steaming apps such as PANDORA® internet radio. For enhanced audio playback of compressed music files, the unit features Advanced Sound Retriever (ASR) and Sound Retriever AIR, to deliver near-CD quality audio from an external player, Internet radio and/or Bluetooth audio transmissions. It also includes a 2.5-inch full-color LCD display and features Pioneer's ControlApp for convenience and added control.

The Elite N-50 is now available at authorized Elite dealers and Magnolia Home Theaters. Price: \$699. pioneerelectronics.com

PRIMALUNA

ProLogue Premium integrated amplifier

Premium parts like Solen capacitors from France, Alps volume control from Japan, custom engineered output and power transformers by some of the most talented minds in the world. Button all that up with point-to-point wiring and five coats of hand rubbed finish, and you have the PrimaLuna ProLogue Premium integrated amp.

While most manufacturers don't supply pictures of the inside of their product, Primaluna insists you look inside at what this \$2299, 35 watt per channel integrated amplifier has to offer. With plenty of power to run most speakers on the market, the ProLogue Premium boasts real bandwidth and superb bass.

Available now. **Price: \$2299. primaluna-usa.com**



ON THE HORIZON



PSB SPEAKERS

Alpha PS1 self-powered desktop speaker

PSB's Alpha PS1 self-powered speaker system is designed for today's music lovers whose systems are often based on computers, game consoles, or smart phones. Featuring PSB's famed sound quality, the Alpha PS1 offers an affordable and musically satisfying experience in a simple plug-and-play solution. The PS1 is the perfect companion for any device with a headphone output and it even features a subwoofer output allowing additional expansion. Each PS1 incorporates two high-performance drivers: a 3 1/2-inch metalized, polypropylene cone woofer with oversized magnet structure paired with a 3/4-inch aluminum tweeter. The drivers, in turn, are powered by a highly efficient 2 x 20W power amplifier. The universal power supply works with any AC voltage making it convenient for world travelers. **Available now. Price: \$299. psbspeakers.com**

ROGUE AUDIO

Sphinx integrated amplifier

The new Sphinx hybrid integrated amplifier from Rogue Audio combines tubes and solid state to take advantage of the smooth natural sound of tubes along with the dynamics and slam often associated with solid state power amplification. A discrete headphone amp and an MM phono preamp are included, making the Sphinx a one box solution for all your amplification needs. The Sphinx measures 15.5" W x 17" D x 5" H, with output power of 100 WPC into 8 ohms. The Sphinx is entirely hand assembled in the USA and is available now at Rogue Audio retailers. **Available now. Price: \$1,295 (\$1,395 with remote). rogueaudio.com**



SONY

SRS-BTX500 X-series ultra-premium Bluetooth speaker with NFC

Sony's new SRS-BTX500 OneTouch portable Bluetooth® speaker with NFC (Near Field Communication) technology offers powerful, dynamic sound and can stream high-quality music or crystal-clear phone calls from NFC-enabled smartphones, tablets and computers via Bluetooth. Better still, the SRS-BTX500 works beautifully in the home or outdoors.

Using Magnetic Fluid technology developed by NASA, Sony's SRS-BTX500 are the world's first full-range, damperless speakers—self-powered speakers that offer a meaningful reduction in noise and distortion.

While delivering rich sound and deep bass, Sony's SRS-BTX500 speakers add style to any room, combining beautiful industrial design with an intuitive user experience. The speakers also offer hands-free speakerphone functionality and a USB charging port for any smartphone, as well as a neoprene carrying case.

Available in March 2013. Price: \$299.99 sony.com

How to Choose an Audio System

Excerpted and adapted from *The Complete Guide to High-End Audio* (fourth edition). © 2013 by Robert Harley. Reprinted with permission. To order, call 800 888-4741 or visit www.hifibooks.com

Choosing a high-quality music-reproduction system is one of the most important purchasing decisions you'll make. Unlike buying home appliances, your selections in components will influence how deeply you appreciate and enjoy an art form—music. A great-sounding system can even change your lifestyle as music assumes a greater importance in your life. A hi-fi system is a vehicle for exploring the world of music; the better the system, the further and wider that vehicle will take you.

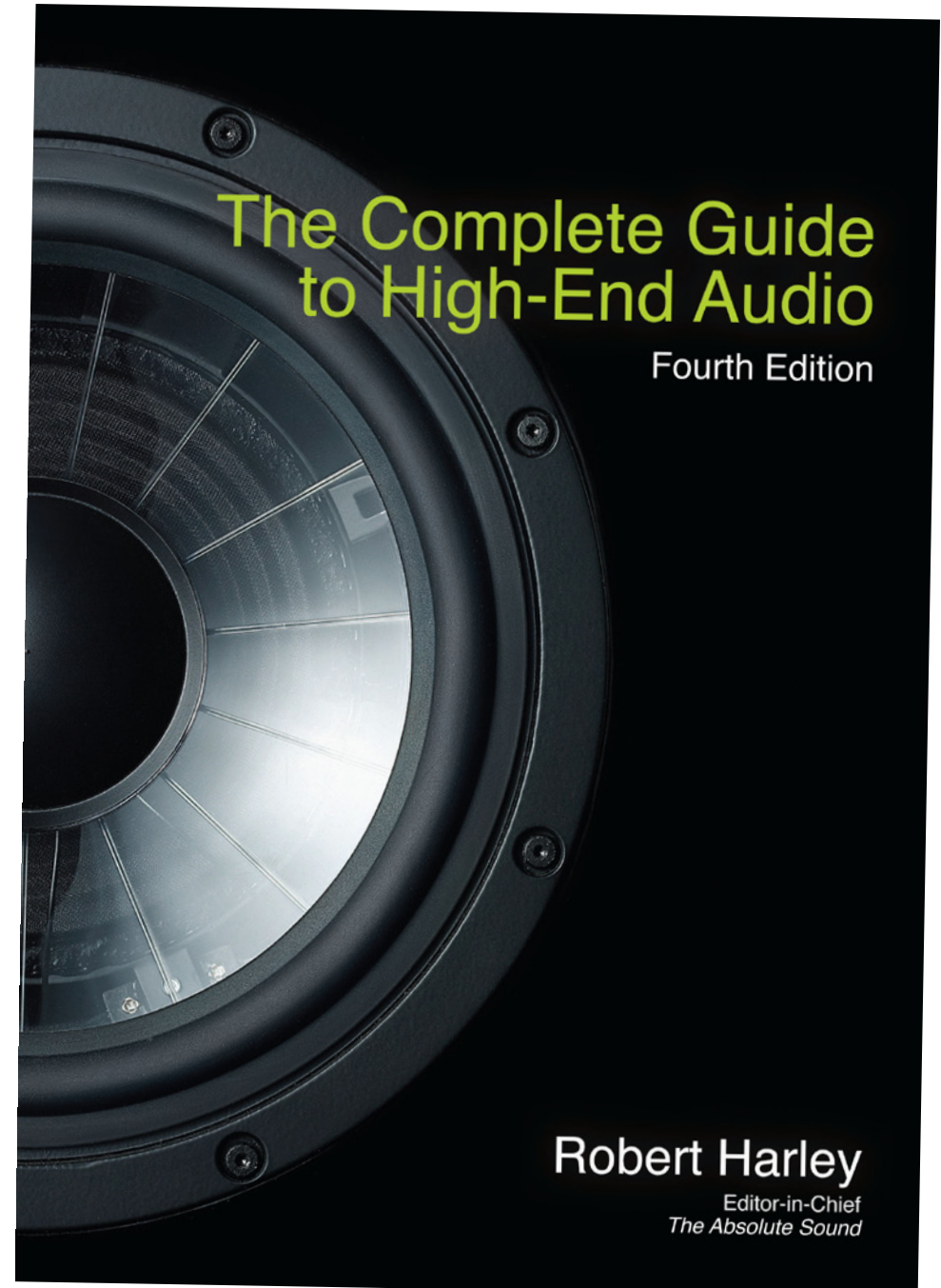
Although selecting hi-fi components may seem a daunting task, a little knowledge and preparation will go a long way toward realizing your dream system—and staying within your budget. The informed shopper knows that choosing the right components, matching those components to each other, and setting them up carefully are more important than a big bank account. This chapter will teach you to become a wise shopper and show you the path to assembling the most musically and aesthetically satisfying system possible for your money.

Choosing the System Best Suited to Your Needs

Just as a pickup truck is better suited to the farmer and a compact car to the city dweller, a hi-fi system ideal for a small New York City apartment would be entirely inadequate in a large suburban home. The hi-fi system must not only

match your musical taste, as described in the next chapter, but must also suit your room and listening needs. (The following section is only an overview of how to choose the best system. More detailed information on how to select specific components is contained in Chapters 4–13.)

Many of the guidelines are fairly obvious. First, match the loudspeaker size to your listening room. Large, full-range loudspeakers don't work well in small rooms. Not only are large loudspeakers physically dominating, they tend to overload the room with bass energy. A loudspeaker that sounds fine in a 17' by 25' room will likely be thick, boomy, and bottom-heavy in a 12' by 15' room. The bass performance you paid dearly for (it's expensive to get correct deep-bass reproduction) will work against you if the loudspeaker is put in a small room. For the same money, you could buy a superb minimonitor whose build cost was put into making the upper bass, midrange, and



Book Excerpt: How to Choose an Audio System

treble superlative. You win both ways with the minimonitor: your room won't be overloaded by bass, and the minimonitor will likely have much better soundstaging and tonal purity. There are other benefits: minimonitors, with their limited low-frequency extension, are less likely to annoy neighbors. You can thus listen to music louder without bothering anyone. Further, placement is much easier in small rooms.

Conversely, a minimonitor just won't fill a large room with sound. The sense of power, dynamic drive, deep-bass extension, and feeling of physical impact so satisfying in some music just doesn't happen with minimonitors. If you've got the room and the budget, a full-range, floorstanding loudspeaker is the best choice.

This is just one example of how the system you choose should be carefully tailored to your specific needs.

Allocating Your Budget to Specific Components

There are no set rules for how much of your total budget you should spend on each component in your system. Allocating your budget between components depends greatly on which components you choose, and your overall audio philosophy. Mass-market mid-fi magazines have been telling their readers for years to spend most of a hi-fi budget on the loudspeakers because they ultimately produce the sound. This thinking also suggests that all amplifiers and digital sources sound alike; why waste money on expensive amplifiers and disc players?

The high-end listener makes different assumptions about music reproduction. A fundamental tenet of high-end audio holds

that if the signal isn't good at the beginning of the reproduction chain, nothing downstream can ever improve it. In fact, the signal will only be degraded by any product it flows through. High-end audio equipment simply minimizes that degradation. If your DAC or music server is bright, hard, and unmusical, the final sound will be bright, hard, and unmusical. Similarly, the total system's performance is limited by the resolution of the worst component in the signal path. You may have superb loudspeakers and an excellent turntable and cartridge, but they'll be wasted with a poor-quality preamp in the signal chain.

Quality matching between components is essential to getting the most sound for your budget. High-quality loudspeakers at the end of a chain containing a bad-sounding component can even make the system sound worse than lower-quality loudspeakers: The high-resolution loudspeakers reveal all the imperfections of the electronics upstream of them. This situation has been likened to having a large picture window in your home. If the view is of the Northern California coastline, you want that window to be as clean and transparent as possible. But if the window overlooks a garbage dump, you'd prefer that it somewhat obscure the view.

I've listened to \$400 loudspeakers driven by \$30,000 worth of electronics, and \$158,000 loudspeakers driven by budget integrated amplifiers. I can state categorically that the electronics and source components are every bit as important as the loudspeakers. Although the loudspeakers significantly influence the overall sound, high-quality source components (turntable and digital source), good electronics (preamplifier and power amplifier), and excellent cables are

essential to realizing a musical high-end system.

There are, however, some outstanding modestly priced integrated amplifiers that can drive high-quality loudspeakers. Because these amplifiers tend to be of moderate output power, it's essential that the integrated amplifier be matched to a speaker with high sensitivity.

For the following exercise, I assembled an imaginary 2-channel system of the components I'd choose if my audio budget totaled \$10,000. This hypothetical system follows a traditional audiophile approach. Here are the costs per item:

Preamplifier	\$2000
Power amplifier	\$2000
Digital source	\$1300
Loudspeakers	\$4000
Interconnects and cables	\$700
Total	\$10,000

As you can see, loudspeakers consumed 40% of the budget, the digital source took up another 13%, and the preamp and power amplifier each received 20%. The remaining 7% was spent on interconnects and cables. These numbers and percentages aren't cast in stone, but they're a good starting point in allocating your budget. If you wanted to include a turntable, tonearm, and cartridge, the budget for the other components would have to be reduced.

Following the earlier discussion of matching a superb but low-powered integrated amplifier with high-sensitivity speakers, here's another example of how I might allocate a \$10,000 budget:

Integrated amplifier	\$3000
Digital source	\$1000

Loudspeakers	\$5500
Interconnects and cables	\$500
Total	\$10,000

Again, the key to putting so much of the budget into loudspeakers is extremely careful matching of the amplifier's power output power to the loudspeaker's sensitivity (and impedance curve, explained in Chapter 6), along with finding those few integrated amplifiers that deliver the musicality of expensive separates, but simply have lower output powers. Here's an extreme case: I lived with a system for about a month (during a product review) that included \$11,000 loudspeakers driven by a \$1500 integrated amplifier and the result was musical magic. It takes a lot of searching to find these synergistic combinations—or a great dealer who has discovered these ideal matches for you. I must stress that this approach only works with certain components, and is useful for getting the best sound for the least money. It is not the ideal strategy when the best possible sound is your goal.

Here's another sample budget, this one based on a maximum expenditure of \$2000:

Amplification	\$750
Digital source	\$400
Loudspeakers	\$750
Interconnects and cables	\$100
Total	\$2000

Again, I selected components that experience suggested would be a good match, and tallied the percentages after choosing the components. Interestingly, the breakdown was similar to that in

Book Excerpt: How to Choose an Audio System

the first example: 37% on loudspeakers, 20% on a digital source, 37% on amplification, and 5% on interconnects and cables.

I've heard systems at this price level that are absolutely stunning musically. When carefully chosen and set up, a \$2000 high-end system can achieve the essence of what high-quality music reproduction is all about—communicating the musical message. I've even heard a whole system with a list price of \$850 that was musical and enjoyable. The point isn't how much you spend on a hi-fi, but how carefully you can choose components to make a satisfying system within your budget.

Whether choosing a system you should save some of your budget for an AC power conditioner and accessories. I advise against buying a power conditioner and accessories when you buy the system. Take the system home, get it set up and optimized, then add a power conditioner and start experimenting with accessories. Here's why: AC conditioners don't always make an improvement. In fact, some can even degrade the sound. There are many variables with AC power conditioners, including the quality of AC from your wall, the method of AC conditioning, and the number and nature of the components plugged into the conditioner. It is therefore best to try the conditioner at home before buying.

There's another good reason for adding an AC line conditioner later: By getting to know how your system sounds without an AC conditioner, you'll be better able to judge if the conditioner is an improvement. Remember that a change in sound isn't always for the better. The same logic holds true for accessories such as cones, feet, and tube dampers: You'll be in a much better position

to judge their effectiveness—or lack of it—by knowing your system intimately before installing accessories. Set aside some of your budget—)

Upgrading a Single Component

Many audiophiles gradually improve their systems by replacing one component at a time. The trick to getting the most improvement for the money is to replace the least good component in your system. A poor-sounding preamp won't let you hear how good your music server is, for example. Conversely, a very clean and transparent preamp used with a grainy and hard digital source will let you hear only how grainy and hard the digital source is. The system should be of similar quality throughout. If there's a quality mismatch, however, it should be in favor of high-quality source components.

Determining which component to upgrade can be difficult. This is where a good high-end audio retailer's advice is invaluable—he can often pinpoint which component you should consider upgrading first. Another way is to borrow components from a friend and see how they sound in your system. Listen for which component makes the biggest improvement in the sound. Finally, you can get an idea of the relative quality of your components by carefully reading the high-end audio magazines, particularly when they recommend specific components.

In Chapter 1, I likened listening to music through a playback system to looking at the Grand Canyon through a series of panes of glass. Each pane distorts the image in a different way. The fewer and more transparent the panes are, the clearer the view, and the closer the connection to the direct experience.

Think of each component of a high-end audio system as one of those panes of glass. Some of the panes are relatively clear, while others tend to have an ugly coating that distorts the image. The pane closest to you is the loudspeaker; the next closest pane is the power amplifier; next comes the preamp; and the last pane is the signal source (disc player, music server, turntable). Your view on the music—the system's overall transparency—is the sum of the panes. You may have a few very transparent panes, but the view is still clouded by the dirtiest, most colored panes. This idea is shown graphically on page 3 earlier.

The key to upgrading a hi-fi system is getting rid of those panes—those components—that most degrade the music performance, and replacing them with clearer, cleaner ones. This technique gives you the biggest improvement in sound quality for the money spent.

Conversely, putting a very transparent pane closest to you—the loudspeaker—only reveals in greater detail what's wrong with the power amplifier, preamplifier, and source components. A high-resolution loudspeaker at the end of a mediocre electronics chain can actually sound worse than the same system with a lower-quality loudspeaker.

Following this logic, we can see that a hi-fi system can never be any better than its source components. If the first pane of glass—the source component—is ugly, colored, and distorts the image, the result will be an ugly, colored, and distorted view.

As you upgrade your system, you can start to see that other panes you thought were transparent actually have some flaws you couldn't detect before. The next upgrade step is to identify and

replace what is now the weakest component in the system. This can easily become an ongoing process.

Unfortunately, as the level of quality of your playback system rises, your standard of what constitutes good performance rises with it. You may become ever more critical, upgrading component after component in the search for musical satisfaction. This pursuit can become an addiction and ultimately diminish your ability to enjoy music. The next chapter includes an editorial I wrote for *Stereophile* magazine examining this subject.

System Matching

It is a truism of high-end audio that an inexpensive system can often outperform a more costly and ambitious rig. I've heard modest systems costing, say, \$1500 that are more musically involving than \$50,000 behemoths. Why?

Part of the answer is that some well-designed budget components sound better than ill-conceived or poorly executed esoteric products. But the most important factor in a playback system's musicality is system matching. System matching is the art of putting together components that complement each other sonically so that the overall result is a musicality beyond what each of the components could achieve if combined with less compatible products. The concept of synergy—that the whole is greater than the sum of the parts—is very important in creating the best-sounding system for the least money.

System matching is the last step in choosing an audio system. You should have first defined the system in terms of your individual needs, set your budget, and established a relationship with a local

Book Excerpt: How to Choose an Audio System

specialty audio retailer. After you've narrowed down your choices, which products you select will greatly depend on system matching.

Knowing what components work best with other components is best learned by listening to a wide range of equipment. Many of you don't have the time—or access to many diverse components—to find out for yourselves what equipment works best with other equipment. Consequently, you must rely on experts for general guidance, and on your own ears for choosing specific equipment combinations.

The two best sources for this information are magazine reviews and your local dealer. Your dealer will have the greatest knowledge about products he carries, and can make system-matching recommendations based on his experience in assembling systems for his customers. Your dealer will likely have auditioned the products he sells in a variety of configurations; you can benefit from his experience by following his system-matching recommendations.

The other source of system-matching tips is magazine reviews. Product reviews published in reputable magazines will often name the associated equipment used in evaluating the product under review. The reviewer will sometimes describe his or her experiences with other equipment not directly part of the review. For example, a loudspeaker review may include a report on how the loudspeaker sounded when driven by three or four different power amplifiers. The sonic characteristics of each combination will be described, giving the reader an insight into which amplifier was the best match for that loudspeaker. More important, however, the sonic descriptions and judgments expressed can suggest the type of amplifier best suited to that loudspeaker. By type I mean both technical performance (tubed vs. transistor, power output, output impedance, etc.) and general sonic characteristics (hard treble, forward presentation,

well-controlled bass, etc.).

By reading magazine reviews, following your dealer's advice, and listening to combinations of products for yourself, you can assemble a well-matched system that squeezes the highest musical performance from your hi-fi budget.

Component Selection Summary

When choosing a high-end system or component, follow these ten guidelines:

- 1) Establish your budget. Buy a component or system you'll be happy with in the long run, not one that will "do" for now. Do it right the first time.
- 2) Be an informed consumer—learn all you can about high-end audio. Study magazine reviews, visit your local specialty retailer, and read the rest of this book. Do your homework.
- 3) Develop a relationship with your dealer. He can be the best source of information in choosing components and assembling a system.
- 4) Find components that work synergistically. Again, your dealer knows his products and can offer suggestions.
- 5) Select products based on their musical qualities—not technical performance, favorable reviews, specifications, price, or brand name.
- 6) Choose carefully; many lower-priced components can outperform higher-priced ones. Take your time and maintain high standards—there are some great bargains out there.
- 7) Buy products from companies with good reputations

for value, customer service, and reliability. Also, match the company's product philosophy (i.e., cost-no-object vs. best value for the money) to your needs.

8) When possible, listen to prospective components in your system at home before buying.

9) Follow the setup guidelines in Chapters 14 and 15 to get the most from your system. Enlist the aid of your dealer in system setup.

10) Add accessories after your system is set up.

If you read the rest of this book, subscribe to one or more reputable high-end magazines, and follow these guidelines, you'll be well on your way to making the best purchasing decisions—and having high-quality music reproduction in your home.

One last piece of advice: After you get your system set up, forget about the hardware. It's time to start enjoying music.

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Editors' Top Picks: Affordable High-End Audio Gems

Neil Gader, Chris Martens, Paul Seydor, and Steven Stone



Audience ClairAudient "The ONE" stand-mount loudspeaker (\$999/pair)

www.audience-av.com; review pending, TAS 237

"The ONE" as you might infer from its name, uses a single full-range driver placed into a small box. This driver is exactly the same unit that Audience uses in their flagship 8x8 speaker, and if used in the right-sized near field set-up "The ONE" is every bit as good at delivering an unobstructed window into the original musical event as its larger siblings. With its high levels of coherence, resolution, soundstaging accuracy, and image specificity, when mated with a subwoofer "The ONE" offers desktop and near field listeners more than a taste of what you can achieve from a large-room mega-buck system.



Burson Audio "Soloist" stereo preamplifier/headphone amplifier (\$999)

www.bursonaudio.com;

reviewed by **Chris Martens, Playback 60**

One of our favorite reasonably priced stereo preamps is the sophisticated, Australian-made, Burson Audio Soloist, which doubles as a superb headphone amplifier. The Soloist sports three analog inputs, variable-level analog outputs, and offers three switch-selectable master gain settings that enable the amp to adapt to various headphone loads. It is essentially a hand-built product. Thus, the Soloist uses "op amps" based solely on discrete transistors (not ICs), the volume control is a hand-made stepped resistor ladder, and the chassis is made of resonance-resistant machined aluminum panels. There is no remote control, but once you hear the Burson's ridiculously suave, 3D sound, we doubt you'll care.



Dynavector Karat 17D3 moving coil phono cartridge (\$1150)

www.dynavector-usa.com;

reviewed by **Paul Seydor, TAS 137**

Dynavector's Karat 17D3 is the third generation of a twentyyearold design, is ruler flat top to bottom with all the life and liveliness of past Karats, with seethrough transparency, superb tracking, crackling musicality, brilliance and clarity abounding. It also throws a sensationally wide and deep soundstage with extraordinary dynamics and resolution, and it tracks like nobody's business. At \$1150 it has in Seydor's view no peer in the price/performance sweepstakes; it requires a very good tonearm to give of its best, but when paired with the best 'arms it punches so far above its price class that it can take on all comers.



Harbeth P3ESR minimonitor (starting at \$2090/pair)

www.harbeth.co.uk; non-Radial version

reviewed by **Paul Seydor, TAS 193**

TAS' Paul Seydor found designer Alan Shaw's HLP-3ES2 subcompact monitor is so cannily designed it almost transcends the limitations of its genre. Neutrality and natural tonalbalance reign supreme, but this one can also play to loudness levels and suggest bass depths that leave the LS3/5a and its other derivatives at the post. Strengths include exceptional driver integration, coherence, and openness. The "R" in the model designation indicates the midrange/woofer is now made from Harbeth's proprietary RADIAL™ material, which means extremely low coloration. This is now Seydor's reference minimonitor.

EDITORS' TOP PICKS



HiFiMAN HE-500 planar magnetic headphones (\$699)

www.hifiman.com;

review by Tom Martin, Playback 47

The food company Sara Lee used to promote its baked goods with the claim that, “Nobody doesn’t like Sara Lee.” Well, that same comment might apply for HiFiMAN’s next-to-the-top-of-the-range HE-500 headphone—a product that wins friends by finding the elusive balance points between accuracy and musicality, and between high performance and sensible pricing. The HE-500 offers smooth, wide-range frequency response, excellent levels of resolution, and turn-on-a-dime transient reflexes, yet it is never edgy or finicky in operation. Better still, the HE-500 is easy to drive (not all planar magnetic ‘phones are), making it something of a top-tier headphone for “Everyman”.



iFi iDAC digital-to-analog converter (\$249) and iUSB power supply (\$199)

www.ifi-audio.com/en/;

review by Steven Stone, TAS 233

TAS’ Steven Stone suspects that many audiophiles will purchase iFi products with the intention of using them in a portable, traveling, or desktop system. But after trying any one of these little wonders, you might be tempted to move them into your main system. During listening sessions Stone used the iDAC both alone and connected to the iFi iUSBPower device. Performance, even without the addition of the iUSBPower, was startlingly good. Using the fixed-level RCA outputs, the lack of extraneous background noise and the essential silence of the iDAC was excellent. If your budget for a USB DAC is above the combination price of \$448, we strongly advise you to listen to the iDAC/iUSB before climbing the price-point ladder.



Magnepan 1.7 planar-magnetic floorstanding loudspeaker (starting at \$1999/pair)

www.magnepan.com;

reviewed by Jonathan Valin, TAS 205

Magnepan’s 1.7 arguably serves up more high-end virtue and sophistication per dollar than any other loudspeaker on the market today. Strengths include remarkable top-to-bottom coherency, smooth and evenly balanced frequency response, respectable bass that extends down to about 40 Hz, excellent transient speed, realistic image height, and huge, three-dimensional soundstages. Still, the 1.7 is demanding; it requires plenty of room in which to operate and substantial amounts of high-quality amplifier power. But meet its needs and the 1.7 will in turn meet yours. For a lower cost and more readily room-adaptive alternative, consider Magnepan’s Super MMG system (ideally with twin DWM bass panels).



Magnepan Super MMG planar-magnetic loudspeaker system (starting at \$1199)

www.magnepan.com; **review pending, TAS 235**

Maggie sound in a small package? The Super MMG system consists of a pair of specially optimized MMGs plus a single DWM bass module. And it works like a charm. The three-panel system is superbly integrated with a welcome mid and upper bass bloom that’s musically relevant and balanced. Not to mention the presence of all the classic Maggie traits like low distortion, swift transient speed, plus the micro dynamic energy and harmonic complexities that define and enliven acoustic music. And since there’s no cabinet there’s not a hint of overhang, or any amusical resonances. Part of Magnepan’s aggressive direct sale program, the Super MMG System is a 60-day return guarantee product. (\$1750 with twin DWM panels)

EDITORS' TOP PICKS



Meridian Explorer USB DAC (\$295)

www.meridian-audio.com;

reviewed by Neil Gader, TAS 234

Packaged in a chic, compact, extruded aluminum ovular case the Explorer is a fully asynchronous, USB powered, high resolution DAC streamer, capable of streaming files up to 24-bit/192kHz resolution. Sonics? Heck yeah. Tonally, the Explorer supplies smooth touches of analog-like warmth and fluidity—factors that I regard as essential in the otherwise arid landscape that describes much entry-level digital. It brings a more expressive bass region to this segment, with sturdy timbral identities and a purer, cleaner dynamic midbass punch. In its class the Meridian is a little more intrepid dynamically and possesses a dimensional complexity that stands it apart. Issue 234



Musical Surroundings Nova Phenomena phono preamp (\$999)

www.musicalsurrroundings.com;

reviewed by Paul Seydor, TAS 172

The Nova Phenomena, a Mike Yee design for Musical Surroundings, has been around for almost a decade, during which time it has been Paul Seydor's reference owing to outstanding performance, with gain and loading options that allow for optimal matching to any pickup. Its sonic personality consists in a notable lack of same: a neutrality and freedom from coloration that is state of the art, with an Apollonian restraint and objectivity that evince evidence of fidelity to the source, rather than to some imposed aesthetics of "good" sound. Battery powered, dual mono, extremely quiet, very low in distortion, wholly US made, at \$999 this remains unsurpassed by anything even close to its cost and nothing at any price puts it in the shade.



Mytek Stereo192-DSD-DAC (\$1595)

www.mytekdigital.com;

reviewed by Steven Stone, TAS 234

Although the Mytek Stereo192-DSD-DAC is extremely neutral, it does have more than one sonic personality. The upsampling option, as well as the two PCM filter choices, made a noticeable difference in how the Mytek sounds. With lower bit-rate sources, such as MP3s and audio from video streams, upsampling delivered superior low-level definition, image solidity, and better pace. But with higher resolution digital files the non-oversampling native rate was superior. If you need a DSD-capable DAC with a Firewire interface (which can be attached to any Thunderbolt connection via an adapter) the Mytek is the only game in town, so far.



NAD C326BEE integrated amplifier (\$499)

www.nadelectronics.com;

reviewed by Paul Seydor, TAS 199

At \$499 the C326BEE represents for TAS' Paul Seydor an update of NAD's classic 3020 amplifier for the new millennium, its predecessor's warm, veiled presentation banished in favor of a neutral tonal balance (with just a hint of darkness, though this may actually *sound* more natural) and far greater control and transparency. Despite offering only 50 watts/channel, dynamic range is quite superb, well able to handle Wagner's *Ring* at its most spectacular or Mary Travers at her loveliest, and no slouch when it comes to resolution. Seydor considers this the budget amplifier to beat and if he had to he would use it without apology to drive even his superrevealing QUAD 2805s electrostatic loudspeakers.

EDITORS' TOP PICKS



Oppo Digital BDP-105 universal/Blu-ray player/DAC (\$1198)

www.oppodigital.com;

reviewed by Chris Martens, TAS 232

Few disc player/DACs can compete with Oppo's BDP-105 at its price point—not in terms of versatility, flexibility, video quality, or of serious high-end sound quality. The Oppo offers a clean, clear, and decidedly detail-oriented presentation that hews somewhat toward sonic leanness, where what you hear is what's on the record, pure and simple, with no infusions of artificial softness, warmth or bass enrichment. Accordingly, the Oppo is a player with which your system can grow (and, note, also the vehicle of choice for many firms offering high-performance upgrade mods). Oh, and did we mention the Oppo sounds terrific with top-tier headphones?



ProAc Anniversary Tablette stand-mount monitor (\$2200/pair)

www.proac-loudspeakers.com;

reviewed by Steven Stone, TAS 234

The ProAc Tablette has gone through nine iterations since it was introduced. The latest version still has that same small, ported MDF enclosure as its forbearers. But the current model sports a new 5 7/8" Kevlar-coned midrange/woofer and a 20mm dome tweeter. While still not able to defy the laws of physics, the Anniversary Tablette can play louder, with far fewer signs of sonic distress than earlier versions. Tablettes offer a unique combination of high resolution and musicality that makes them a top contender for desk space if you are looking for a great small-footprint high-resolution monitor speaker.



Revel Performa3 M106 stand-mount monitor (\$2000/pair)

www.revelspeakers.com;

reviewed by Neil Gader, TAS 234

Cut from the same cloth as its floor standing, big brother the F206, Revel's stand mount M106 sports that speaker's brilliantly refined tweeter/acoustic lens waveguide resulting in the same wide midrange sweetspot and a vocal lover's dream. There's a rewarding lack of localization and estimable composure under all sorts of dynamic fire. Plus nearly imperturbable output so that even under punishing conditions this feisty compact remains frequency response linear. There's a cooler cast to its tonal balance likely due to the lighter bass presence but its voice is still unmistakably, accurately Revel. A remarkable two-way compact that exceeds all expectations of small speaker performance in its price class and well beyond.



Sonus faber Venere Model 2.5 floorstanding loudspeaker (\$2498/pair)

www.sonusfaber.com;

reviewed by Neil Gader, TAS 232

Sonics, sex appeal and style—Sonus faber brings all these ideals to bear in the Venere Model 2.5. One thing is assured: the Model 2.5 will never be accused of being a wallflower. The 2.5-way floorstander is dynamically lively, tonally well balanced. Its vivid midrange palette brings music alive and brimming with enthusiasm. Even if it overshoots the mark on occasion—a small presence range dip, added bloom in the bass—these are minor deductions in light of its overall, robusto performance. In many ways, with its weightier tonal signature and weighted soundstage, the Model 2.5 shares a major percentage of family sonic traits with the appealing, up-market Sf Liuto of TAS 199 fame.



EQUIPMENT REVIEWS

Loudspeakers

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Late one snowy night

at a Michigan motel, January 1999, I designed Gibraltar speaker cable for my own system. I needed an extremely high-performance cable which would provide true Double-BiWire performance in a single attractive cable. While I needed to optimize a 2-way speaker, in which the transition between woofer and tweeter is above the midrange, the challenge I enjoyed overcoming in those early morning hours was designing a cable which would also be equally effective Full-Range or when used to BiWire a 3-way speaker (in which the bass/treble transition is below the midrange, the midrange information being carried by the treble cable rather than by the bass cable as with a 2-way).

Original Gibraltar's all important basics – superior geometry, almost ideal isolation between the magnetic fields of the bass and treble signals, Perfect-Surface metal, conductor size maximization (AQ's SST), etc. – are the fundamentals of our new Castle Rock cable, as are crucial post-1999 improvements to Gibraltar, such as even better metal and AQ's Dielectric-Bias System (DBS).

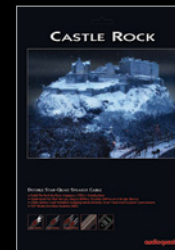
You might not notice that Castle Rock's new more nicely sculpted "breakout" (covering where the cable separates into red and black legs) is no longer metal. We have made this all-models upgrade because speaker cables and AC cables carry large magnetic fields which interact with any metal "collar" around the cable.

Smaller ingredients, such as non-metallic breakouts and the new Noise-Dissipation System (NDS) built into Castle Rock, and bigger changes, such as Castle Rock using the same sleek new 1000 Series Multi-Spades and Bananas developed for the WEL Signature Series cables, add up to an important difference in what you hear and enjoy.

Even though the jump up from last-generation Gibraltar to Castle Rock is no bigger than the cumulative improvements brought to Gibraltar over its long life, Castle Rock's own new systems and materials earns it a new name to honor Gibraltar's long-term evolution + Castle Rock's new ingredients.

Happy listening!

William E. Low



audioquest®

Pioneer SP-BS22 LR

The Devil and Mr. Jones

Neil Gader

What are your expectations for a \$129/pair loudspeaker? Not all that high I would guess. At the very least, you'd expect it to work reliably, play reasonably loud, and not look too schlocky. But high-end sonics? That's setting the bar way up there. And that was pretty much what I thought when the redesigned Pioneer SP-BS22 LR was presented to me for review. But there was one significant difference—the new BS22 sports a discrete signature on its back panel just above the binding posts: A. Jones.

So what's in a name? This particular A. Jones is Andrew Jones, the British gentleman known principally for his exquisite designs for TAD Labs, the high-end wing of parent company Pioneer Electronics. However, he's also the chief speaker engineer for Pioneer, where the demands of that global titan include a broader-based, budget-conscious market. I can't speak for Mr. Jones' ability to compartmentalize, but it does speak volumes about his creative range—a bit like engineering a McLaren one day and tinkering with a Mini the next. However, whether it's designing the latest beryllium coincident transducer, or bringing the new TAD Evolution 1 (\$29,000, review to come) or, in this case, the modest SP-BS22 LR to market—the influence of Mr. Jones' design cannot be taken lightly.

To look at, the SP-BS22 LR is as conventional and unassuming as a speaker comes. It's a two-way bass-reflex design that tips the scales at little more than nine pounds. If you imagined its driver array as something along the lines of a TAD-derived coincident driver trickling down to

the sub-\$150 price point, think again. Mid/bass duties are handled by a prosaic four-inch driver with a structured-surface diaphragm to aid rigidity and fend off breakup modes. The one-inch soft-dome tweeter uses a large, custom-designed waveguide to control dispersion and increase sensitivity. Construction and fit and finish appear solid, consistent with today's "made in China" workmanship. The SP-BS22 LR speakers utilize a curved cabinet design, which adds stiffness to the enclosure and is said to reduce internal standing waves. (This last issue is less germane in small boxes than full-range enclosures.) Although SP-BS22 LR is small, its relatively low 85dB sensitivity means that it requires more than minimal power. Bass is better controlled and there's more of it with additional watts; plus, the added power enlivens dynamics and enriches tonality.

But, like they say, the devil's in the details, and the wildcard is the not-to-be-underestimated Jones Factor. What makes his concoction such a delight to listen to is how well he applies high-end values to such a small and (let's face it) cheap



EQUIPMENT REVIEW - Pioneer SP-BS22 LR



bundle. To be clear, my point is not that the BS22 somehow dethrones every loudspeaker below, say, five grand, but that Jones has hit the bull's-eye (it figures he's an archery buff) in the nature and proportion of the speaker's many inevitable compromises.

The BS22 has an honest tonal signature that doesn't pander to the "let's move 'em" sensibilities of big-box-store salesmen. It is remarkably free of sonic hype. From the outset I noted how quiet the cabinet was. There was little sense of a veil or cloud hanging over the soundstage, smudging

images and restricting acoustic boundaries. The choristers of the Turtle Creek Chorale were firmly rooted in position during Rutter's "A Gaelic Blessing" from his *Requiem* [Reference Recordings], and there was a well-defined, dimensional soundstage, albeit one that was somewhat abbreviated in depth and size.

However, the essence of the BS22's performance is found in the quality of its midrange. Jones has fashioned a smooth, tonally ripe midband with just enough heft and weight behind vocal and instrumental images to provide reasonable dynamic and harmonic scale. The treble is surprisingly open, which lends overtones a fullness and dimensionality that are often lacking in blue-plate loudspeakers. The BS22 does roll off the top treble to some degree, giving sonics a darker and somewhat more forgiving character, but credit the waveguide tweeter for limiting dispersion at the lower end of the tweeter's passband so its dispersion more closely matches that of the upper end of the woofer's passband. As a result, vocals of either gender are tonally authentic rather than helium-breathing, Munchkin-like caricatures. On a track like Linda Ronstadt's "Poor Poor Pitiful Me" from *Simple Dreams* [Asylum] the BS22 demonstrated canny balance, articulating low-level niceties while producing the weight and dynamic energy of the tracks' rhythm section. Similarly Don Henley's high harmony during Jackson Browne's "Colors of The Sun" was fully realized with that distinctive smoky character soon to be made famous when he formed the mega-band, the Eagles, a couple years later. And again during Jennifer Warnes' "If It Be Your Will" on *Famous Blue Raincoat* [Impex] the speaker managed to steer clear of peaky

treble behavior and again artfully straddle the line between articulate reproduction of the graceful 12-string and the deep colors of the bass guitar. The take-away here is that the BS22 is agile enough not to bury musical delicacies beneath a slurry of low-frequency cabinet resonances.

At first I thought it might be foolish to cue up "Prof" Keith Johnson's latest from Reference Recordings, *Horns for the Holidays* [RR-126, review this issue], but, beyond the obvious SPL limitations, the BS22 supplied a rich sensation of bloom from these spirited wind and brass sections with discernable contrasts in energy.

The SP-BS22 doesn't go especially deep beyond the upper bass, but it remains composed at higher outputs. There's bit of port/cabinet noise at its dynamic limits, but on Norah Jones' "Sinkin Soon" from *Not Too Late* [Bluenote], acoustic bass was both tuneful and tight. For the most part, the BS22 avoids the midbass boom that makes potential subwoofer-matching such a nightmare.

Although not sonically cringe-worthy, there was a bit too much sibilance for my taste. When Holly Cole sings "Take me home/ You *silly* boy" from *Temptation*, there was just a small helping more "sss" than I prefer. There was also a general diminution of top-end transparency the higher the speaker went. Cymbals, for example, lacked the wide-rimmed splash and decay of the real things. And, lastly, beyond the absence of true low bass, the most noticeable subtraction was a diminution of macro-dynamics. The BS22 compresses gently but firmly, and flattens out the larger swings as if carefully measuring its own physical limitations, self-censoring if you will.

I would never have guessed at the outset that I'd be taking the BS22 so seriously when

it came time to write this review, but in the right room this game little compact has in many areas turned in a performance worthy of speakers well beyond its almost laughably low price point. All courtesy of the man behind that tiny back-panel signature. The BS22 is simply one of the great buys out there, without reservation. **tas**

SPECS & PRICING

Type: Two-way, bass-reflex
 Drivers: 1" tweeter, 4" mid/bass
 Frequency response: 55Hz–20kHz
 Sensitivity: 85dB
 Impedance: 6 ohms
 Dimensions: 12.6" x 7.2" x 8.5"
 Weight: 9.1 lbs.
 Price: \$129/pr.

PIONEER ELECTRONICS
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 Long Beach, CA 90810
 (800) 421-1404
 pioneerelectronics.com

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Survey: Three Small Monitors from Definitive, CEntrance, and GoldenEar

Less Can Be More

Chris Martens

For many people, the term “high-end audio” equates to “high-priced audio,” but I fondly recall a time when things were not this way. TAS founder Harry Pearson once remarked that (I am paraphrasing, here), “The high-end is about high sound quality and a music-first mindset—not about high price points”—a sentiment with which I wholeheartedly agree. Thus, though I enjoy exotic, ultra-high-performance audio gear as much as (or more than) the next person, I’ve long been fascinated by those affordable gems that occasionally come along in our industry—the products that, without fanfare, hype, or stratospheric prices simply settle in and play the music with fidelity and conviction. Three such gems are the affordable compact monitors from Definitive Technology, CEntrance, and GoldenEar Technology that I will address in this survey.

Definitive Technology StudioMonitor 45

Many audio enthusiasts associate the name Definitive with so called “home-theater speakers,” but the company also has roots that go deep in the area of affordable, high-performance monitors. Over the past year, Definitive has rolled out a three-product family of stand-mount studio monitors, the smallest and most affordable of which is the inexpensive Studio Monitor 45 (or SM45, for short). In spite of its almost laughably low price, the SM45 is a speaker that demands to be taken seriously, for reasons you’ll discover in a moment.

The SM45 is a two-way, bass-reflex monitor that is larger than you might at first expect (viewed from the side, it proves to be nearly a foot

tall and deep). The driver complement includes a second-generation version of Definitive’s 1-inch aluminum-dome tweeter (which receives special heat-treatment processing and a ceramic coating) plus one of the firm’s signature 5.25-inch BDSS (Balanced Double Surround System) mid/bass drivers fitted with Definitive’s recently developed LRW (Linear Response Waveguide) phase plug. Together, BDSS and LRW technologies are said to give the mid/bass driver dramatically greater excursion (and thus dynamic) capabilities, lower distortion, smoother frequency response, and improved off-axis performance. A curved baffle plate with rounded edges also helps fight diffraction.

I found the SM45s sounded great straight out of



EQUIPMENT REVIEW - Three Small Monitors

the carton so that they didn't need a lot of run-in time and weren't terribly fussy about placement. They did, however, need at least a little clearance from adjacent walls and sounded best on stands that positioned their tweeters at ear level.

From the start, three aspects of the SM45's sound hit home for me. First, they were unexpectedly full-bodied and offered an astonishing amount of bass reach (down into the upper 30Hz region)—reach few other small monitors can match. Frequency response is smooth but perhaps not strictly neutral, as the speakers do introduce a broad, gentle touch of bass lift from about 80Hz on down. However, there's not enough low-end emphasis to make the speakers sound overblown, but rather enough to remind you that this is a serious, near-full-range monitor—one that seeks to provide big-speaker depth and richness. The only caveat I found is that if you feed the Definitives very low-frequency material at high volume levels, you may periodically bottom out their mid/bass drivers (I did this once or twice on brutal LF test discs).

Second, the Definitives sounded much more dynamically expansive than other monitors that I have heard about their size and price. It's almost as if the SM45s magically suspended the conventional rules of "small-speakerness," holding forth with ease and gusto, as if they were much larger than they appeared to be.

Third, the SM45s were relaxed, effortless, and at times downright holographic imagers. Many small speakers claim to have these properties and can even achieve them to some extent, but the Definitives take "disappearing act" imaging to a much higher level and do so without requiring endless tweaking, fiddling, or fine-tuning. For a quick, four-word, audio-speak summary of the SM45, try this one: "Plays *big* and disappears." Indeed, these speakers re-define the concept of cheap thrills.

To appreciate the broad appeal of the SM45s, it's instructive to put on a piece of music that could, under typical circumstances, embarrass most small monitors—a piece such as the very taxing closing section of Mahler's Eighth Symphony (Tilson-Thomas, San Francisco Symphony, SFS Media, SACD). Rather than falling flat on its face and sounding painfully overstressed, the little SM45s just wade right in and play the music. Are there occasional moments of

compression, low-level congestion, and the like? Of course there are (Mahler's 8th is, after all, power music at its most demanding), but overall the Definitives' presentation not only hangs together, but also retains a significant amount of the scale, grandeur, and aspirational reach that makes this piece so majestic.

Naturally, the SM45s work for smaller pieces too, such as the title track from Anne Bisson's *Blue Mind* [Fidelio], where Bisson's voice and piano sound pure and well-focused, although the accompanying acoustic bass does sound hearty almost to a fault. But overall, the musical effect is one where dense tonal colors, vivid imaging, and an overarching quality of sumptuous richness carry the day.

The SM45 might not provide the highest levels of strict textbook accuracy, but it provides giant helpings of musical richness, relaxation, and enjoyment at a ridiculously modest price. For these reasons and many more, Definitive's SM45s are a no-brainer recommendation for music lovers whose sights are set high, but whose budgets are limited.

CEntrance MasterClass 2504 Monitor

Chicago-based CEntrance started as an audio-engineering consulting company, but has since branched out to manufacture a range of innovative music products, some targeted for the pro-sound world, some geared for serious desktop audio enthusiasts, and a few—such as the MasterClass 2504 mini-monitors reviewed here—that appeal to both communities. In creating the 2504, CEntrance hoped to build a nearfield speaker accurate and revealing enough for monitoring applications, but refined and soulful enough to please audiophiles. Most of all, they wanted a monitor that would deliver exceptional imaging and soundstaging in desktop applications.

The 2504 is a small, bass-reflex monitor that incorporates a CEntrance-designed 4-inch coaxial/coplanar mid/bass/tweeter array said to eliminate arrival time delays between the driver elements (not all coaxial drivers are coplanar, and thus not time-aligned as the CEntrance driver is). The crossover network, in turn, uses "audiophile-grade capacitors," air-coil inductors wound from oxygen-free copper wire, and special "low-leakage" printed circuit boards to "minimize phase shift, frequency non-linearity, and

resulting distortion." Thoughtful touches abound.

The 2504's require about 20 hours of run-in time and extremely careful placement. CEntrance's manual advises that the speakers "truly open up if they are positioned in such a way that there is *no horizontal surface right in front of them*" (italics are mine). CEntrance thus recommends placing the speakers either at the front edges of desks or on short stands at least 1–1.5 feet from nearby walls.



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I would add that listeners should elevate the 2504s so that their coaxial drivers are at ear level; in fact, this step is the crucial key to unlocking the speakers' superb imaging capabilities.

The 2504s offer neutral and accurate voicing suitable for monitoring applications, yet voicing that also offers a gentle hint of natural warmth which keeps the speakers from sounding cold, analytical, or sterile. Mids are sophisticated and nuanced, while upper mids and highs sound delicate and extended, with a touch of natural sweetness. The only caveat is that you might occasionally hear faint traces of a subtle horn-like coloration on hard-edged upper midrange/treble transients (perhaps a low-level interaction between the coaxial driver's tweeter and mid/bass cone?). Happily, though, this is a minor flaw that's rarely evident.

Bass extends to a lower limit of about 50Hz, which doesn't sound impressive on paper, but turns out to be perfectly adequate for nearfield listening. Some bass connoisseurs might wish for a smidgeon more low-frequency damping, but I personally respect and admire the balance CEntrance has chosen, which offers low-end detail and definition on one hand, with pleasing natural weight and warmth on the other.

The 2504s offer good levels of detail and resolution, excellent transient speed, and a sure-handed way with low-level and larger-scale shifts in dynamic emphasis. But by far their most impressive qualities are their tightly focused imaging and vivid 3-D soundstaging. Expect to hear wide, deep soundstages unfold far behind and beyond these tiny desktop speakers.

To hear these qualities in action, put on "Aphrodite" from Robert Paterson's *The Book of Goddesses* [American Modern Recordings], a piece written for and performed by the Maya trio, which features harp, flute, and percussion. Impressively, the 2504s showed many of the positive qualities I've heard from far more expensive speakers on this track, meaning that the harp sounded lithe, agile, and luminous; the flute sounded breathy, round, and resonant; and the percussion instruments sounded taut, incisive, and full of rhythmic drive.

More importantly, the 2504s captured the "air" surrounding the instruments and the elusive sense of performers playing in a real three-dimensional space—qualities conveyed through masterful

reproduction of very low-level spatial and reverberant cues in the music. In simple terms, it's the 2504's ability to "go 3-D" on command (when recordings permit) that gives this speaker an element of greatness.

While the 2504s can't play at head-banger levels, they can handle the demands of rock music pretty well—assuming you use them, as intended, for nearfield listening. You won't hear the thumping, overblown bass favored by some rock fans, but the CEntrance's sheer clarity, power, and expressiveness may win you over nevertheless. On well-recorded electric guitar solos, for example, such as those served up by bluesman Hadden Sayers on *Hard Dollar* [Blue Corn Music], you'll find Sayer's Fender Strat sounds satisfyingly scorching and evocative through these little boxes.

For nearfield listening, I think CEntrance's MasterClass 2504s are tough to beat; in fact, they are among the most sophisticated and satisfying desktop monitors that \$499 can buy.

GoldenEar Technology Aon 3 Monitor

Sandy Gross (founder of Definitive Technology and GoldenEar Technology) has an abiding passion for making fine loudspeakers accessible to people of moderate means, and his Aon 3 two-way bookshelf monitor is a perfect case in point. Gross says the concept for the Aon 3 arose after a business trip where he heard a demonstration of a very expensive set of monitors. The premium-priced speakers were "really very good," said Gross, but he also thought, "I'll bet GoldenEar could build small, high-performance monitors that would give these things a run for their money—for a fraction of the price."

To this end, the GoldenEar Aon 3 monitor features an "augmented two-way" design, leveraging driver technologies created for the firm's award-winning Triton Two floorstander. Thus, the Aon 3 uses a Heil-type tweeter and a 7-inch wide-bandwidth mid/bass driver to cover most of the audio spectrum, while a pair of side-mounted passive radiators helps extend bass depth and punch. The resulting speaker serves up agile, detailed, and revealing mids and highs, plus bass that is robust and surprisingly extended, and that matches the resolution and speed of the mids and highs step for step.



I found the Aon 3 sounded best when positioned within about two feet of the rear wall of my listening room, using stands that placed the tweeters roughly at ear level. I experimented with toe-in angles until soundstaging "locked in," yielding images that were surprisingly realistic in height and scale, with terrific spaciousness and three-dimensionality.

To give the Aon 3's a workout, I turned to an old favorite: Ti-Ti Chickapea's *Change of Worlds* [Orchard Park]. Ti-Ti Chickapea—a trio comprising the gifted jazz cellist Hank Roberts, eclectic guitarist

EQUIPMENT REVIEW - Three Small Monitors

Richie Stearns, and violinist and luthier Eric Aceto—combines elements of traditional folk music, bluegrass, and jazz in a format reminiscent of the works of Robert Frisell. *Change of Worlds* is a recording that can be enjoyable on mid-grade gear, but that really “clicks” into realism when played through a better grade of equipment. Happily the Aon 3s did not disappoint.

On the track “Star of the County Down,” the Aon 3s sounded fast, pure, and believable as they navigated Stearns’ intricate and finely woven guitar lines. Plucked notes were rendered with such realistic attack, sustain, and decay that they seemed to lead lives of their own. I was also drawn in by the Aon 3’s ability to capture the weight, warmth, richness, and woodiness of Roberts’ cello—qualities that remained consistent across the instrument’s lower, middle, and upper registers. This top-to-bottom focus and coherency is arguably the Aon 3’s greatest strength—the quality that makes it seem like a considerably more costly speaker than it actually is.

On Aceto’s electric violin—an instrument that should sound clear and incisive yet never overly “steely” or brittle, the Aon 3s rendered the instrument’s finely filigreed treble details without any sonic histrionics or overshoot. I also noted that the Aon 3 found the understated but heartfelt emotion in Roberts’ deceptively simple vocals—emotion conveyed partly through micro-dynamics and partly through revealing hints of grit and grain in Roberts’ voice. Finally, the Aon 3s placed each ensemble member in a precise location within a 3-D soundstage.

Can the compact Aon 3 delivers truly satisfying bass? The short answer is that it does, provided you can be happy with bass that extends only a

bit below 40Hz and like to listen at sensible—not ear-melting—volume levels. As a bass test, I put on on the title track from master bass guitarist Dean Peer’s album *Airborne* [ILS Records], wherein Peer and percussionist Brett Mann serve up a serious bass workout. This is not an album for fainthearted speakers, so I was delighted to find the Aon 3s rendered most of the bass content on hand with clarity and gusto. Granted, a slim layer of low-frequency underlayment was under-represented, but very little of substance went missing.

What are the Aon 3’s weaknesses? I would say it is a very good imager, but not quite as good as GoldenEar’s smaller Aon 2, which offers superior dispersion and therefore seems to have an easier time helping the sound break free from the box. I would also say that the Aon 3, though very capable in its own right, is perhaps not the right speaker for low bass aficionados or those who like their music *loud*. But apart from these minor shortcomings, what’s not to like? Of all the speakers in this survey, the Aon 3 is the one that, if heard in the dark, could plausibly pass for a multi-thousand-dollar model.

In sum, the Aon 3 sounds more vibrant, finely resolved, involving, and believable than it has any right to for its size and price. It is, as Mr. Gross promised, an affordable compact monitor that gives more costly competitors a serious “run for their money.” **tas**

SPECS & PRICING

Definitive Technology StudioMonitor 45

Type: Two-way, bass-reflex, dual-driver, bookshelf/stand-mount monitor

Driver complement: 1" pure aluminum dome tweeter, 5.25" mid/bass driver

Frequency response: 35Hz–30kHz

Sensitivity: 90dB

Impedance: 8 ohms

Dimensions: 6.7" x 11.69" x 11.69"

Weight: 12 lbs.

Price: \$398

DEFINITIVE TECHNOLOGY

11433 Cronridge Drive
Owings Mills, MD 21117
(410) 363-7148
definitivetech.com

CEEntrance MasterClass 2504

Type: Two-way, bass-reflex, dual coaxial-driver, nearfield monitor

Driver complement: One 4" full-range coaxial/coplanar driver, with dual voice coils—one coil driving the 4" woofer element and the other driving a coaxial 3/4" dome tweeter (both driver elements share a high-performance neodymium magnet)

Frequency response: 50Hz–20kHz, +/-1dB

Dimensions: 5.71" x 9.06" x 8.15"

Weight: 5.47 lbs., each

Price: \$499

CENTRANCE, INC.

8817 Mango Ave.
Morton Grove, IL 60053
(847) 581-0500
centrance.com

GoldenEar Technology Aon 3

Type: Two-way, dual-driver, bookshelf/stand-mount monitor with dual passive radiators

Driver complement: One HVFR (high velocity folded ribbon) tweeter, one 7" cast-basket mid/bass driver, and two 8" side-mounted passive radiators

Impedance: 8 ohms

Sensitivity: 90dB

Dimensions: 9" x 14" x 11"

Weight: 23 lbs.

Price: \$999

GOLDENEAR TECHNOLOGY

P.O. Box 141,
Stevenson, MD 21153
(410) 998-9134
goldenear.com

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Paradigm Shift A2

Problem Solver

Neil Gader

The dilemma: My wife and I recently added a small room to our house in order to create a much-needed workspace for her. She stores her music and other audio materials on an iPod and on her Mac, but the idea of cluttering a freshly finished room with electronics was at best unappealing. The solution called for good sound at entertaining levels while maintaining the smallest possible footprint. This was about the time that Paradigm announced its latest loudspeaker series, the irresistibly named Shift.

The appearance of the \$559-per-pair model A2 represents something more than just another speaker. It heralds a seismic shift in the way many of us are accessing and experiencing our music today. Already new-fangled music sources are everywhere—smart phones, MP3 players, wireless computer-generated audio, even that little headphone jack on the side of a flat panel can no longer be ignored.

Tasked with keeping up with new-gen music delivery, Shift is based on Paradigm's resident mighty-mite two-way, the Atom. However, the Shift A2 scuttles the rear-firing port, sealing the enclosure and packing it with fifty cool-running watts of bi-amplification linked up with a digital crossover and DSP (all incoming signals are converted to digital with a 48kHz sampling rate). Did someone say powered loudspeakers? In some segments of the tweakier high end that's still a big yuck—like eating broccoli. But if ever a newly born segment of the speaker marketplace cried out for internal power (and open minds), this one is it.

Standing a mere eleven inches tall, the MDF cabinet of the A2 is finished in a brilliant polar-white gloss that screams Apple (five finishes are available). The plastic back panel is fitted with an on/off rocker (it automatically cycles into standby mode after a few minutes *sans* signal); independent volume controls and an AC outlet stand ready for wireless streaming audio devices like an AirPort Express. The 3.5mm mini-jack and set of analog inputs mean that any model in the Shift line can be driven straight out of the Mac headphone mini-jack or from a preamp. All the appropriate wiring is provided. Additionally a single A2

can be purchased on its own (\$279). A handy slider-switch on the A2s back panel is selectable for mono or left/right or multiple speakers. In sum, no preamp or amp is necessary—just locate a couple of AC outlets and you're good to go. An alternative to an AirPort is Paradigm's optional Bluetooth BD 1 dongle. About the size of Zippo lighter, it operates within a range of approximately thirty feet, and is battery-powered and rechargeable. A charge lasts about 12 hours and over 200 hours in standby. It comes with an AC recharger which conveniently plugs into the back of an A2. It synched with my MacBook without issue.

The satin-anodized aluminum drivers are derived from Paradigm's Reference line. The mid/bass diaphragm features a high stiffness-to-mass ratio and foam-rubber elastomer surround. Although it appears an exact match to the Atom driver, it has a larger magnet and a longer voice coil for increased excursion—crucial in a less efficient sealed enclosure. The wire-mesh-protected dome tweeter uses a powerful ceramic magnet and ferro-fluid cooling for increased power handling, as well as waveguide technology for smoother response and dispersion. Keep in mind, the Shift is not a pro-monitor, so if you were expecting balanced inputs, a digital input, or IEC fittings for audiophile-grade power cords, forget it. On the other hand, at under \$300 each the Paradigm Shift A2s deserve some slack. One item that could use an easy fix is the volume control wheel on the rear panel. Why not include a center notch so that users can adjust by feel where the volume is at any one moment?

I evaluated the A2 in a variety of settings, determined



EQUIPMENT REVIEW - Paradigm Shift A2 Powered Loudspeaker

to give it a workout. I listened to everything from Debussy to *The Daily Show*, wirelessly from a Macbook, from the preamp outs of a NAD C 390, and through the headphone jack of a flat-panel television. Sonically the Shift takes a midrange-centered Everyman approach, consistent with its wide-ranging crossover mission. There's general warmth to its personality—a fuller, darker, almost voluptuous sound that makes this little speaker particularly satisfying even without the augmentation of a subwoofer. It communicates surprising weight with orchestral material—a factor that is all the more significant given that many of us might consider the A2 as an occasional movie speaker system in lieu of a dedicated home theater. Dialogue and effects are critical to that experience, and the tonal values that the A2 espouses are consistent with good voice articulation and the slam and immersion of special effects-driven soundtracks.

Even the in-room response I measured validated my impression that the A2 is remarkably balanced throughout the midrange. There are no significant tonal spikes or suckouts—especially in the highly sensitive 1kHz–3kHz presence range. The character of the sound is a bit forward, even in the upper midrange and presence region. Although the lower/mid treble region has hints of added sibilance, there's an overall coolness and dryness to the tweeter—a reluctance in the top octaves to open up fully, which accounts for the earlier reference about the speaker's darker sound. But even though the upstage castanets were reproduced with a slight metallic bite during the Saint-Saëns *Samson and Delilah Bacchanale* [Reference Recordings], the personality of the treble turned out to be more complex than that. During the same track the cymbals and other instruments were reproduced with a bevy of fine-grained and specific detail. The Shift A2's imaging and soundstaging abilities are by and large average for this range, but it has enough dynamic gradation and low-level resolution to reproduce significant front-to-back depth. However, its ability to retain ambience and lifelike image size in the vertical plane is distinctly earthbound.

Bass quality, by which I mean timbre, timing, and pitch, was quite good. At eleven inches tall I'd hardly expected Edgar Meyer's stand-up bass to be reproduced with much soundboard reverberation and sophistication, but the A2 really caught me flat-footed. And the bass

drums during Copland's *Fanfare* were not only presentable but very nearly intimidating. Certainly the heaviest symphonic challenges will illicit a slight rubbery quality from the 5.5" driver, which tends to mask the articulation of individual images. But I can count on the fingers of one hand the number of small inexpensive speakers that produce such a startling amount of energy in the midbass. Indeed, the 55Hz low-end extension that Paradigm specifies was accurate in my smallish room, and there was perceivable response further down the spectrum. Credit Paradigm's extensive experience with subwoofer bass management and DSP for the specific tailoring of the A2's low-frequency performance. Paradigm's acoustical engineering manager Oleg Bogdanov was forthright about the DSP employed in the A2: "At higher volumes, where the woofer reaches its excursion limits, the DSP starts gradually limiting amp output at low frequencies. This effectively works as a dynamic high-pass filter. At 80dB SPL (at 1m distance), the low-frequency extension is about 30Hz, at 100dB it is about 55Hz. Other products on the market typically use wide-band compression to stop the driver from over-excursion and self-destruction. However, this results in an uncomfortable phenomenon, with the volume continuously changing depending on the amount of bass that is present in the material being played." I noted that at

high volumes the A2 did lose a little low-end heft but Paradigm has achieved a very reasonable balance with its clever technology.

The Paradigm Shift A2 represents a very high order of value and performance—incredibly versatile for small-room, family-on-the-go, and impromptu listening anywhere there's an outlet. Frankly only a dog is more companionable than the A2. And as for the dilemma I laid out at the beginning of this article: Take it from the wife and me—problem solved. **tas**



SPECS & PRICING

Drivers: 1" aluminum dome tweeter, 5.5" aluminum midbass

Frequency response: 55Hz-20kHz

Integrated amp power: 50W

Dimensions: 11" x 6.5" x 8.75"

Weight: 11.6 lbs

Price: \$279-\$329 each, depending on finish (BD 1, \$59)

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Focal XS Book Powered Loudspeaker

Desktop Delight

Steven Stone

Focal makes some of the most expensive speakers in the world. Many of its flagship models have been reviewed in these pages over the years. But the XS Book is at the opposite end of the Focal product spectrum—it's currently Focal's least expensive powered speaker. Priced under \$400 and styled for the computer-audio market, the XS Book looks more like a lifestyle product than a serious piece of audiophile gear. Sure, it's from Focal, but how good could it be? Let's find out.

Technical Description

The diminutively sized 11" x 7.9" x 4.5" XS Book includes its own built-in 20-watt amplifier, which drives both its .748" aluminum dome tweeter and 4" polyglass midrange/woofer. Using a bass-reflex design, the XS Book has one large oval front-firing vent located at the bottom of the front baffle of the speaker. The crossover point between the two drivers is 3kHz, and the published low-frequency "point" is 44Hz. Overall frequency response is listed as 50Hz–22kHz +/-3dB.

Rather than the usual rectangular wood box, the XS Book has a curved metallic-finished cabinet that includes provisions for accepting an OmniMount AB2 system for wall or ceiling mounting. Its color matches the silver finish on a Mac Mini. The speaker grilles are removable, but I suspect that most users will keep them on since they integrate so well with the cloth inserts on the top of the speakers.

Focal began as a manufacturer of raw drivers,

so it should be no surprise that both drivers in the XS Book were designed and built by Focal. The dome tweeter, situated behind a single vertical protective column, looks more like a fabric tweeter than a metal one because it's black (and matches the color of the front baffle.) The long-throw mid/woofer uses a special soft dome dust cover that features the Focal logotype molded into its surface.

Setup and Ergonomics

Because the XS Book is a powered loudspeaker, it has different inputs than a passive speaker, which would require an outboard power amplifier. The rear of the right XS Book speaker (they come in mated pairs) has one pair of RCA single-end inputs and one 3.5mm mini-jack stereo input. It also has a single RCA jack to run to the left-hand speaker and an AC power connection. The top of the right-hand XS Book has a single rotary volume/on-off control with a small light below it. The left-hand XS



EQUIPMENT REVIEW - Focal XS Book Powered Loudspeaker

Book has only a single RCA input for the signal from the right-hand speaker.

Although the XS Book has provisions for wall or ceiling mounting (mainly for a rear speaker installation), it was designed primarily for desktop or bookshelf placement. Because of its front-firing port, the XS Book can be placed on a shelf or in an actual bookcase without blocking its port or impeding the drivers' motion, making it one of the only "bookshelf" speakers that will actually work properly in a bookshelf.

The XS Book comes with some of the necessary cables for initial installation. This includes one 1.5m RCA cable to connect the two speakers and a 1.5m AC cable to supply power. Fortunately all the connection cable types, including the AC cable, are readily available from many sources. If you need a longer or shorter cable it will be easy to obtain. You do need to supply your own pair of single-ended RCA or mini-jack cables to connect to your source device. For users who prefer larger-diameter RCA interconnect cables, the inputs on the back of the XS Book are spaced far enough apart so that all but the most rotund cable should fit easily. But since the XS Book weighs only eleven pounds, some especially stiff cables may be less than an ideal ergonomic match.

I used the XS Book system in three very different setups: in my computer desktop system, placed in a bookshelf, and on location during my most recent live symphony recording. For the bookshelf installation I tethered the XS Book to a Cambridge Audio DAC Magic Plus connected to a Logitech Squeezebox Touch. On location the XS Book received a feed directly from the outputs of a Grace Lunatec V-3 microphone preamplifier.

The only option I did not try with the XS Book was stand-mounted in a conventional room setup. Since they were not designed for this application, it would have been inappropriate to try to shoehorn them into a traditional sound-room environment.

Focal has several accessories made especially for the XS Book. Focal's optional booster stand was designed to raise the XS Book off the desktop, primarily for users who have large video monitors or who require a higher placement for sonic reasons. The accessory that I found especially useful was the lightweight travel case, custom-

made for the XS Book. With a one-piece high-density foam insert molded to fit the two speakers perfectly, the case made carrying the XS Book to my location recording easy, and the speakers arrived intact despite a two-foot drop on the Macky Auditorium stairwell.

Break-in

Straight out of the box the XS Book sounded just this side of awful. The bass was bonky with an unmistakably boom-boxy, plastic groadiness that reminded me of the sound of a 1968 Chevy Vega with factory-standard 4" oval coaxial speakers. But the bass wasn't the XS Book's least attractive sonic characteristic. No, the award for that would have to be the upper midrange. There was a glare-zone centered right on 3kHz that gave everything passing through the XS Book a nasty edge.

Since several people who have excellent ears said that the XS Book was a more-than-decent-sounding speaker, I decided to withhold judgment until the Books had been playing for a while. I set up the speakers in my workroom, tethered to a Logitech Squeezebox Touch, where they sat pumping out tunes at mid-level volumes for just under a week before I gave them a second serious listen. They sounded better, much better.

After more than 140 hours of playing time, the 3kHz glare had virtually disappeared. The bodacious bass bonk had also shrunk to the point where it sounded less like that Vega thumping down the street and more like something that you'd let inside your home.

In all my years as an audio reviewer, I've never heard a component do a more radical Jekyll/Hyde sonic conversion as a result of break-in. I suspect the combination of so many new components—drivers, amplifiers, and crossover parts—accounts for the extensive changes. So, when you first set-up the XS Book, if you find them sounding "raw," don't say I didn't warn you. Put in some serious play time, and then listen if you want to hear what the XS Book really sound like.

Sound on a Bookshelf

Since many potential XS Book owners would like to use the speaker on a bookshelf, I spent some time listening to the XS Book in this

SPECS & PRICING

Type: Powered, ported, two-way desktop loudspeaker

Power configuration: Mono-amped, two 20W amps

Drivers: 4" polyglass mid/bass; .748" aluminum dome tweeter

Frequency range: 50Hz-22kHz (+/-3dB)

Crossover frequency: 3kHz

Inputs: One 1/8" stereo (main); two RCA (aux)

Dimensions: 7.875" x 11" x 4.5"

Weight: 11 lbs.

Price: \$399 per pair

AUDIO PLUS SERVICES

156 Lawrence Paquette Industrial Drive

Champlain, NY 12919

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focal.com

ASSOCIATED EQUIPMENT

Source Devices: MacPro model 1.1 Intel Xeon 2.66 GHz computer with 16 GB of memory with OS 10.6.7, running iTunes 10.6 and Amarra 2.1.1 music playing software, Pure Music 1.85 music playing software, Audirana Plus music playing software, Logitech Squeezebox Touch, Grace Lunatec V-3 DACs: Weiss DAC 202, Empirical Audio Off-Ramp 4, Wyred4Sound Dac2, April Music Eximus DP1 DAC/PRE, AudioEngine D1
Speakers: Aerial Acoustics 5Bs, ATC SCM7s, Silverline Minuet Supremes, Quad 11Ls, Role Audio Canoes, PSI A-14s, Velodyne DD+ 10 subwoofer
Cables and Accessories: Wireworld USB cable, AudioQuest Carbon USB cable, PS Audio Quintet, AudioQuest CV 4.2 speaker cable, Synergistic Designer's Reference speaker cable, AudioQuest Colorado interconnect, Cardas Clear interconnect, Crystal Cable Piccolo interconnect, and Audioprism Ground Controls.

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EQUIPMENT REVIEW - Focal XS Book Powered Loudspeaker

setup. Because of its shape and size, the XS Book will fit into any shelf that's more than 12" high and 8" deep. But just because it can fit into a bookshelf doesn't mean it should be put into a bookshelf. Of all the setups I tried with the XS Book, a bookshelf installation was the most sonically limiting (the speaker was, after all, designed for a desktop).

Even after extensive break-in, putting the XS Book into a bookshelf will, in most cases, deliver more midbass warmth than would be considered neutral due to wall-proximity gain. But despite the dollop of extra bass, bookshelf placement was surprisingly listenable. Even in a bookshelf the XS Book managed to create a believable, if not entirely three-dimensional, stereo image. On dense mixes, such as you'll find on Brad Brooks' album, *Harmony of Passing Light*, each instrument retained a precise position laterally across the soundstage.

Harmonically, once you get past the room-induced bass bump, the XS Book was far more neutral than conventional small monitors. The XS Book's lower midrange, while not lush, had enough energy and weight to keep it from sounding thin. The upper midrange was smooth, with no traces of the glare zone that was so noticeable right out of the box. The treble was clean, staking out a neutral middle ground between stridency and reticence.

With only a 20-watt amplifier to drive them and such small mid/bass drivers you shouldn't expect the XS Book to pump out high enough undistorted volume levels to fill a large or even a mid-sized room. Most likely if the XS Book is placed in a bookshelf, its primary purpose will be for background or at best semi-serious listening. In this situation the XS Book will perform better than many more conventionally shaped and

designed small "bookshelf" monitor speakers.

Sound on Location

After several weeks of living on my bookshelf the XS Books took a field trip. I loaded them into their custom carrying case and schlepped them to the University of Colorado's Macky Concert Hall to serve as on-location monitors for a recording of the Boulder Philharmonic. At the recording session I began to hear the XS Book's true potential. When set up on a desktop for near-field listening the XS Book speakers can deliver a surprisingly three-dimensional soundstage. Not only could I easily locate every instrument in the orchestra, but the XS Book also preserved the height cues—I could tell that the horn sections were not only behind the woodwinds, but also above them on a riser.

Once I got them more than 12" away from the wall, midbass diminished to the point where the XS Books produced fairly well-balanced results. The bass was still slightly thicker than ideal, but at least it wasn't overbearing. The midrange was clear enough to be involving, and while I would never call the XS Book the last word in resolution, it still preserved enough low-level information to create a convincing musical picture with enough sonic information for me to confidently make microphone placement and level corrections.

As an on-location monitor the XS Book proved its worth. The combination of light weight, dedicated carrying case, and easy setup and placement made using the XS Book a complete pleasure.

Sound on a Desktop

After the recording session I brought the XS Book back home and set them up on my computer

desktop. I connected the XS Book speakers to the April Music Eximus DP1 DAC/preamplifier, as well as to the Weiss DAC 202, and Wyred4Sound DAC2. I also used the XS Book with more price-appropriate gear, such as the Cambridge Audio DAC Magic and DAC Magic Plus, as well as the AudioEngine D1 DAC.

At first I used the XS Book without a stand, but after a few days I improvised a 5" high speaker stand made of closed-cell high-density foam. Raising the XS Book up 5" put the tweeter above my ears and the midrange/woofer level with them. This position resulted in the largest sweet spot with the most precise imaging. The XS Book disappeared completely when they were toed-in 15 degrees.

Once optimally located, the XS Book created a very satisfying three-dimensional image that was nearly the equal of my reference monitors, including the ATC SCM7 speakers. Especially in terms of lateral soundstage size, the XS Book rivaled anything I've had on my desktop. Depth recreation was also decent, but not exemplary, because only the front part of the soundstage was three-dimensional while the back half was flattened in comparison.

The harmonic balance on my desktop also ranked up with some of my better small monitor references, like the Silverline Minuet Supremes. Similar to better mini-monitors, the midbass remained clean and well defined until the volume level got above the internal amplifier's comfort zone.

Dynamic contrast through the XS Book speakers was less than optimal, again primarily because their built-in amplifiers simply don't have as much clean headroom as the drivers might

like. At 85dB average levels the XS Book are fine, but at 90dB average levels they run out of steam during peaks.

I was able to use the XS Book with a subwoofer by taking a subwoofer output from whatever preamp I was using and routing it directly to the sub, as the XS Book itself has no built-in subwoofer output. Focal recommends its XS 2.1 system for folks who want more bottom end. But for anyone with a spare third-party subwoofer, melding it with the XS Book should be easy.

Most buyers probably will use the XS Book without a subwoofer. To them I have to report that you won't get a lot of bass, but what you will get is clean and relatively uncolored up to the loudness point where the internal power amplifiers run out of juice. Even at its lowest frequencies the XS Book is clean and well controlled.

Conclusion

To label the XS Books as merely another pair of flashy-looking computer speakers would be doing them a disservice. While their best and highest use is as a nearfield monitor tethered to a good computer audio system, the XS Book would also work beautifully as part of a small-room bookshelf system. In addition, on-location recording enthusiasts will find the XS Book's combination of ergonomics and sonics makes it a perfect location monitor for cramped playback spaces.

For \$399 the Focal XS Book powered-speaker system offers a lot of sound, flexibility, and functionality. And yes, in the end it's a lifestyle rather than an audiophile product, but it's a lifestyle that most people won't mind living. **tas**



PSB Imagine Mini

Little Big Man

Kirk Midtskog

The vast majority of new speakers the size of the PSB Imagine Mini are likely designed for a computer-desktop or a lifestyle A/V setup. PSB has gone one better; it has created a tiny speaker that can also serve as a truly enjoyable dedicated stereo speaker in a small room. I was pleasantly surprised to find out that the Imagine Mini delivered genuinely engaging, musically valid performance, without veering into the tinny and fatiguing—or, contrarily, overly polite and dull—territory that most other very small speakers seem to own.

I shouldn't have been all that surprised because I'd heard the Mini sound quite good at CES 2011. While I cannot claim the Mini redefines the price/performance equation, simply because I haven't done a thorough survey of \$700-to-\$1000 speakers, I can say it appeals to me more than some considerably

more expensive speakers I've heard. The Imagine Mini manages to convey the heart of the music so artfully that I stopped worrying about the elements the Mini can't deliver and just marveled at how rewarding the darn thing is to listen to. You can guess what those non-delivered elements are: bass below about

55Hz, a large and enveloping sound, macro-dynamics that will startle you, and peer-into-the-recording-session resolution. No surprises here, as we are talking about small, sub-\$800-per-pair loudspeakers. Even so, I found the Mini was able to play much "larger" and with greater punch than I thought possible from a six-and-a-half-pound loudspeaker you can hold in one outstretched hand.

That artful performance springs from Paul Barton and his adherence to some ongoing psychoacoustic research at the National Research Council in Ottawa, Canada. According to Barton, many key elements of sound reproduction, which nearly all people—

regardless of musical taste or background, age, gender, listening habits, or audio expertise—tend to regard as natural and accurate, have common characteristics. While not revealing all these characteristics, Barton did say that his speakers are made to sound good whether listeners are seated or standing, and that the individual drivers have similar sonic qualities in their crossover regions. Known as a value-oriented company, PSB focuses on delivering test-verified positive sonic attributes, thereby reducing the effort to improve factors that have been shown to be sonically less significant or even deleterious.

My listening preferences must fall right in line

EQUIPMENT REVIEW - PSB Imagine Mini

with the NRC results (even though it pains me to admit to being average and predictable), because I hear, in the Imagine Mini, an overall quality that I almost instinctively recognize as “right.” In broad strokes, the Mini has a well balanced (albeit bass-shy), engaging personality with a level of resolution—and without any upper midrange glare—that represents a new standard from a \$760 loudspeaker, in my experience. It also delivers truly size-defying dynamics and overall impact when used in a system that provides sufficient clean power. While unable to render the ambient “air” of a venue the way much more expensive speakers, the Mini still does a commendable job of recreating 3-D space.

Two small holes at the back of the cabinet, through which you have to route the speaker cables (bananas or bare wire) to binding posts recessed *under* the cabinet, will strike users as either clever or a hassle. The arrangement hides the hardware and is more attractive, but it also means you have to use cables small enough to pass through the holes, turn the cabinet over, wiggle the cables into place, and then tighten the lock nuts. I listened with the grilles off and used 25"-high Dynaudio stands.

Not surprisingly, the Mini’s sound-stage and dynamic envelope were smaller than those of a larger speaker, but they were still expansive enough to be proportionally credible. The soundstage was roughly three feet high, stretching just beyond the outer edges of the cabinets laterally for about seven-and-a-half feet, and extending about three feet behind the front baffles (recording permitting). The loudspeakers seemingly disappeared as sound sources, and the overall perspective was a bit farther back than mid-hall. You get a good impression of how instruments sound from the midbass on up with a bit more emphasis on the bigger picture than on individual players in massed stringed sections, for example. The Mini does *not* congeal whole sections of the orchestra into undifferentiated masses, however. Front-to-back layering and rendering of 3-D images were quite good, if also a bit foreshortened. This is true of nearly all speakers in this price range—and often also so of some costing much more. I could not place the Minis more than seven feet apart (tweeter-to-tweeter), or the back center of the soundstage would not fill in convincingly.

Most people will probably be using the Mini in a small space, so seven feet should be plenty wide. The Mini is also a very good nearfield speaker. Moving them 3.5' apart, and sitting close proved to be quite instructive. Unless there was a musical element panned hard right or left in the mix, the Minis seemingly disappeared, with a proportionally smaller soundstage floating well behind the cabinets. No doubt, desktop, office, or den applications were significant goals in the Mini’s design brief, and it should perform admirably thus deployed.

I was cautious with the volume control at first because all other small speakers I have worked with couldn’t take much juice, becoming ragged when pushed. Not so with the Mini—to a point. The Mini needed to be kicked into action and seemed to come alive when I turned the volume higher than usual on the dial. This experience, and its 85dB in an anechoic chamber (87dB in a room) sensitivity rating, suggests the Mini is not exactly an easy drive. Fortunately, the Mini has a remarkable clay/ceramic-filled polypropylene cone unit, with a double-magnet arrangement, that gives it much more control, power handling, and excursion than a typical four-inch driver. I could turn up the volume to satisfying levels in my 12' x 17' room without inducing strain. The PSB manual recommends amplifiers of 10–80 watts. PSB has demonstrated with NAD amplifiers ranging from 125 to 150 watts, and I had fantastic results with the 200W Hegel H200 (\$4400, Issue 212). The tweeter is a wave-guide titanium unit that takes the prize for being the smoothest, best integrated, most articulate, and sweetest-sounding titanium tweeter in a speaker under \$1000 I have ever heard. I have also heard a pair of Minis mated with two small PSB subwoofers with good results.

I tip my hat to Paul Barton and his team for the intelligent choices they have made in the Mini. I give it high marks for its sheer musicality and fidelity to the sound of live music within its size and price constraints. I like the Imagine Mini so much that I would choose it over some speakers that cost quite a bit more. It gets enough right to make me not sweat the audiophile stuff and just sit back and listen. **tas**

SPECS & PRICING

Type: Two-way, rear-ported, bass-reflex mini-monitor

Drivers: One 1" titanium-dome tweeter, one 4" clay/ceramic-filled polypropylene cone mid/bass

Frequency response: 55Hz–23kHz (+/-3dB)

Sensitivity: 85dB (anechoic chamber), 87dB (listening room) 1W/1 meter

Impedance: 6 ohms (4 ohms minimum)

Power handling: Not specified

Recommended amplifier power: 10 to 80 watts

Accessories: Optional Imagine Mini PFS-27 Floor Stand and PWB-1 Wall Bracket

Dimensions: 5.75" x 9.25" x 8.38"

Weight: 6.5 lbs.

Price: \$760 (pair) in dark cherry, black ash, walnut veneers; \$830 black gloss, white gloss

ASSOCIATED EQUIPMENT

Analog Source: Basis Debut V

turntable with Vector 4 tonearm, Benz-Micro LP-S cartridge

Digital Source: Ayre C-5xeMP

Phonostage preamp: Ayre P-5xe

Line stage preamp: Ayre K-1xe

Integrated amplifier: Hegel H200

Power amplifier: Gamut M-200 monos

Speakers: Dynaudio Confidence C1, Aerial 7T, B&W PM1

Cables: Audioquest Rockefeller speaker wire, Shunyata Anaconda

interconnects and speaker wire,

Shunyata Anaconda power cords

A/C Power: Two 20-amp dedicated lines, Shunyata Triton power conditioner

Room Treatments: PrimeAcoustic

Z-foam panels and DIY panels

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Sonus faber Venere Model 1.5

Tiny Goddess

Neil Gader

Sonus faber, I thought I knew you—that we had an understanding. What happened? You’ve seduced me for years with romantic, walnut-and-leather-accented, lute-shaped loudspeakers inspired by the 18th century craftsmanship of the Cremonese master luthiers. Speaker designs that were so much a part of the fabric of this industry that they seemed destined to endure, timeless in and of themselves. So when I caught my first glimpse of your sleek and contemporary Venere line—available in six, modestly priced models (including center-channel and wall-mounted numbers)—I felt the sting of betrayal. The Model 1.5, the baby of the line and the subject of this review, looks as if stepped off a Milano runway, quickly tossed back an espresso doppio, and bopped by MacWorld—so au courant it could be in a Roche Bobois catalog. But the more time I spent with this compact two-way, the more my longing for yesterday began slipping away. Venere, Latin for Venus, the goddess of love and beauty, represents a new direction for Sonus faber in this price category. And true to its name I think I’m smitten.

Whether it’s adorned in either a glossy arctic-white or a piano-black hand-rubbed-lacquer finish, Venere is all about flowing lines. It sports multi-radius arched side panels, a gently angled front baffle, and a playfully upswept “ducktail” top panel of tempered glass with Sf’s logo

screen-printed on it in silver foil. However you look at it, Venere is a game-changer for Sonus faber, and its market positioning is clear. Entry-level Millennials anxious to put the finishing touches on their digital media systems or home theaters should start lining up now.



EQUIPMENT REVIEW - Sonus faber Venere Model 1.5

As refreshing and easy on the eye as the Venere lineup appears to be, it didn't just materialize out of nowhere—many of its styling and design cues key off Sonus faber's lavish \$120,000 Aida floorstander. Beyond the Aida-like side-panel curves, there are the softly curved corners designed to eliminate diffraction artifacts, the general driver architecture, and the new, larger soft dome. Also the lack of parallel surfaces not only increases structural rigidity but reduces internal resonances. The Venere's beauty is more than skin-deep—the enclosure is an MDF composite sourced by Sf not only for its acoustically inert properties but also to meet California's stringent emissions requirements. The base of the front baffle houses a narrow, slotted, foam-filled port. To the rear, speaker terminals are nicely offset from one another for easy access and are doubled up for bi-wiring or bi-amping. The quick-release magnetically-attached grilles are also well done.

The twin drivers are entirely designed by Sonus faber Lab and manufactured by its cadre of suppliers. Final assembly and finishing occurs in China. Central is the silk-domed 29mm tweeter (made by the German company DKM). It's inset into a deep oval-shaped waveguide to increase output, maintain linearity, and make its dispersion at the lower end of its passband more closely approximate the woofer's dispersion at the transition to the tweeter. The 6" mid/bass driver uses a trademark Curv cone, and it too is set into a shallow of the front baffle. "Curv" refers to the innovative variant of the polypropylene cone Sonus faber developed. It's a woven, self-reinforcing material that features better internal damping and higher rigidity than mineral-filled polypropylene. It also offers higher resistance to temperature extremes with greater stiffness and tensile strength. Its stiffness-to-weight ratio results in exemplary roll-off properties.

The Venere's crossover point is set at 2kHz, and sensitivity is a relatively low 85dB, a predictable trade-off for a speaker of modest internal volume that is expected to produce authentic bass response.

The stands are purpose-built for the Model 1.5, constructed of a tempered glass base and parallel MDF uprights that terminate in a steel top-plate that mounts to the underside of the Venere. They're rigid; they establish the correct listening height with the adjustable aluminum footers; and they couple to the floor providing the proper amount of rearward tilt to acoustically time-align the drivers. I consider them a mandatory option. Caveat to D.I.Y. enthusiasts: Due to the convoluted instructions the stands may take more than a few minutes to assemble, but I'm told a clearer guide is being considered.

Going in, I assumed that the Model 1.5 would have the default sonic traits of many small, two-way compacts: There would be riveting detail, cavernous dimensionality, and a cat burglar disappearing act. But such attributes are often accompanied by wobbly bass and a lack of dynamic reserves, deficits often masked by a brighter-than-bright top end. (Fact is, it's much easier for a small speaker to top-load a tweeter with detail than pressure a little woofer to sputter out a series of organ pedal points.)

Here's what I didn't expect. First was the darker, relatively even midrange tonal balance and the refreshingly unhyped treble, not the aforementioned rising top that I've learned to dread. I also didn't expect the volume of air that the Model 1.5 seemed to set into motion in my room particularly during symphonic recordings. There was a sense of the physical nature of music reproduction in the way it conveyed the thicker body of a cello, the rippling skin of a timpani, the darker resonances of a large piano soundboard, or the complex textures of a contrabassoon.

Nor did I expect the midrange weight and bloom that this fifteen-inch-tall monitor generated. The Model 1.5 reproduces the bottom half of the midband with a weight and heft that most small-volume, narrow-baffle monitors cannot muster. The thick blat of a trombone or a heavy bow across the strings of an acoustic bass during Stravinsky's *Pulcinella* [Argo] is immediately identifiable for what it is and the brain

doesn't have to suspend disbelief to enjoy the musical moment. In fact, the Venere immediately called to mind a larger, multi-driver speaker.

The treble for its part, rather than sounding dry or brittle or over-etched with false detail, had more than a hint of the darker acoustic signature that reminded me of other Sonus fabers like the Liuto. And by *darker* I'm not implying run-of-the-mill resolution. Just the opposite. During the Audra McDonald lullaby "Lay Down Your Head," the Venere expressed a wealth of finely wrought, low-level transients and timbre as the string quartet and accompanying harp delicately enter. When I began playing Leonard Cohen's "Darkness" from his new album *Old Ideas* [Columbia] I didn't count on the heavy core-resonance of his voice to be so richly reproduced. Catching me equally off guard was Korngold's Violin Concerto in D; the sound was expansive, the output generous. The Venere threw a wide, well-resolved, three-dimensional soundstage brimming with ambient cues and the "feel" of the venue—of the sound reaching the corners and back wall of the listening space.

Explosive is not a word that normally comes to mind when describing

SPECS & PRICING

Type: Two-way, bass-reflex
Drivers: 1.2" tweeter, 6" mid/bass
Frequency response: 50Hz-25kHz
Sensitivity: 85dB
Impedance: 6 ohms
Dimensions: 15.5" x 8.1" x 11.8"
Weight: 13 lbs.
Price: \$1198 (\$398/pr stands)

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EQUIPMENT REVIEW - Sonus faber Venere Model 1.5

the lower-frequency extension and dynamics of an inexpensive compact monitor but within rational limits the Venere constantly surprised me in this area. Bass response is solid into the 60Hz range and, depending on room size and wall reinforcement, has usable response even further down. And I didn't have to worry about softballing the Model 1.5 in the volume department either. Often low bass from a small speaker sounds vaguely orphaned from the midrange—a sonic gap pops up where the music goes soft in the power range of the upper bass/lower mids and then regroups in the midbass. The effect is disquieting and can be a deal-breaker. While the Venere 1.5 can't entirely break free of its own physical constraints it does so in a manner that is entirely reasonable and at times utterly convincing.

What also stands out is the inter-driver coherence of the Model 1.5, which produces the sense that music is originating from a single point, rather than alternating between tweeter and mid/bass. Its midbass and upper-bass response is surefooted and seamlessly connected with the adjoining octaves. Significantly, I never felt as if I were fidgeting or otherwise subliminally cocking my head this way or that in order to get an accurate tonal fix on the speaker. It didn't impart the dreaded tweeter-on-top/bass-on-bottom discontinuity. What I heard was a smooth, solid wall of unbroken sound that easily adapted to a bit of slouching or off-axis listening. Obviously the Venere will sound its best in the sweet spot, stereo being what it is, but clearly the Sf team has put some serious thought into its oval waveguide technology.

As good as the Model 1.5 is however, two drivers in a 15" box, however alluring, ultimately succumb to their own physical limitations. On a minimalist track like Lyle Lovett's "Baltimore," a small presence dip laid the vocal back in the mix slightly. There was also a bit of constriction in the lower treble during Sheryl Crow's "I Shall Believe" that emphasized the upper elements of harmonized vocals and deemphasized the more throaty and chesty aspect of those voices. Larger, sweeping dynamics are tamped down a bit, and while bass response in a smaller room was very good, don't expect the Venere to reproduce a bass note's decay to the full extent before running out of wind. On a major plus side, port interaction and box colorations were virtually absent from my listening sessions.

At the end of any evaluation, I always ask myself the same question—am I sorry to see this gear leave? The Model 1.5 was so irresistible on a multitude of levels—concept, design, cost, and sound—I concluded that I not only didn't want it to leave but also to call it anything other than a TAS Product of the Year would be an injustice. And I'm not done yet. I'll be reviewing its floorstanding sibling, the Model 2.5, in a forthcoming issue. I can't wait. **tas**



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Paradigm Monitor 9, Series 7

High in Musical Value

Wayne Garcia

Now in its seventh generation, Paradigm's Monitor Series is one of the benchmarks for good-sounding, affordable speakers that, while perhaps not the last word in any one area, offer tremendous across-the-board performance, musical satisfaction, and value. Which, of course, are the very traits that have made this Canadian firm's designs such a success over the past quarter-plus century.

For instance, put on a full-range, well-recorded rock disc, such as Mobile Fidelity's SACD of Stevie Ray Vaughan's *The Sky Is Crying* (which I reviewed in Issue 220), and marvel at the relatively compact \$1198 Monitor 9s' impactful low-frequency response. It's not that this speaker goes spectacularly low—its spec'd response is a respectable 31Hz—but the choices made by Paradigm's design team, and improvements made over the V.6 model, create a feeling of bass—fast, tuneful, and reasonably weighty—that's nevertheless quite satisfying. While I imagine that home-theater users, or those into bass-heavy music might wish to add

a subwoofer (and Paradigm offers a range of these, too), the walloping drums in, say, "Little Wing," were just that, with good snap from the snare, and a nice recreation of size and power from tom and kick drums. You'll also hear how Paradigm's latest aluminum dome tweeter seems altogether more open, dynamically free, and less bright than past versions (though this takes some time, as the tweeters are initially a bit hard and edgy). Vaughan's Strat peals and shrieks as the late-great lets rip; yet it purrs sweetly, too, during quieter passages. Dynamic range is also impressive. Although the Monitor 9 may not be as fully nuanced as my reference



EQUIPMENT REVIEW - Paradigm Model 9, Series 7

Maggie 1.7s during the quiet opening movement of Schumann's *Märchenbilder* with Martha Argerich at the piano and Nobuko Imai playing viola [Phillips CD], the speaker steps out during the lively second movement. Again, though, the Monitor 9's designers did a fine job of letting this speaker fly pretty high, without overtaxing the relatively small drivers.

I'll outline the many changes Paradigm has made to the 7 Series, but one that deserves mention right away is that, although the company has put much effort into improving the sound and frequency extension of the current Model 9, it has done so while shrinking its profile by about 20%—only a quarter-inch in height but nearly an inch in width and nearly three in depth. On paper this may not seem like so much, but that sleeker frame makes the new Model 9 easier to place and somewhat less visually obtrusive, and I would think also results in more rigid cabinet construction. The major challenge to this smaller enclosure is bass performance. Especially since the low-frequency drivers have also lost some inches, from 6.5" to 5.5" in diameter. But improved technology seems to have bridged the performance gap. (In fact, the -2dB point has improved over the V.6 from 51Hz to 46Hz.)

I can't think of a speaker manufacturer—or perhaps one of any other component type—that doesn't boast of "trickle-down" technology. And indeed, Paradigm makes something of a big deal regarding technological tweaks and tricks it learned from its Reference line.

Starting with the enclosure, Series 7 upgrades include something Paradigm calls "the Roman Plinth," a sleekly-integrated base that increases stability for the new design's smaller footprint, as well as what the company calls its most rigid, low-noise Monitor Series cabinet yet, as well as a thicker (.75") front baffle. Paradigm has spiffed up the 7 Series' appearance, too. In addition to the more svelte profile, the honeycomb-patterned grilles are more acoustically transparent and attach via magnets. And with the grilles removed, no driver-mounting hardware is visible on the front baffles, which makes for a nicely refined presentation.

Derived from the Reference Series, driver upgrades include Paradigm's trademarked S-Pal technology—a satin-anodized

pure aluminum—for the 1" ferro-fluid-cooled dome tweeter, as well as the 5.5" bass/midrange driver. Paradigm says the high stiffness-to-mass ratio combined with internal damping results in lower resonance and distortion, and greater clarity and frequency extension.

The twin 5.5" bass drivers have also been designed for high rigidity; they're made of injection-molded polypropylene, which Paradigm feels also increases driver-to-driver consistency.

Paradigm claims bragging rights, too, at the 7 Series' price-points for its use of polypropylene film or bipolar electrolytic capacitors, air core and laminated core inductors, and the high-power resistors found in the crossover networks.

Needless to say, all of these swell upgrades wouldn't mean much unless they delivered the musical goods. And as I've already written, the Monitor 9 certainly does.

I gather that one fundamental aspect of the 9's sound has changed since my colleague Neil Gader reviewed the V.6 edition a few years back. Neil observed that that speaker presented a dark tonal balance. On a range of music—*Sinatra's Only The Lonely* [MoFi], Jeff Buckley *Live at Sin-é* [Columbia/Legacy], Eric Dolphy's *Out To Lunch* [Music Matters 45rpm reissue], the abovementioned Argerich disc—the Monitor 9 did a fine job with burnished brass, the lower registers of Sinatra's vocal, the darker character of Buckley's guitar, and so on, but in a way that, to my ears, was well balanced by the new version's greater openness and the tweeter's impressive airiness. Yes, it's still a tad dark, but I suspect much less so than the incarnation Neil reviewed. Neil also commented on the earlier model's somewhat vague imaging. In that regard, I'm not sure if much has changed. The speakers I reviewed were okay with their focus, more concert-hall-like than pinpoint. But then a stated goal of this design is broad dispersion throughout a room, which makes sense since these speakers are often sold in multichannel packages.

With large-scale symphonic works such as a Mahler piece from the San Francisco Symphony's cycle [SFS Media], the Monitor 9 creates a nice, if not ultra-layered feeling of the third dimension, with a good sense of air around instruments. I also found top-to-

bottom tonal coherence to be well managed, with just a touch of discontinuity transitioning from mid-to-highs.

Due to Paradigm's combination of engineering chops and musical sensitivity, none of these imperfections are glaring. Indeed, this is a cleverly balanced and involving design that ultimately lets the music do the talking. It reminds me of one of those terrific, affordable Barbera d'Albas from Italy that one enjoys without having to get cerebral. Good stuff, excellent value. **tas**

SPECS & PRICING

Type: Two-and-half-way, bass-reflex, floorstanding loudspeaker
Driver complement: Two 5.5" bass drivers, one 5.5" midrange, one 1" tweeter
Frequency response: 46Hz-22kHz +/-2dB
In-room sensitivity: 91dB
Nominal impedance: 8 ohms
Recommended amplifier power: 15-200W
Dimensions: 6.75" x 40" x 10.5"
Weight: 42 lbs. each
Price: \$1198 per pair

ASSOCIATED EQUIPMENT
 TW-Acoustic Raven One turntable; Tri-Planar Ultimate VII arm; Benz Gullwing and Transfiguration Phoenix moving-coil cartridges; Sutherland 20/20 and Simaudio Moon 310LP phonostages; Cary Audio Classic CD 303T SACD player and SLP 05 linestage preamplifier; Magnepan 1.7 loudspeakers, Tara Labs Zero interconnects, Omega speaker cables, The One power cords, and BP-10 Power Screen; Finite Elemente Spider equipment racks

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KEF LS50

Star Power

Neil Gader

Some speakers sure know how to make an entrance. They just have a presence when you first encounter them. I know that's how I felt when I crossed paths with the KEF LS50 a few months ago. At a glance, this two-way bass-reflex compact looks like little more than a stout box-speaker from an indeterminate era—as simple as it gets. But then you realize you can't take your eyes off it. Designed to celebrate KEF's 50th anniversary, it tips its hat to the BBC monitors of the 70s. But the LS50 is not an exercise in nostalgia. It bears zero resemblance inside or out to the birch-ply two-ways of that era—popularized by Spendor, Rogers, Harbeth, and, of course, KEF.

Beyond its modest silhouette, KEF has designed the LS50 with enough innovations to stuff a *piñata*. It's visually striking with its high-gloss finish and the KEF logo discreetly etched onto a corner of the top panel. The pink-gold (a nice 50th Anniversary touch) diaphragm of the Uni-Q driver is a pure KEF-designed coaxial unit and the star of its current generation of speakers. Bearing little relation to the deep-throated coaxials of yesteryear, KEF's latest-generation coincident was designed particularly for the LS50. It's positioned dead center in a radically curved one-piece front baffle—an incredibly dense, plastic compound which tapers to softly rounded edges.

According to the design team, the 5.25" magnesium-aluminum alloy midrange driver uses a mechanism to damp diaphragm resonances, so the usual peak in response common to metal cones is ameliorated. According to KEF, the now-

familiar “tangerine” waveguide uses radial air channels to produce spherical waves up to the highest frequencies—and this allows a deeper “stiffened dome” diaphragm that raises the first resonance, culminating in response that extends beyond 40kHz. Collectively these technologies ensure wide and even dispersion without interference between drivers.

Despite the LS50's obvious physical differences from the Blade, these speakers have much in common. KEF has applied many of the same engineering principles for coincident-driver technology, internal damping, and innovative baffle design. The unique curvature and composition of the baffle is directly related to the Blade project and is designed to mitigate diffraction effects and spurious reflections—keys to good soundstaging and imaging. The elliptical reflex port is offset in an upper corner of the rear panel. Its profile reduces



EQUIPMENT REVIEW - KEF LS50

high-level turbulence—sources of compression and distortion. The ribbing associated with the Z-Flex surround ensures that the surround does not cause any excessive discontinuity for sounds radiated from the high-frequency driver.

The enclosure, including baffle, is as non-resonant as I've experienced at this level. Cabinet construction is all MDF, but KEF analysis has optimized placement of the internal bracing. Add to that the constrained-layer damping placed between the internal bracing struts and the inner walls of the cabinet, and the term “acoustically dead” has rarely been more applicable.

When sizing up the potential of a coincident-driver eleven-inch cube like the LS50, one might assume that it would likely be a “voice” speaker—something more akin to a bridge monitor with distinct, perhaps even serious, wideband limitations. But this isn't the case. Even under levels of dynamic stress that would send a lot of other mini-monitors heading for the hills, the LS50's output is remarkably even. It hardly flinches, even when it's pushed hard. This is impressive, but high output alone is not much of a trick for small speakers nowadays. What is much rarer is high output with linearity and extension.

Sonically the LS50 doesn't suggest the lighter, faster, and edgier personality of the average compact with a five-incher for a driver. This is an essentially neutral monitor throughout the midrange. But there's also a prevailing sweetness, a harmonic saturation that lends it a dark, velvety overall character, and a bloom that is so pleasing that I began affectionately dubbing it the butterscotch sundae of small monitors.

When listening to a variety of symphonic music I noted image focus was excellent, as I'd expected from a coincident driver. But it's not hyper-focused. It provides a more spacious, open, and, in my view, authentic representation of an orchestra. Yes, the LS50 has quick transient reflexes, but that is not what grabbed my attention. Rather, it was its bloom and tonal weight. Heavens to Betsy, this little speaker has guts. As I listened to the Rutter Requiem [Reference Recordings], overflowing with the huge Turtle Creek Chorale and the massive voice of the pipe organ, the LS50 supplied a rich impression of large-speaker grandeur (although somewhat scaled back) as

it energized the room with ambience and provided the illusion of the walls fading away as the musicians begin to materialize.

The mid- and upper-treble range is smooth; the sibilance region is controlled—crisp and clean, but with compliance. As I listened to the Bryn Terfel and Renée Fleming duet on “Not While I'm Around” from *Under the Stars* [Decca], I felt the physical presence of these superb singers, their voices seamlessly expressed. Their images were pitched slightly forward, but only enough to grab your attention and not enough to overwhelm or minimize the musical accompaniment. There is probably a hint of energy fall-off in the presence range, which, when combined with the heavier low end, adds a darker hue to vocals and ever so slightly rounds the edges from peakier recordings. As I listened to Leonard Cohen's “Darkness” from *Old Ideas* [Sony], I keyed on Cohen's voice, whose deep, tired, full-chested character seems dredged from the bottom of an old whisky barrel. Here it sounded even darker than usual, as if it had further sunk into his chest.

Ultimately, when pressed at higher volumes, the LS50 will give away some of the finer low-level details. I felt that during the Bach Toccata in C [RCA], Kissin's piano sounded slightly dampened during high-pursuit lines. As Kissin's left hand descended into the lower octaves there was a trace of soundboard plumminess that suggested the presence of a hard-working port. As with the Leonard Cohen example, the 12-string guitar that ushers in “All Things Must Pass” from *Concert for George* receded slightly in the mix, and during Jen Chapin's *ReVisions* [Chesky] baritone sax and acoustic bass shed some weight and developed a more strictly midband character.

The heretic in me should add that owing to the wide dynamic and spectral envelope of the LS50, it's a very satisfying companion when pressed into home-theater mode. I tend to break in speakers with all kinds of material, so if there's a Blu-ray movie I've been angling to watch, whatever speaker I happen to be running-in will be pressed into duty. In this case, the soundtrack to Wes Anderson's *Moonrise Kingdom*, which features Benjamin Britten pieces and Britten-inspired pieces from Alexander Desplat and Devo's Mark Mothersbaugh, and further contributions from Leonard Bernstein among others, proved to be a lush romantic workout for the KEFs,

with terrific orchestral and percussive selections that exploited the speaker's dynamic range and vivid timbral colors. Not to mention excellent dialogue intelligibility, with no subwoofer or center channel required. Throw anything at it, the LS50 takes on all comers.

The LS50 is tuned for smaller rooms and is meant to take advantage of the room gain that can give midbass response a boost. However, there are always exceptions, and KEF provides elliptically sculpted foam plugs that are effective in reducing bass output a few decibels. These can be helpful in troublesome situations where the speaker setup is optimized for soundstage and imaging but where the room itself is over-boosting LF output, thickening the bass and thus masking details in key regions of the frequency spectrum.

The KEF LS50 is one of the most all-around-satisfying little speakers I've reviewed in some time. Construction and execution are exemplary. It delivers the kind of performance that deserves to be on a Wheaties box. And there's an incalculable coolness factor that makes it a breath of fresh air. The LS50 also answers the classic question, “Who says you can't teach an old box new tricks?” **tas**

SPECS & PRICING

Type: Two-way bass-reflex mini-monitor

Drivers: Uni-Q array, 1" tweeter, 5.25" mid/bass

Frequency response: 79Hz-28kHz (47Hz-45kHz, -6dB)

Nominal Impedance: 8 ohms

Sensitivity: 85dB

Dimensions: 11.9" x 7.9" x 10.9"

Weight: 15.8 lbs.

Price: \$1500

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Monitor Audio GX50

Beguiling

Neil Gader

There's an embarrassment of riches in the under-\$2k loudspeaker category and, fortunately for me, I've been able to experience firsthand some of those bargains over the last few issues. For example, I recently wrote about a pair of compacts, real performers both, the three-way Polk Audio LSiM and the three-way KEF R-300 with concentric midrange/tweeter. On deck is the latest from Sonus faber, the Venere Model 1.5.

However, unique among these entrants and emblematic of the diversity in this segment is the Monitor Audio GX50. The smallest member in the GX Series, the GX50 is a two-way, stand-mount loudspeaker in a bass-reflex enclosure. Visually the GX50 strikes a premium pose from any angle. Aluminum trim rings circumscribe the drivers, and an inverted rubber surround rims the mid/bass. There are no visible screws or bolts to mar the effect (an access panel is cleverly hidden at the base of the speaker). The GX50 is a hybrid-driver design that features a 5.5" mid/bass cone driver and a ribbon tweeter—the C-CAM ribbon transducer, which promises extension to 60kHz. It's also worth noting that these are not one-size-fits-all units—each driver in the GX range has been specifically designed and optimized for the model it is used in, taking into account cabinet volume, desired bass extension, and efficiency. The crossover point of the

GX50 is specified at a relatively low 2.3kHz, with a slope of 18dB per octave for both high- and low-pass sections.

Construction quality and cabinet finish are as good as they get in this price segment. Tolerances appear tight—literally seamless, in fact. But breaking with tradition the GX Series doesn't secure the driver to the front baffle via a handful of screws. Rather, Monitor Audio employs an internal bolt-through method which increases cabinet rigidity back-to-front and maintains consistent tension around the driver periphery thus improving driver/baffle decoupling in the bargain. The results speak (or don't speak) for themselves. The cabinet was effectively invisible throughout my listening sessions. The terminal plate on the back panel is a die-cast alloy with high-quality bi-wire terminals. All internal parts are wired with Monitor's Pureflow Silver cabling. The cabinet is 20mm-thick MDF throughout, with

EQUIPMENT REVIEW - Monitor Audio GX50

radial and cross-bracing techniques for rigidity and reduced cabinet coloration. The grilles affix magnetically, which preserves the clean, unbroken visuals of the front baffle.

Always interested in the challenges an engineer confronts in designing a coherent hybrid loudspeaker, I asked Monitor Audio's technical director Dean Hartley for his take on the subject. He pointed out that development of the GX Series was an extension of Monitor's work on the flagship Platinum Series in 2007, so the challenge of integrating moving coils and ribbons was not unfamiliar territory. Hartley added, "It's still a bit tricky with passive crossovers to achieve perfect alignment with regards to time. Rather than designing the crossover in the frequency domain, which is what some designers do (and forget about the time), we concentrate on this first. We then look to see if we can ensure there is uniform frequency response...The C-CAM drivers we use have very lightweight moving assemblies that yield good overall transient response. We then have to make sure we use powerful motors and optimize the driver's moving mass to yield the best transient response from the electro-mechanical section. We designed the ribbon tweeter to go down lower than most by using a special kind of flexible suspension system. This means we can drive it lower down and ensure that the integration with the mid/bass and also the off-axis response is better. Crossing a 5.5" bass driver over to a ribbon at 4–5kHz is not practical, in our view. Of course, there is always going to be a small difference in transient response since the very low moving mass of the ribbon is impossible to perfectly match to a dynamic driver."

Sonically I have to say, with small reservations,

mission accomplished. The GX50 is a midrange-dominant loudspeaker that shines brilliantly on vocals, female especially as a *cappella* artist Laurel Massé proved repeatedly [*Feather and Bone*]. It relishes the delicacies of musical texture, air, and bloom. It's very effective for its size in mid- and lower-level detail and dynamics with an engaging sense of "being there"—an attribute that encourages you want to keep listening. Tonally it can sound a little polite in the upper mids and there's a bit of extra brilliance in the sibilance range, but the openness of the ribbon tweeter more than makes up for these relatively minor colorations. The ribbon is, as I'd expected, sweet, smooth, and superbly detailed in the transient realm. In the case of piano reproduction, it combines a sense of speed and edge detail at the commencement of a note with little to no impression of woolen overhang or smudging at the note's conclusion. Although the GX50 is more a finesse loudspeaker than a headbanger's dream, that's not to say it completely lacks low-end punch; there's genuine 60–70Hz capability here, and perceivably a bit more further down. Its small mid/bass driver is articulate and more than capable of holding its own on tracks from the Rutter *Requiem* [Reference Recordings], many of which feature the undertow of a pipe organ beneath the large chorus.

Driver integration was essentially very good with only some minor height-related lobing in my smaller listening room. Importantly there was little sense of any "hare and turtle" discontinuity between the ribbon and the cone transducers. My take away from this is that they are somewhat height sensitive, so establishing the correct height for the small cabinet is important. In my smallish

room, the ideal was positioning them at ear level to the listening position which means a stand around 26" tall. Monitor Audio offers a 24-incher for \$495.

As previously alluded to, the GX50 tonal balance is on the lighter side. A track like "All The Roadrunning" is instructive in the way the GX50 captures the female voice more effectively than the deeper male voice. This duet features Emmylou Harris and Mark Knopfler, and it's clear from the outset that the reproduction of the barrel-chested Knopfler's vocal lacks the deeper resonances that characterize his dark, throaty voice. Yet Harris' vocal on the next verse is unwaveringly consistent with previous experiences I've had with this track and a variety of loudspeakers. Similarly the full breadth of soundboard radiation from a grand piano is somewhat truncated; the rippling waves of ambience that fill a symphony hall and reside around specific images and sections are there, but the foundational weight that defines the soundstage and extends it to the rafters is reduced.

Bass extension is where compromises are most keenly felt in smaller speakers. Giving the listener a healthy impression of bass from a diminutive transducer is the stock and trade of talented engineers. And with only minor reservations, Monitor Audio effectively walks the GX50 along this fine line. Most of us are aware that the full weight of an orchestra requires either really large drivers or a whole bunch of smaller ones. Beyond the stout but small mid/bass cone, the GX50 has only its port to rely on, and there are moments when its upper-bass emphasis can be both a good and a not-so-good thing. It can effectively convey the beat and drive of a rock rhythm section or a bass-viol ostinato, but,

especially at higher volumes, it can also sound a bit labored and one-note in character. To be fair, this is the way it is with almost all small compacts. Monitor Audio has struck a fair balance.

The Monitor Audio GX50 was very much at home in my small room. Bear in mind that at under a foot in height it does have ultimate SPL limitations, so don't expect it to fill an auditorium. However, taken on its own terms, the GX50 is beguiling in its strengths and serious in its intentions, and with that ribbon tweeter adds a distinctively sweet flavor to the under-\$2k category of loudspeakers. **tss**

SPECS & PRICING

Type: Two way bass-reflex compact

Drivers: C-CAM ribbon tweeter, 5.5" mid/bass

Frequency response: 55Hz–60kHz

Impedance: 8 ohms

Sensitivity: 86dB

Dimensions: 11.75" x 6.75" x 10.4"

Weight: 16.5 lbs.

Price: \$1795

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Anthony Gallo Acoustics Classico CL-3 Loudspeaker

Little Big Speaker

Chris Martens

I have been following the evolution of Anthony Gallo's loudspeakers for quite a while and over time have grown accustomed to, and even fond of, their futuristic styling. But Gallo speakers, as I have pointed out in past reviews, always look different for solid engineering-related reasons, not just for the sake of making a high-impact design statement. Where other designers have used traditional rectangular MDF speaker enclosures with wood veneers, Gallo has taken a much different path—often designing irregularly shaped die-cast aluminum or spun-stainless-steel enclosures, all in the name of structural rigidity, resonance control, and resistance to internal standing waves. And Gallo's willingness to (pardon the pun) think outside the box extends beyond the realm of speaker enclosures to include fresh thinking about drivers and crossover networks, too.

Imagine my surprise, then, when I first set eyes and ears upon Gallo's new Classico CL-3 floorstander (\$2395/pair), which is the first Gallo speaker ever to feature a conventional wood-box enclosure. (Gasp!) I could well imagine the commercial considerations that might have prompted a move to wood-box enclosures, but wondered if this meant Gallo was setting aside the design objectives that had led the firm to use unorthodox metal enclosures in the first place. In short, I wondered if the CL-3 would sound like a "real" Gallo. As it turns out, however, I needn't have worried, as I discovered very early on that the new Classico model not only equals the performance of Gallo's critically acclaimed Reference speakers in many respects, but

arguably surpasses them in some critical areas. To learn how Gallo pulled off this feat, read on.

The CL-3 is an unusually small 31"-tall tower-type speaker that features strikingly-angled panel surfaces intended to minimize problems with internal reflections. Classico models are offered with either genuine cherry or ash veneers and come with curved, magnetically attached mesh grilles that compliment the angular shape of the speaker cabinets. The CL-3 drivers comprise a pair of 5.2" mid/bass units with carbon-fiber diaphragms, plus one of Gallo's signature CDT 3 (cylindrical diaphragm transducer) tweeters. The CL-3 enclosure is made from ¾" internally braced MDF and is configured, says Gallo, as a "modified

transmission line," which vents through a rear-firing slot. The transmission line, in turn, is loaded with Gallo's patented S2 damping material, which I will discuss further below. Interestingly, a brief spin through the Gallo specifications table reveals this telling phrase: "Internal Crossover: None required." Like many of Gallo's Reference Series designs, the Classico CL-3 is essentially a crossover-free loudspeaker, which as you might expect yields audible benefits in openness, transparency, and freedom from crossover-induced sonic artifacts.

Let's take a moment to review some of the technical highlights of the CL-3. First, as mentioned above, the CL-3 uses a CDT tweeter

EQUIPMENT REVIEW - Anthony Gallo Acoustics Classico CL-3 Loudspeaker

that has 180 degrees of horizontal dispersion and 30 degrees of vertical dispersion. Gallo notes that the CDT tweeter provides “consistent high-frequency response both on- and off-axis,” meaning that both “soundstaging and imaging are enhanced.” The tweeter features a semi-cylindrical diaphragm formed from sheets of a piezoelectric material called Kynar. As current flows back and forth, the material expands and contracts, with acoustic output closely approximating that of a theoretical pulsating cylinder. Significantly, the CDT tweeter naturally acts as a roughly 6dB/octave high-pass filter that rolls in at about 3kHz, so that the tweeter is able to serve as crossover. Apart from terrific horizontal dispersion, the CDT tweeter also offers good linearity, high resolution, and extremely fast transient response.

Like previous Gallo speakers, the CL-3 uses the firm’s proprietary S2 damping material within its cabinet. S2 is a finely shredded polyethylene film material that not only provides excellent general damping properties, but also improves the volumetric efficiency of the air within the speaker. As Gallo puts it, “Our patented S2 technology tricks the Classico’s precision woofers into performing as though they’re in significantly larger enclosures.” Previous Gallo designs have always used S2 material in relatively small sealed enclosures, but in the Classico CL-3 the S2 material is, for the first time ever, being applied in a larger, vented, transmission-line enclosure. For the CL-3 application, Gallo has strategically placed air-permeable bags containing carefully chosen quantities of S2 material at specific locations within the transmission line. The claimed result is a speaker that “sounds much larger than its actual size and delivers real-life

impact without ever sounding muddy.” Gallo has given this distinctive transmission-line-loading methodology the acronym BLAST, which stands for Backwave Linearization And Synchronization Technology. According to Gallo, BLAST affords “an improved acoustic impedance match between the woofer/midrange driver and the air within the enclosure,” which “allows the speaker to play louder, deliver exceptional bass, and perform overall like a speaker many times its size.” And as you’ll learn in a moment, these aren’t hollow marketing claims.

Finally, the Classico CL-3 employs what Gallo terms Optimized Pulse Technology (OPT) Level 2. OPT “applies a dielectric absorption countermeasure to eliminate sonic degradation from static charges that typically build up on speaker wires and within the speaker itself.”

All of these technical features sound promising in principle, but how do they work out in actual practice? The simple answer is that they work better than I ever imagined possible.

Let me acknowledge from the outset that CL-3, which is quite attractive in its way, simply looks too compact, too short, and too conventional to be capable of producing deep bass and powerful and expressive dynamics, or of delivering a big, transparent, and highly refined sound. But once the speaker is broken in (about 50 hours’ worth of run-in time should do the trick) and properly positioned, the fact is that it does all of the above and more.

Gallo specifies the CL-3’s frequency response as 32Hz–22kHz +/-3dB in room, and when you look at that 32Hz bass extension figure and then look at the CL-3 with its two 5.2" mid/bass drivers, your first thought might well be, “No way!”

But put on a track with really solid low-frequency content, such as the very low-pitched drum heard near the beginning of the track “Temple Caves” from Mickey Hart’s [Rykodisc], and you’ll soon be singing a different tune. Implausible though it may seem, the little CL-3s go amazingly low and they do so with a remarkable combination of authority, finesse, and pitch definition. For example, you can easily pick out subtle drumhead “skin sounds” even on very low-pitched concert bass drums and the like—precisely the sort of thing many moderately-priced speakers either fail to reproduce altogether or else capture with an overlay of thick, ill-defined low-frequency noise. With the Gallo, on the other hand, it’s hard to say which is more impressive: its ability to go low, or its ability to maintain a very high level of textural finesse when doing so. Is there a trick to achieving this level of bass performance? Well, there is one: You must heed Gallo’s positioning guidelines, which recommend placing the CL-3 at least four inches and no more than two feet from the wall behind the speakers. I tried several positioning options during my listening tests and discovered that once the speakers were pulled out more than two feet from the wall, bass performance (that is, perceived weight, depth, and balance) fell off precipitously. But, within the two-foot zone, bass performance was exemplary.

Next, let me focus on the CL-3’s midrange performance and dynamic capabilities. It is in these two related performance areas that I felt the CL-3 actually managed to outperform some of the Gallo Reference models I’ve heard in the past. Specifically, the CL-3 exhibits a wide-open, highly transparent midrange that is terrifically responsive to shifts in dynamics.

SPECS & PRICING

Type: Two-way, three-driver floorstanding loudspeakers with “modified transmission line” enclosure loading
Drivers: Two 5.2" mid/bass drivers with woven carbon-fiber diaphragms, one CDT 3 (cylindrical diaphragm transducer) tweeter
Frequency response: 32Hz-22kHz +/-3dB in-room
In-room sensitivity: 88dB
Nominal impedance: 4 ohms
Recommended amplifier power: 20-200W
Dimensions: 7" x 31" x 12.5"
Weight: 27.7 lbs. each
Price: \$1595 per pair, sold factory direct

ANTHONY GALLO ACOUSTICS

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EQUIPMENT REVIEW - Anthony Gallo Acoustics Classico CL-3 Loudspeaker

Although the CL-3 is nowhere near as sensitive as today's best horn-loaded loudspeakers, it does somehow convey their traditional sonic qualities of effortlessness and powerful (indeed, at times explosive) dynamics-on-demand. By comparison, the midrange response of Gallo's Reference models, though very good in its own right, can at times sound ever-so-slightly over-damped, so that one sometimes has the sense that a very powerful amplifier is needed in order to help "push" the notes out of the speaker. But, within reasonable volume limits, the CL-3s have no such restraints or caveats; with the Classicos in play, the music just flows freely—even at moments when dynamic demands become pretty extreme.

To appreciate what I mean, try listening to Movement 3 of David Chesky's [Chesky] and note the ferocious interplay between Bryan Baker's electric guitar and the orchestra at full voice. Trying to get either the sound of the guitar or the orchestra right would be tough enough for most moderately priced loudspeakers, but in this movement the Classico handles both challenges with equal parts grace and savage energy. Note, as you play this movement at reasonable volume levels, how beautifully the CL-3 captures both the aggressiveness and intricate articulation of the guitar, while simultaneously handling the opposing demands of very high-frequency and very low-frequency percussion instruments played with gusto. If you have any lingering doubts about the CL-3's ability to handle loud, abrupt, low-frequency transients, this track will quickly put them to rest.

The only caveat I would mention is that, because the midrange of the CL-3 is so expressive and revealing, the speaker is not very

tolerant (or forgiving) of the overly hot midrange sounds captured on some modern pop records. I put on the track "You Were Always There" from Lyle Lovett's [Lost Highway] and noted that the Classicos pointedly exposed the fact that Lovett's vocals were somewhat too closely mic'd and therefore exhibited an unnatural glassy sheen and a strident sound on sibilants and other vocal transients. For better or worse, the CL-3's will consistently expose flaws of this sort, though I feel this is a small price to pay for the levels of openness and transparency the speaker offers on good recordings.

Finally, let me say a bit about the speaker's ability to produce an unexpectedly big, spacious sound. When you first see the 31"-tall CL-3s, it is perhaps inevitable to worry that they might image, oh, at about knee level (which would obviously not be good). But this isn't the case at all. Instead, I found that the speaker produced wide, deep, spacious images that were centered about a foot-and-a-half above the tops of the speaker enclosures. I frankly have no idea how Gallo pulled this off, but I suspect two design choices may have helped. First, the CL-3 positions its CDT tweeter at the top of its driver array, whereas most other Gallo designs place the CDT tweeter in the center of a classic MTM (midrange-tweeter-midrange) array. Second, the front baffle of the CL-3 is deliberately sloped backward to a noticeable extent, so that the tweeter's output is angled upward. I suspect that positioning the tweeter as the uppermost driver in the array and giving it a bit of upward tilt helps with perceived image height.

In any event, the CL-3 sounds like a much larger speaker than it actually is, and it offers highs that are at once smooth and yet very finely focused,

detailed, and extended. Where some tweeters seem to shout, "I've got definition to burn," the Gallo CDT 3 tweeter manages to sound relaxed without ever sacrificing critical details or sounding recessed and soft. On the contrary, the CDT 3 does a great job of capturing high-frequency overtones, textural details, and subtle reverberant cues that help define the size and acoustics of recording spaces. Horizontal dispersion, as advertised, is extremely broad, so that it is not uncommon to experience soundstages whose width extends well beyond the outer edges of the loudspeakers.

A good example can be drawn from the middle movement of Robert Paterson's from Paterson's [American Modern Recording], which is performed by the Clockwise duet featuring violinist Marc Uys and harpist Jacqueline Kerrod. The recording is rich in delicate, fleeting treble transient sounds, textural details, and ambient cues, and—through the Classicos—yields a sound where the voices of the harp and violin seem to hover in the air, replete with lush, evanescent beauty. In particular, I was enthralled to hear the Gallos vividly reproduce subtle performance details, such as the delicate, airy sound of Uys' deft bowing. The only minor caveat I would note is that, because the tweeter's treble dispersion pattern is so broad, you'll want to be careful about positioning the speakers directly beside or behind nearby objects that could cause unwanted reflections. Most of the time, however, the Gallo tweeter helps foster greater levels of listener involvement.

Put all these factors together and it becomes clear that Gallo's Classico CL-3 is one of the most capable and appealing loudspeakers in its price class, though it is not without stiff

competition from models such as the GoldenEar Triton 3, the Magnepan 1.7, and the MartinLogan Electromotion ESL (three excellent performers in this class). I had a pair of Magnepan's 1.7s on hand for comparison purposes and found the Maggies enjoyed a narrow edge in top-to-bottom cohesiveness and overall image scale. The Classicos, however, offered equally taut but more powerful and deeply extended bass, equivalent levels of resolution, a somewhat greater sense of midrange fluidity, and more explosive dynamics. Significantly, the Gallos are somewhat easier to drive than the Maggies, though both speakers may require top-shelf (or at least near-top-shelf) amplification and source components to give of their best.

I would encourage anyone shopping for loudspeakers in the near \$2k/pair class to give the Classico CL-3 very careful consideration. The only hard part, really, will be figuring out how Gallo is able to pull such a big, expansive, and refined sound from such small, unassuming loudspeakers. **tas**

EQUIPMENT REVIEWS

Amplifiers

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DDA-100, DAC-100, HAP-100



DDA-100



DDA-100



DDA-100

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- Left: DDA-100 \$549 a direct-digital integrated amplifier
 Right: DAC-80 \$795 a class-leading DAC with asynchronous and re-clocking circuit
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 STA-100 \$695 a hi-end stereo power amplifier

Jolida Glass FX-10 Integrated Amplifier and Glass FX Tube DAC

Small Stereo With a Big Sound

Garrett Hongo



My two GenNext sons like their music portable—on iPods played back through earbuds, headphones, or via RatShack hookup to thrift store electronics and scrounged speakers. In this, they're typical of their twenty-something generation. It's even hard to get them to sit through any kind of listening session. They start talking about the music, fingering through touch-files stored on their portable drives, sampling and playing blips and bits rather than any one, single recognizable tune. It drives me nuts.

But their lifestyles have them constantly on the move too, jumping from the couch to a party across town, then to a club for live music, to a beer hall for yet another gathering. They've earbuds on while cycling around town or riding the bus, while tapping keys on their computer at a coffee shop updating a Web site they've designed. Or, if they are still a moment, they're listening in their apartments via desktop speakers attached to their computers, playing MP3 or Apple Lossless (I've converted *one* son) files. Their music systems need to be small, even pocketable. Unlike Pops, they don't have what they call, derisively, *Big Stereo*.

This is precisely why Michael Allen, President of Jolida, a Maryland-based audio company, designed his new Glass Series of components.

"I started thinking that the high end has gone way big and priced itself completely out of the entry-level," he said during a recent telephone interview. "So I thought up a series of six components—a tubed amp, a hybrid amp, a mini-DAC, a tubed DAC, a phonostage, and a

transport—that would be small, affordable to younger people, and provide good sound."

Jolida has, since 1994, steadily produced a line of normal-sized tube amplifiers known for their good sound and very low prices. When most high-end electronic products might cost in the thousands of dollars per unit, Jolida prides itself in producing equipment, both handsome and musical, for mere hundreds. Designed in Maryland by Michael Allen and a team of engineers, Jolida products are built in China to Allen's specifications. And, since the mid-90s, the company has also added CD players, hybrid amps, SET amps, and preamps to its offerings—albeit some with prices north of a thousand.

"With the Glass Series, the trick was getting things small," Allen said. Three-quarters of the design problem had to do with getting the equipment into a box of about 8" x 7" and making the components stackable. "We also wanted the tubes exposed, so that meant there had to be a glass top for the casing."

EQUIPMENT REVIEW - Jolida Glass Series

Once those problems were solved, Jolida put things into production, coming out first with the FX-10 integrated amp (\$499) in 2008, then the mini-DAC (\$120) and Tube DAC (\$379) in 2009. Forthcoming are the Glass transport, hybrid amp, phonostage, and a new headphone amp.

The Glass FX-10 is a beautiful display box of an amp. Coming in silver or black (mine was black) and weighing in at twelve pounds, it measures a compact 8" W x 7" H x 7" D and feels sturdy and solid. Fit and finish are of high quality. Self-biasing, it uses two pairs of Electro-Harmonix EL84 output tubes and two Tung Sol 12AX7 input ones that sit in front of a tidy housing for its transformers, all enclosed on four sides and on top with heat-resistant safety-glass panels. Assembly was a snap. All I had to do was pull the amp out of its shipping box, place it on its side, and unscrew the four aluminum feet. Pulling the feet out from the bottom of the amp also withdraws the long aluminum rods that hold the amp's glass casing together. Once that's out of the way, this allows you to remove the block of Styrofoam from around the tubes that secures them while in transit. Simply replace the casing and screw in the feet/rods, and the amp is reassembled and ready for operation. The look is clean and its size perfectly suited for a desktop or even a nightstand.

Functions are all straightforward. The front control panel consists of four small push-buttons (marked **STANDBY**, **CD**, **AUX**, and **INPUT**), a volume dial, and a 1/8" input jack for an external dock or MP3 player. Blue LED lights above each button illuminate when in use. The FX-10 designation is silk-screened underneath a distinctive, half-inch square gold badge embossed with the Jolida logo. The off/on switch is on the back left rear and

the amp goes into standby mode when switched on. Also on the back are 4- and 8-ohm taps for speaker wires, two pairs of gold-plated RCA input jacks, and an IEC jack. When you hit the **STANDBY** button on the front panel, its LED switches from red to blue and the amp itself bursts with blue light emanating from under each tube. While the amp is operating, the blue light stays on and illuminates the tube bases in an attractive circular parachute pattern around their mounting pins. About the size of a 1/4" stack of Monopoly chance cards, the logo-less remote is a battery-powered, feather-light wafer of black plastic with blister buttons for mute, power, up and down volume, sequential function-switching, and also direct switching (to **CD**, **AUX**, and **INPUT**). It worked perfectly.

The Glass Tube DAC has the same footprint as the FX-10 amp, measuring 8" W x 3" H x 7" D and weighing only 6½ pounds. It too comes in silver or black and has a safety-glass top silk-screened with the Jolida logo. Like the FX-10, build-quality is impressive. And no assembly is required. While its inner workings are shielded from view by a black metal casing, its two side-mounted Tung Sol 12AX7 buffer tubes are on display, seen either from above or through a neatly done rectangular cutout on the far right of the DAC's front panel. The rest of the front panel, from left to right, consists of a largish power button and a smaller control button that switches the DAC from its **USB**, **coaxial**, or **TosLink** input connections, signified by a trio of labeled blue LED function lights. In back are a pair of RCA output jacks and the **TosLink**, **coax**, and **USB** inputs along with a ground pin and the IEC. Its components are decidedly high-end—ESA Clarity capacitor filters, gold-plated RCA jacks, and a PCM 1793 TI Burr-Brown DAC. Via

SPECS & PRICING

Glass FX-10 integrated amplifier

Maximum power output: 12Wpc at 8 ohms, 1kHz

Frequency response: (1W into 8 ohms) 17Hz-37kHz
+/-1dB

THD + N: Less than 1% at 10W output, 39Hz-10kHz, 8 ohms

Circuit type: Ultralinear Class AB

Tube complement: Two matched pairs of EL84 power output; two 12AX7 preamplifier

Bias settings: Self biasing

Dimensions: 8" x 7" x 7"

Weight: 12 lbs.

Price: \$499

Glass Tube DAC

Tube complement: Two 12AX7 preamplifier

Frequency response: (1W into 8 ohms): 8Hz-130kHz
+/- 1dB

Output level: 2.0V

THD: Less than 0.02% tube out (1kHz)

Circuit type: Ultralinear, Class AB

Dimensions: 8" x 3" x 7"

Weight: 6.5 lbs.

Pricing: \$379

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ASSOCIATED EQUIPMENT

Digital sources: Cary 303/300 CD player; Apple iMac, iPod, and iPhone with Jolida Glass Tube DAC

Digital transport: Wadia 170iTransport

Preamplifiers: Lamm LL2.1, deHavilland Mercury 3 line stages

Power amplifiers: Herron M1, deHavilland KE50A (both monoblocks)

Speakers: Sonist Recital 3, Sonist Concerto 3, Von Schweikert Audio VR5 HSE

Speaker cables: Audience Maestro and Au24 jumpers; Siltech 330L and 330L jumpers

Interconnects: Audience Maestro, Atlas Navigator All-Cu, Siltech 330i

USB cables: Wireworld Starlight, Wireworld Silver Starlight, Cardas Clear

Coaxial cables: Wireworld Starlight 6, Radio Shack Auvio

Power cords: Cardas Golden Reference, Fusion Audio Predator and Impulse, Harmonix XDC Studio Master, Thor Red, Wireworld Stratus, Siltech Ruby Hill, Siltech SPX-800

Power conditioner: Weizhi PRS-6, Siltech Octopus

Accessories: Box Furniture S5S five-shelf rack in sapele, HRS damping plates, edenSound FatBoy dampers

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EQUIPMENT REVIEW - Jolida Glass Series

USB, the Tube DAC accepts signals at 16 bits at rates from 44–96kHz. Via its coaxial and TosLink connections, it supports 192kHz/24-bit.

“Aside from the size, we basically worked on parts quality, sound, and producing a good soundstage,” Allen said.

Hooking everything up is entirely intuitive. The only hitch might be working with the amp’s speaker taps, as the posts are necessarily very close together and can’t be tightened with a tool. I had to carefully position the spades of the speaker wires so they never touched, and then finger-tighten the knurls by twisting the spades at the same time to ensure a tight fit. I used three different sets of interconnects and two different speaker wires, all with great results. I also used three different USB cables, two different coax cables, a Wadia 170iTransport dock, my iMac (OS X 10.6.8) and both an iPod and an iPhone, each running Apple iTunes (10.5.2) and loaded mainly with iTunes Lossless files (44.1/16). As for speakers, I first used a review pair of Sonist Recital 3s (93dB/8-ohm), then a pair of Sonist Concerto 3s (95dB/8-ohm), and finally, my reference Von Schweikert VR5 HSE (91dB/6-ohm). Things could not have been easier. And, I tell you, the results just knocked me out.

From the start, the pair of Jolida units sounded great. One of the things I like to do late at night is listen to small jazz combos, particularly the great Miles Davis sextet from the late 50s. I turned to an old favorite—“So What” from *Kind of Blue* (Columbia/Legacy CK64935) ripped to iTunes Lossless from CD to my iMac’s hard drive. From the first few notes, I heard great presence in the recording. Paul Chambers’ plucked bass seemed to inspirit my listening room. I heard deep, pliant notes thump and resonate in the chamber of its

chthonic body. Bill Evans’ piano sent out a rich bounty of harmonics, sometimes in counterpoint to the bass, sometimes doubling it, and other times trailing in light trills of thematic echo. The horns blended in precise, pulsating choruses. And, on the first solo, Miles’ trumpet sounded clean, lightly propulsive, on occasion just shy of piercing, and had a touch of warmth. There was Coltrane’s characteristic swagger in his solo, his tenor sounding burnished and muscular throughout. Finally, Adderly’s swinging alto reached deftly back into Charlie Parker’s bag of speedy bebop and robbed it, not for virtuosity, but for a concise vein of pure sweetness. This was music one could taste and savor.

Wanting to hear what a straight download might sound like, I went to the iTunes Store and purchased Adele’s *Live in Soho* (lossy AAC). I figured Apple’s MP4 file would put the Jolida amp/DAC combo’s powers of resolution, extension, and micro-dynamics to the test. It passed with flying, portmanteau colors. Adele’s charming melody and swooping wails on the acoustic version of her hit “Chasing Pavements” combined with exquisite coos and titillating high-note piping in a lubriciously intimate style that interwove with a sensitive acoustic guitar and electric piano accompaniment. When she wailed *Ohhhhhhhhhwww* in a climactic passage, there was absolutely no breakup, no clipping—only the dramatic extension of her soulful voice, attesting to the FX-10s power and the Tube DAC’s resolution and smoothness. Yet, Adele’s voice could also sound a bit pushed at times, as though from a bump in the upper midrange, possibly due to Apple’s file compression.

On most rock recordings with male voices, the Jolida gear performed as well as it did with female

voice and small-combo jazz. I switched to the Sonist Concerto 3 speakers with their larger cabinets and dual 8" woofers, hooked my iPhone to a Wadia 170i Transport dock and played lossless files of vintage rock like Cream, Traffic, and The Band, and paged through the touchscreen for more of what I wanted. I found U2 and *Joshua Tree* [Island 7 90581-2]. The Edge’s guitar had a gritty metallic bite and clarity I hadn’t heard before on “With or Without You,” and the studio amplification to his chording added a chiming sustain that was mesmerizing. Together, the tambourine intro, distortion lead guitar, and cymbalom-sounding rhythm guitar chords created a fine tapestry of electronic sound against which Bono’s expressive vocal had loads of complexity—depth, screaming attack, bite, and some raspiness. There were punchy toms and a kickdrum that both sounded almost synth-like. Characteristically, the soundstage was deep and wide. Another thing I noted was the good centerfill. Although FX-10 only outputs ten watts, those watts are *mighty mighty!*

Yet, at first, I thought the little integrated didn’t seem to have quite the authority of higher-powered separates driving my reference Von Schweikert VR5 HSE speakers once I switched to them. The FX-10 sounded a tad shrill in the violins on Ivan Moravec’s Beethoven Piano Concerto No. 4 [VAIA 1021]. There was nothing overtly unpleasant, really—piano arpeggios were buttery, liquid, and smooth and Moravec’s trills sounded okay, if not superb and crystalline. There was a nice bass rumble from the piano’s lower notes and fine timing with the Vienna Musikverein orchestra. And, in refinement, the Jolida combo got Moravec’s emphatic inflections on the keyboard, his idiosyncratic phrasing. But violins and flutes were just a shade thin and strained at times and orchestral *tuttis*

sounded muted. However, once I changed wires from the budget-level but very decent Audience Maestros and Au24 jumpers to my reference Siltech 330i interconnects and 330L speaker wires and jumpers, these flaws diminished.

Midway through the review period, I changed output tubes in the FX-10 amp, swapping the stock EL84s for a matched quad of Shuguang Psvane tubes from Grant Fidelity and the stock 12AX7s in the Tube DAC for a pair of Psvane 12AX7s, also from Grant Fidelity. And the sound got even better—smoother, more resolving, with a deeper soundstage, more focused images, even more jump, and a nice boost in midrange warmth. Tonal balance seemed perfect. “No Quiero Celos” from *Tribute to Cuarteto Patria* by Eliades Ochoa [Higher Octave World 47494] had great pace and exquisite separation of timbres among the numerous instruments.

The Jolida Glass Tube DAC and Glass FX-10 amp are great music-makers, capable of wonderfully rich yet nuanced playback on all genres I tried. Good with their stock tubes and using budget cabling, they sound even better as you upgrade the tubes and wires and match them with speakers sensitive enough to be driven by a low-watt amp. While not the *Big Stereo* that my Gen Y sons decry, the Jolida Glass gear is seriously *Good Stereo*—affordable, compact, great sounding, upgradable, and entirely attractive. I recommend both the Tube DAC and FX-10 amp to anyone making the move up from portable sound or simply wanting to put together a quality desktop, computer-sourced system. **tas**



NuForce DDA-100 Integrated Amplifier

A PWM Integrated Amplifier for the Masses

Steven Stone

Insomniacs must populate NuForce's R&D department. That's the only explanation I can come up with for NuForce's rapidly expanding stable of new products. I reviewed its excellent DAC-100 in Issue 228, and now NuForce has introduced an even more revolutionary digital product—a direct-digital integrated amplifier that utilizes pulse-width-modulation technology.

Priced at a paltry \$549 the DDA-100 delivers value with a capital V. You get four digital inputs (no analog—remember, this is an all-digital amplifier), one TosLink digital output, and one pair of speaker terminals. NuForce even throws in a nice little credit-card remote control. Add a computer to the front end and a pair of speakers on the back and you've got a completely modern audio system. And, I will brashly add, the DDA-100 sounds better than any conventional integrated amplifier I've heard priced under \$2500.

Technical Tour

According to NuForce, "The DDA-100 doesn't require the typical DAC stage found in most of today's digital audio products. Rather, its PWM power amplifier stage is modulated directly by the incoming signal, and the digital-to-analog conversion takes place at the speaker outputs. In effect, the PWM power amplifier stage operates as a power DAC." The DDA-100 supports any 16- or 24-bit digital signal, from 44.1 to 176.4 (but not 192 kHz) via its one S/PDIF input. The two TosLink and single USB 2.0 inputs support up to 96kHz and 24 bits.

For a description of how PWM power amplifiers work, please read Robert Harley's sidebar. Suffice it to say that PWM is not the same as switching amplifiers, such as Class D or T designs, and offers the technical advantages of a simple signal path and fewer active components, as well as a few ergonomic drawbacks.

Setup and Ergonomics

The DDA-100 principal market is audiophiles who want a simple, moderately priced, one-box solution to go from any conventional digital source directly to a pair of loudspeakers. Headphone and subwoofer users will need to

add additional components to the signal chain. Using either a USB to S/PDIF converter box with multiple digital outputs (one for the DDA-100 and a second one for your headphone DAC) or a USB DAC with an auxiliary S/PDIF output, will expand a DDA-100-based system's capabilities to handle more ambitious systems.

Hooking up the DDA-100 is easy as long as you keep it simple. If you do any amount of headphone listening you'll need to add another DAC to your system, since the DDA-100 has no headphone output. For headphones I used the NuForce DAC-100—I gave it the TosLink output from the DDA-100. Using the DAC-100 also supplied me with a line-level subwoofer feed if I needed one. Another option I looked at was NuForce's new headphone amplifier, the HAP-100, but it only has analog inputs. You will need a headphone amp that has a DAC and a TosLink input to interface with the DDA-100.

At 50W RMS (8 ohms) the DDA-100 is far better suited for speakers, even desktop speakers, that are at least 88dB sensitive. With some of my less sensitive monitors, such as the Aerial Acoustics 5B's (86dB), I could hear the amplifier section beginning to strain during dynamic peaks. And because the DDA-100 is such a low-noise device (true 95dB S/N from digital input to analog power output) variations from its optimal operating range were readily apparent.

For computer sources NuForce supplies a basic USB interface that supports up to 96/24. For higher resolutions you must use either the RCA S/PDIF input or TosLink. Unfortunately for us high-resolution addicts, 176.4/24 is the maximum resolution supported by the DDA-100. If you try playing full-resolution 192/24 files through the DDA-100 all you will hear is modulated noise through your speakers.

EQUIPMENT REVIEW - NuForce DDA-100 Integrated Amplifier

Sound

The DDA-100 was my first encounter with a PWM amplifier, and I was impressed by its lack of coloration and the absence of electronic noise. In my desktop system, regardless of what speakers the DDA-100 was tethered to, it always produced a more convincing soundstage than I've experienced before. Locational cues were simply easier to decipher, as was all sonic information.

During the initial stages of my review I used the DDA-100's USB input, and while it didn't sound bad, the USB input is certainly not the DDA-100's "best" input. Through the USB the sound had a slight but pervasive opaqueness when compared to better, lower-jitter sources coming from the S/PDIF input. I used several outboard USB/SPDIF converters with the DDA-100, and in every case the inclusion of a dedicated outboard USB converter in the signal chain rewarded me with a better and more transparent sound.

Since this is a review of the DDA-100, not USB converters, I will not go into great detail enumerating differences between various USB boxes through the DDA-100, but I will tell you that the DDA-100 offers sufficient resolution to easily hear that a Bel Canto RefLink or Empirical Audio Off-Ramp 5 delivered better low-level detail and resolution than a \$60 Matrix converter.

But how does the DDA-100 sound different than more conventional amplifier designs? During listening sessions I was continually aware of the DDA-100's lack of haze and homogenization in the "black space" between instruments. The edges and dimensions of each instrument were defined in a more concrete manner through the DDA-100 than any amplifier I've heard near its price. On my recently recorded "field recordings" of Chris Thile, Chris Eldritch, and Gabe Witcher from a Rockygrass Academy workshop on improvisation,

not only did the DDA-100 place each musician in a cohesive and dimensionally convincing soundstage, it also allowed me to hear into the background so well that I could clearly identify Pete Rowan's vocals coming from another tent 75+ feet away.

As for any traces of a "characteristic" sonic signature in the DDA-100, I have yet to hear one. Unless driven into clipping, I could not identify any additive colorations that I could attribute to the DDA-100. As for subtractive colorations, compared to a traditional tube design, the DDA-100 will not be as warm or harmonically rich in the lower midrange, but I wouldn't call this a subtractive coloration as much as a lack of an additive one. The bottom line was that for me, with current sources, the DDA-100 was sufficiently transparent and uncolored to be used as a reference device as long as it was mated with sufficiently sensitive and unproblematic transducers.

Final Thoughts

You can view the NuForce DDA-100 in two ways—it's either a supremely high-value entry-level integrated amplifier or it's a component that lacks just a few vital features needed to make it into a devastating price-no-obstacle-to-performance component.

The issues with the DDA-100 are primarily ergonomic. It can play 176.4/24, but lacks the ability to play 192/24 files. Through USB it can support only up to 96/24, but will handle up to 176.4 through S/PDIF. It also has no analog outputs for headphones or subwoofers, and is only 50W RMS (into 8 ohms). And while you can remedy the paucity of analog outputs by linking the DDA-100's sole digital output (which is TosLink) to a second DAC with headphone and analog line-level outputs, this adds substantially to the complexity and cost of a system.

But the sound of the NuForce DDA-100 is so impeccable, up to the point when it runs out of power,

that even after adding a NuForce DAC-100 to augment the ergonomic flexibility of the system, the final cost is still a sonic bargain. I haven't heard any integrated amplifier with DAC capabilities priced near this combo that offers any serious sonic competition.

If you have sensitive speakers, at least 88dB, and can work around the DDA-100's ergonomic limitations, you may find that the DDA-100 is simply the best integrated amplifier solution that you've ever heard. And for those readers who still firmly believe that all-digital amplifiers are for someone else's system, listening to the DDA-100 will be, as it was for me, a revelation. **tas**

SPECS & PRICING

Digital input: Two TosLink, RCA coaxial 75-Ohm, USB 2.0 adaptive mode

Sampling rates: USB: 44.1, 48, and 96kHz; S/PDIF: 44.1, 48, 88.2, 96, 176.4kHz

Resolution: 16-24-bits

Power: 75W (4 ohms), 50W (8 ohms)

Frequency response: 20 to 20kHz +/- 0.1dB

SNR > 95dB A-weighted

Dimensions: 9" x 2" x 8.5"

Weight: 2.64 lbs.


Price: \$549

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JONI MITCHELL: WILD THINGS RUN FAST
By [Neil Gadsis](#) | Feb 14th, 2013

Joni Mitchell
Wild Things Run Fast

Label: GRG
Style: LP
Genre: Rock/pop
Ratings: Music ★★★★★
Sonic ★★★★★

Joni Mitchell's career has been filled with startling detours. From the dulcimer-strummed Woodstock era, to the jazz-infused, smoky stylist of today, the gifted singer-songwriter and restless musical adventurer. Others might have been satisfied with early popular critical approbation, but rather than falling back on this she "Big Yellow Taxi" or "Cloud" continually expanded her creative vocabulary by taking risks. Wild Things Run Fast Mitchell's first effort for newly formed Geffen Records after a long stint at Geffen's parent label, not as well received as the celebrated Court and Spark. WTRF was a return to more terrain. A mélange of jazz/pop invention coated with swirling rock harmonies. WTRF remembered for "Chinese Wall" which quoted from the Righteous Brother's hit "I'm

Although the original pressing was a solid recording it's no match for this 45-rpm.

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EQUIPMENT REVIEW - NuForce DDA-100 Integrated Amplifier

Why the DDA-100 Isn't a Conventional Class D Amplifier



A true digital amplifier such as the NuForce DDA-100 is not a conventional Class D switching amplifier. In a conventional switching amplifier, analog input signals are converted to a series of pulses that turn the output transistors fully on or fully off. The signal's amplitude is contained in the pulse widths, and an output filter smooths the pulses into a continuous waveform.

But in the DDA-100 PCM digital signals fed to the amplifier's input (such as from a music server, or other source) stay in the digital domain and are converted by digital-signal processing (DSP) to the pulse-width modulated signal that drive the output transistors. This is an important distinction, because the true digital amplifier (the DDA-100) eliminates from the signal path the DAC and its associated components, all the preamplifier circuitry, and much of the power amplifier's electronics (the input and driver stages). No DAC is needed because digital-to-analog conversion takes place in the switching output stage as a by-product of the conversion by the output transistors and output filter of the pulse-width modulated signal into the analog output that drives the loudspeakers. There are no analog gain stages between your source and the loudspeaker outputs.

For more detail on how a digital amplifier works, see my review of the NAD C 390DD in Issue 224. I think that this technology holds much promise; consider that both winners of our 2012 Product of the Year Awards in integrated amplifiers are direct-digital switching designs.

— Robert Harley

NuForce HAP-100 Headphone Amplifier/ Preamplifier

Multi-tasker

Chris Martens



In the past, NuForce offered one line of audio equipment targeted toward audiophiles and another line geared toward personal-audio/desktop-audio enthusiasts. Now, NuForce is introducing a third range of components that are affordably priced (only a bit more expensive than its personal-audio components), but whose performance aspirations fall squarely in the high-end camp. A good example would be NuForce's new HAP-100 headphone amplifier/preamp (\$595), which despite its modest price promises low noise, extraordinarily low distortion, wide bandwidth, and linear frequency response, plus a design aimed toward listeners "for whom quality headphone listening is a top priority."

The HAP-100 is a half-rack-width-sized component that features single-ended, Class A, zero-negative-feedback preamplifier/headphone amplifier circuitry, a linear power supply, and a switched-resistor ladder-type volume control with 100 steps in 1dB increments. The NuForce also comes with a handy remote that provides on/off switching, muting, input selection, and volume up/down controls. Unlike some headphone amp/preamps on the market, the HAP-100 can drive both its headphone and preamp outputs simultaneously, though it gives users the option of disengaging the preamp outputs if they wish. This capsule description of the HAP-100 sounds promising, but the key question is whether the NuForce sounds as good in real life as on paper. I will tackle that question by discussing the HAP-100 first as a headphone amplifier and then as a stereo preamplifier.

HAP-100 as a Headphone Amplifier

Ideally, headphone amps should be able to drive top-tier in-ear and full-size headphones equally well. Today's best in-ear transducers are very revealing, high-sensitivity devices; they are not particularly taxing to drive, but they do require amps that are very quiet and that provide a great deal of inner detail and sonic finesse. Top-tier full-size headphones, however, can be dauntingly difficult to drive, in part because they are often even more revealing of sonic nuances than their in-ear brethren, but also because their impedance and sensitivity ratings can potentially fall all over the map. Plainly, the challenge for designers is to build amps that deliver consistently excellent sound quality even when facing widely varying loads—something that is much easier said than done.

The HAP-100 offers three compelling benefits

that can be appreciated no matter what type of headphones you use. First, the NuForce offers admirably low noise, which buys listeners freedom from unwanted grunge and helps unlock low-level details that could otherwise get lost in the noise floor. Second, in the best NuForce tradition, the amp emphasizes pristine cleanliness of reproduction with very good levels of detail and definition. Third, the amp's precise, 100-step volume control allows listeners to dial in just-right amounts of output for virtually any earphone/headphone application (whereas many headphone amps appear to be optimized for low- or high-sensitivity 'phones, but not for both).

In my listening tests, the HAP-100 was at its best when driving high-performance in-ear headphones and custom-fit in-ear monitors. It succeeded in this context partly because it was inherently quiet, partly because its volume control worked perfectly with high-sensitivity in-ear devices, but primarily because it offered detail and definition aplenty.

To hear these qualities in action, try the beautiful title track of Gillian Welch's *Time (The Revelator)*, which centers on the voices and acoustic guitar of Welch and David Rawlings. The most evocative elements of the track (namely, Welch's deceptively complex and delicately expressive vocals and clear, articulate guitar work) fell smack dab in the middle of the HAP-100's sonic "wheelhouse," creating a sort of sonic synergy that helped my top-class in-ear monitors really sing. Welch's vocals were simply enchanting, made all the more lovely thanks to NuForce's ability to capture very low-level inflections and harmonic details, while the guitars sounded at once tonally pure and dynamically lifelike—as if heard from only a few feet away. Underpinning these sonic qualities were the NuForce's silent, jet-black backgrounds, which

EQUIPMENT REVIEW - NuForce HAP-100 Headphone Amplifier/Preamplifier

made subtle musical contrasts and shadings more apparent and enjoyable.

Still, the NuForce's presentation was not without drawbacks. First, the amp's tonal balance conveyed a touch of midrange/upper-midrange forwardness coupled with somewhat lean-sounding bass. Second, the amp sounded detailed and well-defined, but not entirely "continuous" or three-dimensional in its presentation. This tendency meant the HAP-100 gave good results in a "hi-fi checklist" sense, but was somewhat less musically engaging than it might have been.

Moving on, I tried the HAP-100 with many different top-tier full-size headphones (some with traditional dynamic drivers and others with planar-magnetic drivers), with mixed results. With certain 'phones, such as Sennheiser's flagship HD-800, the HAP-100 gave an excellent account of itself, exhibiting sonic strengths similar to those I observed when listening through in-ear monitors. But with other 'phones, such as the Fischer Audio FA-002W High Edition or HiFiMAN HE-500, the HAP-100's tendencies toward midrange-forwardness and lean bass became more pronounced, yielding a somewhat brittle and strained-sounding presentation.

Why these variations in sound quality from headphone to headphone? I can't say for sure, but I suspect the HAP-100 is optimized for "Hi-Z" or high-impedance loads (note that the Sennheiser HD-800 offers a relatively high 300-ohm load). The problem is that not all top-tier headphones offer high-impedance loads, and even those that do can be so power hungry that that they are still quite challenging to drive. The bottom line is that the HAP-100 can sound terrific with loads it can handle well, but its sonic weaknesses may become exaggerated when confronting less than optimal loads.

To better understand the foregoing comments, try listening to the HAP-100 with a variety of headphones on a bellwether track such as "Angel of Darkness" from Hot Tuna's *Steady As She Goes* [Red House Records]. This enjoyable but non-audiophile-grade recording presents midrange content that is energetic and somewhat prominent to begin with, so that the need for midrange

and upper midrange neutrality and for counterbalancing bass weight and body becomes critically important. The HAP-100 displayed its signature sonic virtues on "Angel of Darkness" when driving the Sennheiser HD-800s, but with harder-to-drive 'phones the amp often pushed Jorma Kaukonen's vocals and electric guitar too far forward in the mix, giving them a borderline shrill quality. Similarly, when driving difficult loads, the amp undercut Jack Cassidy's normally vigorous-sounding, syncopated bass guitar lines, making them sound thin and insubstantial, thus robbing the song of its low-frequency foundation.

For comparison purposes, I tried the same track with the same group of test headphones, but using competing amps from CEntrance (the DACmini, \$799) and Burson Audio (the Soloist, \$999). What I learned was that both of these admittedly more costly competitors could match or surpass the HAP-100's sonic strengths, while consistently delivering more balanced tonal response across a broad range of headphones.

All things considered, the NuForce has much to offer when it is used with in-ear monitors or with the right full-size headphones. But the fact is that the amp does appear to be load-sensitive, meaning that it would be a good idea to try the HAP-100 with your preferred headphones before making a purchase.

HAP-100 as a Preamplifier

I tested the HAP-100's capabilities in a high-end system comprising an Oppo BDP-93 NE (NuForce Edition), a pair of NuForce Reference 9 V2 SE monoblock amps, and a pair of PSB Imagine T2 floorstanders. I also had on hand a sample of NuForce's exotic, two-chassis Reference P-9 preamplifier (\$3150) to use for comparison.

Very early on, I came to think the HAP-100 was well suited to its role as a preamplifier. I say this because the HAP-100's output capabilities seemed well matched to the task of driving power amplifiers, thus allowing the NuForce's best sonic qualities to shine through while minimizing possible sonic weakness. The result, then, was a preamp that, while not perfect, offered really impressive performance in light of its price.

SPECS & PRICING

Inputs: Four stereo analog inputs (RCA)

Outputs: One variable-level stereo analog output (RCA), one 1/4-inch headphone jack

Accessories: Power cord, full-featured remote

Frequency response: 20Hz-20kHz, +0/-0.1dB

Distortion: <0.002% @ 20Hz-20kHz (3V RMS output at RCA jacks)

Signal-to-noise ratio: >100dB

Preamp output: 7.8V RMS, RCA, maximum

Headphone output: 5.2V RMS, Hi-Z, maximum

5.1V RMS @ 300 Ohms

1.81V RMS @ 32 Ohms

0.91V RMS @ 16 Ohms

Weight: Not specified

Dimensions: 8.5" x 1.875" x 10"

Price: \$595

NUFORCE, INC.

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Milpitas, CA 95035

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0746, West

nuforce.com

ASSOCIATED EQUIPMENT

Full-Size Headphones: Audeze LCD3; Fischer Audio FA-002W High Edition; HiFiMAN HE-400, HE-500, and HE-6; and Sennheiser HD-800

Custom-Fit In-Ear Monitors: JH Audio JH 16 PROs; Ultimate Ears In-Ear Reference Monitors and Personal Reference Monitors; and Westone Elite Series ES-5 Monitors

Headphone Amps, Amp/Preamps, and Amp/DACs: Audio Electronics by Cary Audio Nighthawk, Burson Audio Soloist, CEntrance DACmini, and HiFiMAN EF-5 and EF-6.

Sources: AudioQuest DragonFly DAC with Mac Mini, CEntrance DACmini with Mac Mini, NuForce-modified Oppo BDP-93SE universal/Blu-ray player, and Oppo Digital BDP-95 universal/Blu-ray player

Preamps: Burson Audio Soloist, NuForce Reference P9

Power Amps: NuForce Reference 9 V3 Special Edition monoblocks

Loudspeakers: PSB Imagine T2

Interconnects/Speaker Cables: Nordost Blue Heaven and Ultralink

Room treatments: RPB Binary Absorber/Diffuser panels

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EQUIPMENT REVIEW - NuForce HAP-100 Headphone Amp/Preamp

To observe some of the HAP-100's strengths in action, check out the track "Satori in Chicago" from Noah Wooterspoon & The Stratocats' *Buzz Me* [APO Records], which is a very well recorded, jazz-inflected, electric-blues cut. Wooterspoon demonstrates a command of all of the usual Fender Stratocaster pyrotechnics plus a few of his own, so that the song offers a masterful display of soulful electric-blues guitar chops. But the song also offers something more—namely, the unmistakable sound of a highly skilled band that is absolutely locked into its collective groove. The NuForce does its part in several ways, first by revealing the leading edges of transients in a clear, powerful, and incisive way, and then by focusing on tonal purity and inner details. As a result, Wooterspoon's guitar really does sound like a Stratocaster merrily howling away through a fine guitar amp, while the electric bass has the visceral, deeply grounded drive of the real thing. But perhaps one of the biggest treats of all is the HAP-100's rendition of the drums, which have a just-right amount of snap and "pop," and of the hi-hats and cymbals, which shimmer with rich layers of delicate, understated detail. This is awfully fine sound from a \$595 preamp.

How does the HAP-100 compare to the far more costly Reference P-9. In simple terms, I think many listeners would report the two preamps sound more alike than not, though discerning listeners would find small but significant differences. First, the P-9 offers smoother and more grain-free mid and highs. Next, the P-9 offers better-weighted and more powerful bass, though in fairness the HAP-100 sometimes seems to offer a more taut low-end presentation. Finally, the P-9 offers a heightened degree of three-dimensionality—perhaps because it is even quieter than the HAP-100 and provides

superior resolution of low-level details.

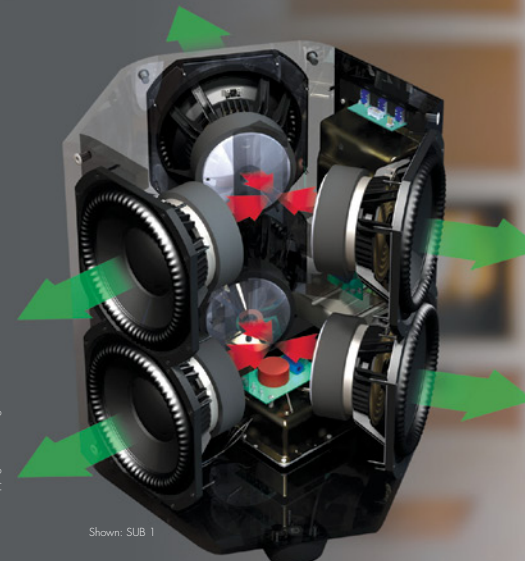
Collectively, these differences become apparent on a track such as the "Aphrodite" movement of Robert Paterson's *The Book of Goddesses* [American Modern Recordings], which highlights flute, harp, and percussion as captured in a reverberant recording space. The HAP-100 gave a good, clear, detailed rendition of "Aphrodite," but the P-9 makes the three-dimensional character of the recording space (and of the instruments' interactions within the space) much more apparent. Still, the important point to bear in mind is that the HAP-100 captures a significant percentage of the P-9's sonic goodness and overall character for less than one-fifth its price.

Summing up, I would say the HAP-100 offers terrific value as a preamplifier; it is in no way embarrassed in the company of more expensive units. It is quiet, detailed, and well defined, and come with a handy remote that's a joy to use. Moreover, the HAP-100 is a thoroughly viable headphone amplifier, one that's at its best with in-ear transducers, but can also give highly satisfying results with some (though not all) of today's best full-size headphones. Viewed as a complete package, the HAP-100 offers an awful lot to like at a down-to-earth price.

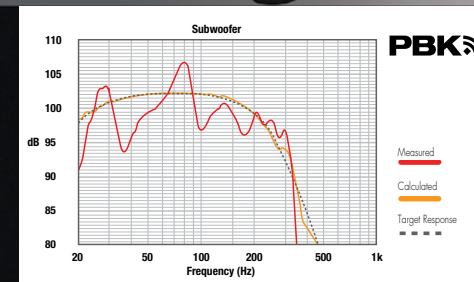
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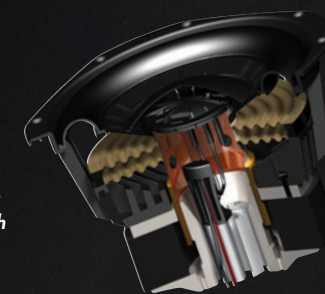
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— Chris Martens, AV Guide

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Rega Brio-R Integrated Amplifier and USB DAC

Musical Synergy

Neil Gader



Don't mess with success—just ask any company about to introduce a new product. Remember New Coke anyone? It's sweaty palms time. But that's exactly what Rega has done with its fully re-imagined Brio-R integrated amp. It's taken a proven winner in the Brio 3, tempted fate, and beaten the odds. And that isn't all. In a bow to the inevitable, Rega, an ardent supporter of analog, has also introduced its first USB DAC called simply the "DAC," a well-appointed unit that joins a high-end growth sector as explosive as a long-ago outbreak of tribbles on a well-known Federation starship. (Trekkies will understand.)

Housed in custom aluminum-and-steel casework, the \$895 Brio-R and \$995 DAC have slender form factors with narrower front panels and minimalist controls. In fact, placed right beside one another, their combined width is a cool seventeen inches, coincidentally the standard width of most components (hint, hint).

The 50Wpc Brio-R features engineer Terry

Bateman's newly designed circuit. In Rega's words, it emulates "Class A conditions with good thermal stability and lower standing currents in the driver stage." Technically it uses a low-source-impedance emitter-follower Class A driver stage, which feeds a complementary pair of 150W Sanken Darlingtons output transistors. Bateman, an unrepentant tube fan, based the circuit on

unfinished designs he'd uncovered from way back in the 60s. Nearly impossible to implement in its day due to thermal-resistance issues, today's high-speed Sankens and advancements in circuitry layout and surface-mount technology have allowed the circuit's potential to be realized.

The Brio-R's phonostage, a moving-magnet design, has also been upgraded to reflect the current improvements in the Rega Planar turntables. A remote control has been added (hence the "R" in the Brio name) and is isolated from delicate audio signals by its own circuitry and power supply. Although there's no jack for headphones, the IEC AC sockets in the rear of both units invites users to bring upscale power cords to the party—I got great results from the Shunyata Venom 3. One downside to all this new compaction is a competition for back-panel space. For the many RCA interconnects that have larger than-the-norm sleeves it's a tight squeeze. And unplugging interconnects provoked a bit of panel flex that I found worrisome.

As for the newly introduced DAC, some will ask, "Hey Rega, what took you so long?" But as Rega founder Roy Gandy pointed out in a conversation, small companies like Rega approach new formats with a necessary degree of caution until the format reaches a threshold of user acceptance. Then it's up to Rega to satisfy itself that it can design a competitive component that performs up to, and hopefully beyond, the expectations of its users.

The Rega DAC is a 24-bit design and is based

largely on the architecture and USB input stage of Rega's flagship Isis player [\$8999, reviewed by Chris Martens in Issue 213]. The DAC's digital-to-analog conversion stage uses a pair of parallel-connected Wolfson WM8742 DAC's (24-bit/192kHz capable), which are driven via a buffer stage. Its input stage comprises a Wolfson digital receiver paired with a high-stability low-jitter clock. The receiver and PLL have their own dedicated power supplies, while the clock oscillator is actually the same one used in Rega's Isis. The DAC back panel offers a pair of isolated S/PDIF inputs and two TosLink inputs.

In a departure from the current norm, the DAC is non-upsampling and processes each stream at its native rate. From Rega's point of view this keeps the signal processing to a minimum. The DAC's front panel includes a switch for selecting between five digital-filter settings in the Wolfson DAC. My advice is not to get too obsessed with the minutiae of filter comparisons. Differences are slight and are mostly determined by the amount of naturally occurring spatial information on the recording.

My first strong impression of the Rega Brio-R and DAC occurred serendipitously. I usually begin listening to a review subject while doing other things—almost as background music. I have a favorite playlist on iTunes, so after cinching up the AudioQuest Carbon USB cable, I set the MacBook to shuffle and then left the room while the amp and DAC settled in. I came back awhile later and

EQUIPMENT REVIEW - Rega Brio-R Integrated Amplifier and USB DAC



found some Cat Stevens' tunes from *Tea For The Tillerman* playing. And then I sat down. I had to. During the opening chorus of "Longer Boats" I was hearing something I hadn't heard since I played the original LP a long time ago. Deep in the mix there's a lightly tapped cymbal that accents the end of each line as in, "Longer boats are comin' to win us" *splash*, "comin' to win us" *splash*. As I listened more and the hours began to spin by, it became ever clearer that this duo creates a special symbiotic relationship—as in, it's hard to tell where one component takes over for the other. They share the most basic and enviable sonic character—balance. The criteria I most prize—neutral tonal balance, transient speed, micro-dynamic energy—complement rather than compete with one another. There is a hint of warmth and fullness, which I'm thankful for. It's a factor that lends a fine perception of air and ambience to good acoustic recordings. As I listened to Judy Collins' cover of "Send in the Clowns" on *Judith* [Elektra], I noted the immediacy of the oboe introduction and the wider acoustic that it was playing in. Likewise, there was also a

clear sense of body and resonance from the cello and the delicate, gossamer-like interplay of rising and falling violins. For me, vocals are critical and the Rega captures every nuance in Whitney Houston's "I Will Always Love You" from *The Bodyguard* [Arista], a master-class performance for pop artists in breath/vibrato control. The upper treble is smooth and just a bit shaded overall. And there's very little congestion in the top octaves.

To my ears there's a lot to be said for an amplifier that doesn't sound conspicuously solid-state or tube but suggests the strengths of both. Right out of the gate, I was impressed by the weight, tonal density, and authority the Brio-R brought to recordings. Brass had the requisite brilliance but avoided aggressiveness. Even on orchestral passages filled with heavy low strings and winds and big percussion, the Brio-R goes a long way maintaining timbral cues and controlling the waves of harmonics.

Keep in mind that at 50Wpc the Brio-R is no earth-mover, but it's well suited for smaller floorstanders and compact speakers of medium-high sensitivity. It became the ideal mate for a small loudspeaker survey that I've been conducting. It really impressed me with the way it defined the differences, eccentricities, and sheer diversity of speakers like the Penaudio Cenya, the Audio Physic Step 25, and the LSA1 monitors (all reviewed next issue).

The Rega USB DAC provides yet more evidence of the strides this format is taking. My largest complaint with the earlier implementations of USB—and I'm referring to everything from DACs to cables—has been the narrow, inwardly-

collapsing soundstage and the latency artifacts which diminish image focus and add high-frequency noise. Take Jen Chapin's cover of "You Haven't Done Nothing" from *ReVisions* [Chesky]. This was one of the first songs I uploaded to iTunes and it proved to be a disaster with early USB DACs. Chapin's vocal was bleached out, flattened like road kill. The baritone sax was dynamically lifeless, and I won't even discuss the disfigurement wrought upon the acoustic bass. Now with the Rega DAC, this track was not only listenable but in many ways never sounded better—not quite the match of the SACD but remarkably close to the standard compact disc. As an aside, Rega stated that in the course of its R&D it identified the noise generated by the PC's switching power supply and other input sources as a major drawback for USB and spent a lot of resources tamping down these artifacts. I'd say the money was well spent.

I do have a couple quibbles, which seem rather petty given the sub-\$1k price point of the Regas, but here goes. On a track like Copland's *Appalachian Spring*, some of the playful micro-dynamic transient delicacy of the high strings and triangle was not as apparent through the Brio-R. And during Nils Lofgren's "Keith Don't Go" from *Acoustic Live*, I felt the vocalist's sibilance range could have been a touch cleaner, the guitar transients snappier and more immediate. At the other end of the tonal spectrum bass cues were a little less specific than I've sometimes heard. As noted previously, the Brio does one helluva job replicating the foundation of a symphony orchestra; however, when I replaced the Brio-R with a mega-integrated like the Lindemann 625, the foundation beneath the orchestra expanded and solidified commensurately. The Lindemann amp possessed a bit more body and was cleaner.

Compared with top-flight USB components the DAC also lacks a bit of crystalline transparency and micro-dynamic liveliness, though overall the Rega DAC was musically at home in leagues well outside its price point, even when paired with loudspeakers as ruthlessly revealing as the vaunted mbl 120s. In sum, the Rega Brio-R and DAC are a great tandem—a seamless tag team that play to each others strengths, and at a painless Start Me Up price.

They say don't mess with success. But they also say, play to win. I say: "Mission accomplished. **tas**

SPECS & PRICING

Brio-R

Power output: 50Wpc into 8 Ohms

Inputs: Four line-level, one mm phono (RCA jacks)

Dimensions: 8.5" x 3.1" x 12.5"

Weight: 12 lbs.

Price: \$895

DAC

Digital inputs: One USB, two S/PDIF, two TosLink

Outputs: RCA analog, S/PDIF and TosLink digital

Dimensions: 8.5" x 3.1" x 10.6"

Weight: 9 lbs.

Price: \$995

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Wyred4Sound mINT (Mini-Integrated Amplifier)

Mighty Mite

Wayne Garcia



These days we take it for granted that our smartphones have more computing power than most desktop rigs of the not-too-distant past—not to mention far more elegant graphics, user interfaces, and once-unimaginable flexibility from something slimmer than a pack of playing cards. Hell, now and again some of us even use them as telephones. But high-end audio is still largely a land of behemoth gear, and understandably so. It takes a lot of juice and air power to reproduce a full symphony orchestra, jazz ensemble, or the aural assault of, say, Neil Young and Crazy Horse.

That said, small monitor speakers have long held a place in the hearts of audiophiles, despite their limited dynamics, low-frequency range, and dollhouse-like soundstaging. And though Class D technology has allowed designers to radically shrink the size of power amps, the sound of such amplifiers is still evolving, and it's rare to find units that compete with their conventional tube and transistor counterparts.

Now comes California-based Wyred4Sound with its nifty and quite good-sounding \$1499 mINT, or Mini-Integrated Amplifier, a component so tiny (8" x 3.5" x 8") that its footprint is just a whisker smaller than that of an iPad.

(Note that Wyred4Sound is not simply based in California; its ever-expanding line of gear is designed and built at the company's headquarters in the town of Atascadero, which heretofore was best-known for its maximum-security psychiatric hospital.)

Rated at 100Wpc and featuring a pair of analog inputs and a dedicated headphone amp, the \$1499 mINT isn't simply an integrated amp; it also sports a built-in DAC with three digital inputs: USB, TosLink, and coax. If by chance you read Steven Stone's in-depth review of Wyred4Sound's DAC-2 in Issue 210, you'll recall his praise for designer EJ Sarmiento's work in the digital domain. Other mINT-y features include the option of using the Auxiliary 2 inputs in the home-theater-bypass mode (from a rear-panel switch) to loop in a multichannel processor. A preamp output can feed a powered subwoofer, while fixed outputs can drive signals to either a second system or to a recording unit. You can also insert a digital crossover while looping back into the main input.

Given its pipsqueak chassis the innards are chockfull of parts—all quite nicely laid out, by the way.

EQUIPMENT REVIEW - Wyred4Sound mINT

The Class D amplifier section comprises a pair of third-generation ASX2 ICEpower modules wedded to Sarmiento's Class A input stage. The miniscule amplifier modules piggyback the power supply on the same circuit board, and the new power supply is said to significantly reduce the "pumping" effects that plagued many past Class D units.

Volume is controlled by a "true-resistive ladder," which Wyred4Sound believes "results in linear control, excellent channel matching, and impressive sonic quality. Rather than passing the signal through the pot, it is only used as a position reference."

The mINT's built-in DAC runs on an ESS DAC chip and is similar to, if reportedly not as refined as, the chip in Wyred4Sound's DAC-1. The same design can also be purchased as an affordable outboard unit for \$399. The coaxial and TosLink inputs support 24-bit/192kHz resolution files, and the asynchronous USB interface manages 24-bit/96kHz resolution files.

The front panel is simplicity itself. Left of the centrally placed volume knob are three buttons for digital input selection, while AUX 1, AUX 2, and mute are to the right. A slightly protuberant black cowl contains a ¼" headphone jack and the on/off switch.

I'm not sure if I would call the mINT "attractive," but it certainly is distinctive looking in a Bart Simpson sort of way—sans yellow coloring, of course—meaning the cosmetics have a nice youthful look.

As noted earlier, the mINT is an impressive-sounding design, and quite musically involving, too. That's a trait I find of more long-term value than merely impressive sonics, as my description

of this model's sound will explain.

And though it's perfectly fine straight-from-the-box, as with all components the mINT will open up, cohere, and lose its edge with several hundred hours of playing time. (Wyred4Sound suggests 300 hours.)

The first thing that struck me while playing Jeff Buckley's *Live at Sin-é* [Columbia Legacy] was the mINT's easy, natural presentation. Though it would improve over time in all the ways stated above, the mINT immediately offered the familiar brightly chiming, yet harmonically rich presentation of Buckley's Fender Telecaster/Twin Reverb combo, with a nice sense of sustain and "bloom" as he played with different sonic voicings and dynamic shadings. Buckley's famous multi-octave voice, too, came through with an excellent sense of his distinctive phrasing—from a tender croon to raw passion—and sometimes goofy humor. The mINT was also good at defining the reverberant acoustic space of this recording, though imaging wasn't as exact as it might be, and the reproduction of the venue's air was not quite as billowy as I've heard.

Streaming the same tunes from my MacBook Pro to the mINT showed why Wyred 4 Sound's DACs have gained such a solid reputation. Though there were slight differences in balance and overall presentation, the streamed files had a smoother, slightly richer quality, if not quite the immediacy heard via CD.

An original vinyl pressing of the Stones' *Exile on Main Street* [RS Records] showed the mINT's rock swagger. The music had a fine sense of pace and drive, with crunching guitars and a quick snap to drums. Of course the recording quality on this wozy if brilliant classic is variable,

but vocals were again right "there," and I found myself so pulled into the LP that I played it twice straight through before my wife said, "Basta!" But there is a threshold—albeit a pretty loud one—where the amp starts to get a touch ragged around the edges. So do pay heed to speaker sensitivity as well as your own volume needs.

With a fine classical recording such as Reference Recordings Mastercuts' *Exotic Dances From The Opera* (reviewed elsewhere in this issue), specifically Strauss' "Dance Of The Seven Veils" from *Salome*, the mINT displayed this recording's overall excellence, you-are-there perspective, and remarkable clarity. Instrumental tone and texture were likewise good, but the dynamic range was not quite as wide or finely shaded as it might be.

Let me emphasize that these shortcomings are simply that when compared to what I'm used to. My job is to describe the up as well as the not-so upsides of the gear that comes my way. Ultimate power, dynamic nuance, and refinement are not to be expected from components in this range, though naturally there are degrees of variation-from-ideal. At the end of the day the mINT's strength's far outweigh its imperfections. And most importantly, this baby constantly drew me into the music, no matter what type.

Here is a most versatile and satisfying performer that I can see as the heart of a fine computer-driven desktop system, or, as I used it, as a small office system with both analog- and computer-derived sources. Oh, and let's also not forget that all of this comes in a package you can practically balance in the palm of your hand. **tas**

SPECS & PRICING

Type: Compact integrated amplifier

Power output: 100Wpc

Inputs: Two line-level, three digital (TosLink, coax, USB)

Outputs: Two digital (S/PDIF, optical), processor, 5-way binding posts

Dimensions: 8" x 3.5" x 8"

Weight: 8 lbs.

Price: \$1499

WYRED 4 SOUND

4235 Traffic Way

Atascadero, California 93422

(805) 466-9973

wyred4sound.com

ASSOCIATED EQUIPMENT

Acoustic Signature Challenger turntable, Funk FX-R Pickup Arm, and Transfiguration Phoenix moving-coil cartridge; Sutherland 20/20 and Simaudio Moon 310LP phonostages; Cary Audio Classic CD 303T SACD player; Magnepan 1.7 loudspeakers, Tara Labs Zero interconnects, Omega speaker cables, The One power cords, and BP-10 Power Screen; Finite Elemente Spider equipment racks; Rega RP6 and Exact 2 moving-magnet cartridge; SimAudio 310LP/320S phonostage; Electrocompaniet PC-1 CD player and EBS 1 loudspeakers; Apple MacBook Pro; AudioQuest Diamondback interconnects and Type 2 speaker cable

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EQUIPMENT REVIEWS

Analog

Pro-Ject Debut Carbon Turntable with Ortofon 2M Red Moving-Magnet Cartridge

A Chicken in Every Pot

Wayne Garcia



It's not exactly a secret that over the past decade turntables have gained popularity with the young and hip—okay, they're also popular with the not-so-young and not-so-hip—appearing in movies, fashion spreads, and newspaper articles. As such, record players are more than mere tools to spin LPs on; they've also become something of a design statement that can be purchased outside of traditional brick-and-mortar stores and on-line audio retail sites.

And there's nothing wrong with that. After all, even veteran audiophiles experience gear obsessions triggered by the way a component looks—before we've heard a single note from it. Who among us has not ogled or, to conjure Jimmy Carter, lusted in his heart for the latest and greatest from any number of manufacturers reported on in these and other pages?

Although some of these objects of desire are unattainable—my credit line can't quite cover \$89k for the latest Walker Proscenium Black Diamond—almost anyone can afford something like Pro-Ject's latest Debut Carbon. For \$399 mounted with Ortofon's 2M Red it represents the audio equivalent of Henry IV's notion of “a chicken in every pot”—analog sustenance for the common man.

Though the basics remain the same—MDF plinth, cast-steel platter with felt mat, a belt-drive synchronous motor with simple

Sorbothane “suspension,” and a choice from among seven gloss colors for the plinth—the Debut Carbon's most significant upgrade over the Debut III can be found in the model's name, which refers to the lighter, more rigid, single-piece 8.6" carbon-fiber arm tube that replaces the III's aluminum arm.

The Debut Carbon comes pre-mounted with Ortofon's 2M Red moving-magnet cartridge, which sports an elliptical stylus and a healthy 5.5mV output, making it compatible with essentially any built-in or outboard phonostage. If you want to use the Debut Carbon to transfer your LPs to a music server, it can be ordered with a built-in phonostage and analog-to-digital converter (with a USB output) for an additional hundred dollars. Either version of the 'table is available in seven high-gloss colors (black, red, green, blue, yellow, silver, and white).

Ease of setup is an especially important consideration for today's

EQUIPMENT REVIEW - Pro-Ject Turntable with Ortofon 2M Red Cartridge



entry-level 'tables, which, as noted, are frequently sold by non-audio specialists. In other words, the buyer will need to do it him- or herself. After unpacking, all that's involved in this case is fixing the drive belt, attaching the platter, threading the counterweight to 1.75 grams tracking force, attaching the ant-skating weight, plugging in the arm leads and wall-wart power supply, and you're ready to play your first LP.

I do have one minor gripe: The arm's finger-grip is a bit stubby, which makes it somewhat difficult to grasp. Combine that with a U-shaped armrest that sits higher than the arm's "neutral" zone at queuing level, and what happens, until

one's motor memory kicks in, is an awkward and repeated bumping of the arm into its resting place. It took about a week before I got used to this and automatically remembered to raise the arm over and into its cradle. Presumably the younger audience the Debut is likely to attract will have greater elasticity in the cranial cavity than I.

As an entry-level design the Debut Carbon nails the basics: dynamic shading and speed constancy. The essentials of what we call "rhythm and pace" are impressive. Without this foundation a turntable is going to fail at its most important job—drawing us into the music.

Queuing up Glenn Gould's recording of Bach's Partita No. 1 in B-Flat Major [Columbia] I immediately heard a very nice sense of interplay between Gould's overlapping hands and interspersed digits as he dances his way through this remarkable piece. Though one might accurately note a tad of smearing or lack of ultimate precision with those notes, this is really something that will only be heard by comparison with more costly designs.

Coltrane's *Crescent* [Impulse] reinforced my sense of the Debut Carbon's overall poise. Though the widest dynamics are not exactly explosive, there is, nevertheless, a natural balance between the peaks and valleys that works well at delivering the tunes. With the Ortofon, Coltrane's tenor sounds throaty but not as meaty as it might, as does McCoy Tyner's piano. But Jimmy Garrison's bass is nice and tuneful with an impressive texture and feeling of wood, and Elvin Jones' drum kit delivered good punch combined with a cymbal sound that was naturally shimmering and not too splashy. The soundstage was likewise good with more than a decent sense of air and space, and good instrumental focus.

Playing ORG's excellent 45rpm edition of Marianne Faithfull's *Strange Weather* revealed a hint of thinness in her mostly well-recreated vocal, but again an impressive overall balance, a sweet sounding violin, and the ability to pull listeners into the album.

Rock—from Jack White's *Blunderbuss* [Third Man] to Nick Cave and Co.'s *Grinderman 2* [Anti] to the Stones' *Sticky Fingers* [RS Records]—showed that the Debut Carbon can also deliver the punch, textures, and gritty edge required to bring home the goods.

Whether for first-time turntable buyers or anyone wishing to enjoy high-quality LP playback without spending a lot of money, Pro-Ject's Debut Carbon is a great way to go. It doesn't excel in any one area but gets the basics so right that it's hard to criticize what's lacking—because, after all, that's what good entry-level models should provide, a solid foundation for musical pleasure. **tas**

SPECS & PRICING

Type: Belt drive, unsuspended turntable
Speeds: 33.3, 45 (78 rpm pulley adaptor optional)
Dimensions: 16.35" x 6.33" x 12.66"
Weight: 12.4 lbs.
Price: \$399

SUMIKO AUDIO (U.S. Distributor)
 2431 Fifth Street
 Berkeley, CA 94710
 (510) 843-4500
sumikoaudio.net

ASSOCIATED EQUIPMENT

Rega P3-24 and RP3 turntables; Rega Exact 2 moving-magnet and Lyra Delos moving-coil cartridges; SimAudio 310LP/320S phono stages; Electrocompaniet PL 1 integrated amplifier, PC 1 CD player, and EBS 1 loudspeakers; AudioQuest Diamondback interconnects and Type 2 speaker cable

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Rega RP3 Turntable, Elys 2 Cartridge, TT PSU Power Supply

Rega Dreams of Analog

Wayne Garcia



A wonderful recent documentary, *Jiro Dreams of Sushi*, focuses on 85-year-old master sushi chef Jiro Ono, whose restaurant is located in Tokyo's Ginza-district subway station. Despite the fact that his 10-seat sushi bar is booked up to a year in advance and has been awarded three Michelin stars, Ono isn't satisfied. His goal each day is to continue honing his craft, perfecting his food. His sleep is filled with "dreams of sushi," and after seventy years on the job his humility keeps him striving for even higher levels of excellence.

I don't think it's too far-fetched to draw analogies between Rega's Roy Gandy, and his team, and Jiro. If you view Rega's simple beginnings with the Planar turntable Models 2 and 3, some thirty years ago, and the latest incarnation of the latter, the RP3, what you see are not radical changes, but step-by-step improvements to what already works, with an eye toward ever better performance and, I believe, value. One point Rega importer Steve Daniels of The Sound Organisation emphasized to me during a recent conversation is that, while Rega maintains a custom-built factory with 60 to 70 workers, the company has no marketing department. Furthermore, said Daniels, "The only ad Rega ever ran was to say that it doesn't do advertising."

Considering that Rega historically keeps models in its line for several years, it's been introducing new designs at a relatively rapid clip of late. I attribute this both to the team's continued quest for excellence as well as the fact that, with analog sales red-hot, the market is that much more competitive.

For veteran Rega lovers, unpacking the RP3 will result in waves of *déjà vu*. As it was with those original Planar models, the

dustcover, plinth, and glass platter arrive sandwiched between a pair of Styrofoam end caps formed to grip the cover and plinth. The arm is held in place with red tape, the motor bearing protected by a cardboard wedge. Rega even includes the same rudimentary paper stylus-overhang gauge I've encountered dozens if not hundreds of times over the years. (For quite a long while I sold Rega at the retail level.) These are excellent examples of a company sticking with the tried-and-true, folding its money back into bettering its previous design work. And, reader, the RP3 is sonically superior to its predecessor in every way.

At \$895—*sans* optional cartridge or power supply—the RP3 costs the same as the outgoing P3 24. This pricing is something Daniels decided on his own; he was adamant about offering superior value at a time when the economy remains as sluggish as a worn-out drive-belt.

Going against the grain of much prevailing turntable philosophy, Rega has always championed lightweight and rigid designs over massive ones as a superior way to deal with resonance. As the company states: "Mass absorbs energy—

EQUIPMENT REVIEW - Rega RP3 Turntable

lost energy equals lost music!”

With the RP3—as well as the new RP6 (\$1495), which I will be writing about in a future issue—the clearest visual indicator of Rega’s latest thinking can be seen in the shape of a double black strip containing a trio of O-shaped cutouts. This twin strip, which Rega calls a “double brace,” is made of a phenolic resin, the same material the plinth’s skin is fabricated from. The idea is to create a bridge, or what Rega refers to as a “stressed beam” assembly, to increase rigidity between the main bearing hub and tonearm mount. One strip runs above the plinth, the other below. Rega’s research proved that doubling the thickness at this critical junction point provided further weight reduction and increased stiffness. Forgive the die-hard geek in me, but rapping on the base of the RP3 while it was playing an LP at a normal level and hearing no audible thump through the speaker was a first in my Rega experience.

But Rega didn’t stop there. Although the 24-volt low-noise motor is the same one found in the P3 24, the RB303 tonearm is an upgrade over the highly respected RB300. The 303 features a newly designed tube said to increase rigidity at the bearing housing, arm carrier, and headshell mount. Moreover, with the aid of new 3-D CAD and CAM technology, Rega has been able to redistribute the mass of the arm and also reduce the number of resonant points.

Rega’s have always been relatively easy to set up. And should you elect to purchase the RP3 pre-mounted with the Elys 2 cartridge for a modest \$200 extra, your task will prove that much simpler. Simply set the tracking force to 1.75 grams, adjust anti-skating accordingly, *et voilà*. You’ll be spinning tunes in no time. Funny thing,

in the past I always felt the need to “upgrade” from Rega’s supplied cartridges to something “better.” But the obvious synergy between the RP3/RB303 and Elys 2, with its smart three-point mounting system, was so musically satisfying that I never felt the desire to switch it out for another model.

So what have these new improvements brought to the presentation? Well, a lot. And though my descriptions may not sound earth-shaking, the audible improvements Rega has wrought are significant.

Rewinding to that knuckle-rap-the-base test tells you a lot, as settling the stylus into the lead-in grooves presents a silence unheard in previous Rega designs. The simple fact is that lowering mechanical noise from our analog playback systems lowers our awareness that we are listening to electro-mechanically reproduced music. But more accurate stylus-to-groove contact not only lowers distortion, it also brings with it wider as well as more finely nuanced dynamic range, and higher resolution of the musical details embedded within those miniscule grooves. Indeed, the word “grooves” is entirely too gentle, too deceptive a description of the jarringly jagged and downright treacherous canyon-like vinyl walls a stylus must be dragged through.

But the RP3’s much improved detail, dynamics, and the like don’t translate only into how much we hear, but how we hear it.

Boss Guitar is a favorite Wes Montgomery record. I have no fancy pressing. But you might think my OJC reissue was an original Riverside, from the deep backgrounds, creamy tones, rich textures, immersive stage, and, most importantly, engrossing musical performance delivered by the RP3. By contrast, hearing the same record on the P3 24 is a far less electrifying experience—good,

but less taut rhythmically, not as swinging, less rich overall, and nowhere near as compellingly involving.

This scenario continued to repeat itself with each new platter. Martha Argerich performing Ravel’s *Gaspard de la nuit* [DG] showed just how quiet the RP3 can be during whisper-soft, elusive-as-air passages, before exploding into kaleidoscopic bursts of tone color. Sinatra’s plaintive singing of “Guess I’ll Hang My Tears Out to Dry” from MoFi’s terrific mastering of *Only The Lonely* had me practically holding my breath at the beauty of his phrasing. Large-scale orchestral works showed a dynamic jump and bass wallop I frankly never thought I’d hear from a Rega, as did—guilty-pleasure confession—Classic Record’s 45rpm single of “Stairway To Heaven,” which found me so involved with the music that it erased all bad memories of this much-abused song. Which, of course, is what makes fine audio gear so pleasurable, and so much fun. Stepping up our systems is akin to discovering our records anew.

The RP3 comes standard with a simple wall-outlet power supply. And here I must state that as fine the RP3 sounds with that unit, the magic described above really kicked in with the addition of Rega’s optional TT PS2 power supply. For \$395 it is in my thinking a “must-have” upgrade, either initially or at some later time, and I will speculate a far more rewarding path than upgrading from the very fine, always musical Elys 2.

I’m more eager than ever to hear what the company has created with the RP6. For this longtime Rega fan, the improvements heard with the RP3 are among the most dramatic—strike that—are *the* most dramatic I can recall in this

company’s long history. Major kudos to Rega’s Roy Gandy and his team for not resting on their laurels; perhaps, like Jiro Ono, new ideas come in the form of dreams. **tas**

SPECS & PRICING

Type: Belt drive, unsuspending turntable

Speeds: 33.3, 45rpm

Cartridge output level: 7mV

Dimensions: 17.32" x 3.93" x 14.17"

Weight: 18 lbs.

Price: RP3, \$895; with Elys 2, \$1095; optional TT PS2 power supply, \$395

THE SOUND ORGANISATION

159 Leslie Street

Dallas, Texas 75207

(972) 234-0182

soundorg.com

Associated Equipment

TW-Acoustic Raven One turntable; Tri-Planar Ultimate VII arm; Rega P3-24, Benz Gullwing, Transfiguration Phoenix, and Lyra Delos moving-coil cartridges; Sutherland 20/20 and SimAudio 310LP/320S phonostages; Cary Audio SLP 05 linestage preamplifier; T&A Audio A 1560 R power amplifier; AVM C8 CD-Receiver; Magnepan MG 1.7, and Electrocompaniet EBS 1 loudspeakers, Tara Labs Zero interconnects, Omega speaker cables, The One power cords, and BP-10 Power Screen; Finite Elemente Spider equipment racks

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Clearaudio Concept

An Affordable Turntable

Wayne Garcia



For me, the analog versus digital debate is similar to one in the wine world, where “Old” versus “New” World advocates often engage in passionate arguments in defense of not only their preferred regions, but styles, winemaking techniques, and flavor profiles. And though I enjoy many New World wines, I’m a strong advocate of the Old World. Because to me, if you really want to understand what pinot noir or chardonnay are all about, then you need to know Burgundy; or for the cabernet lover, Bordeaux; or for sangiovese, Tuscany. After all, these regions have been making wine and cultivating these same varietals in the same vineyards since the Middle Ages, and are where these grapes have consistently achieved the greatest possible expression.

When it comes to music reproduction, as advanced technologically and sonically as digital currently is—and one assumes that progress will only continue—there remains, to these ears, a degree of expressiveness, call it heart or soul, to analog that continues to elude even the best digital. I’m not saying that I don’t enjoy listening to digital recordings, but that over time, I, like other audiophiles I know, have drifted back to playing mostly vinyl LPs.

But since this issue is all about analog, we thought a look at one of today’s more sophisticated yet still reasonably affordable turntables would be of interest not only to potential first time buyers, but also to those who have loved analog in the past and are now looking to re-engage with the vinyl medium.

Clearaudio Concept with MC Concept Cartridge

Let’s get this out of the way right now—Clearaudio’s new Concept turntable and cartridge combo offers a hugely rewarding analog experience at a very attractive price. The ’table alone sells for a reasonable \$1400, and the cartridge goes for \$800. Bundle them together, as many other manufacturers are also doing, and you save a few hundred bucks: Importer Musical Surroundings sells the pre-set-up package for an even \$2000.

Made in Germany, the Concept is a sleekly handsome, low-profile design that, as with designs from companies like Rega, relies on a low-mass, non-resonant plinth and carefully designed working parts to make its musical magic. Moreover, for those who want an audiophile-grade playback system without having to futz with the sometimes nerve-wracking

job of setting the thing up, the Concept is about as “plug-and-play” as you can get. The cartridge is pre-mounted at the factory, and critical issues such as overhang and offset angle, tracking force, VTA, and azimuth are all pre-adjusted. All you need to do is level the unit via the three tiny spiked feet, mount the belt and platter, and you’re ready to go. Note, however, that the factory settings are worth double-checking. For instance, although the basics were just fine, in transit the tracking force had shifted upward from 2.0 to 2.5 grams, and the azimuth was off a few degrees. For something meant to track groove walls measuring mere hundredths of an inch, these are not insignificant differences, as I would hear (and easily correct).

The 30mm (approximately 1.18”) thick Delrin platter rests on a lightweight sub-platter that is belt-driven by a decoupled DC motor. A handy control knob allows you dial-in speeds of 33.3, 45, or 78rpm. The latter may not be something many of us will use, but for vinyl lovers whose record collections span the decades it is an unusually welcome touch.

The new Verify tonearm features a “friction-free” magnetic bearing. It too, is a handsome thing that exudes the same quality of construction found throughout this design. The arm, like unipivots, takes a little getting used to because, unlike fixed-bearing arms, it feels as if it might float away once it’s left the armrest.

Excited to hear what the Concept sounded like, I did what most consumers are likely to: After getting the ’table leveled and the motor spinning, I started to play a favorite record. But the arm felt a bit off. That was verified—oops, no pun intended—by the first few seconds of Dylan’s “Tangled Up In Blue,” from 1974’s *Blood On*

EQUIPMENT REVIEW - Clearaudio Concept

The Tracks [Columbia], which sounded tonally unbalanced and lacking in rhythmic drive. This was when I discovered the shifts in the arm setup noted above. So while the Concept is *close* to ready to go out of the box, be sure to check any factory settings to ensure that they haven't been affected by transport.

Once tweaked, "Tangled Up In Blue" came back to life. The midrange—Dylan's voice, the acoustic rhythm guitars—was naturally balanced and

musically involving. The brushed cymbal and snare and the kick-drum added dynamic momentum and punctuation, aided by good clarity, transparency, and a solid overall balance. With Jascha Heifetz's recording of Bach's *Unaccompanied Sonatas and Partitas* [RCA], the Concept brought a convincing sense of the instrument's presence, and the great fiddler's legendarily masterful technique—a tribute to the design's dynamic nuance and rhythmic precision. And as I heard

with the *Third Tableau from Petrushka* [Athena/Decca], the same Ansermet-led performance I used in my cartridge survey elsewhere in this issue, the Clearaudio setup did an impressive job reproducing the air and space from which the orchestra emerges. While other, more costly designs, may better it by comparison, this \$2000 rig will not leave you wanting for much. The same goes for the loudest dynamic peaks, which come close, if not all the way, to being as explosive as those I hear from my reference TW Acoustic turntable, Tri-Planar arm, and Transfiguration Phoenix cartridge. Pizzicato strings, cymbal crashes, thumped bass drums, and fluttering winds were effortless sounding and engaging, with a very fine sense of depth and detail, as, say, when the solo trumpet reverberates off the rear wall of the hall during the "Ballerina's Dance."

To put this in perspective, the cartridge in my reference vinyl playback system sells for \$500 more than this entire package—and my entire setup costs six times as much. Although I'm not going to tell you that the Clearaudio Concept equals that performance, what I will tell you is that it is good enough in all the ways that count—resolution, dynamics, low-noise, and that hard-to-pin-down thing I'll call musical involvement—that I enjoyed the hell out of my time with it. Couple that with its terrific German build and finish, and the Concept strikes me as a hands-down bargain. **tas**



SPECS & PRICING

Type: Belt drive, unsuspended turntable

Speeds: 33.3, 45rpm

Dimensions: 16.5" x 5" x 13.8"

Weight: 28 lbs.

Price: \$1400

MUSICAL SURROUNDINGS

5662 Shattuck Avenue
Oakland, California 94609
(510) 547.5006
musicalsurrroundings.com

Associated Equipment

TW-Acoustic Raven One turntable; Tri-Planar Ultimate VII arm; Transfiguration Phoenix moving-coil cartridge; Artemis Labs PL-1 phonostage; Cary Audio SLP-05 preamp & 211-FE monoblock amplifiers; Magnepan MG 1.7 loudspeakers; Tara Labs Zero interconnects, Omega speaker cables, The One power cords, and BP-10B Power Screen; Finite Elemente Spider equipment racks; Feickert universal protractor; AcousTech electronic stylus force gauge; Musical Surroundings/Fosgate Fozgometer azimuth adjust meter; Analogue Productions Test LP

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EQUIPMENT REVIEWS

Digital



peachtree audio



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ENJOY MUSIC AT THEIR HOUSE!”**

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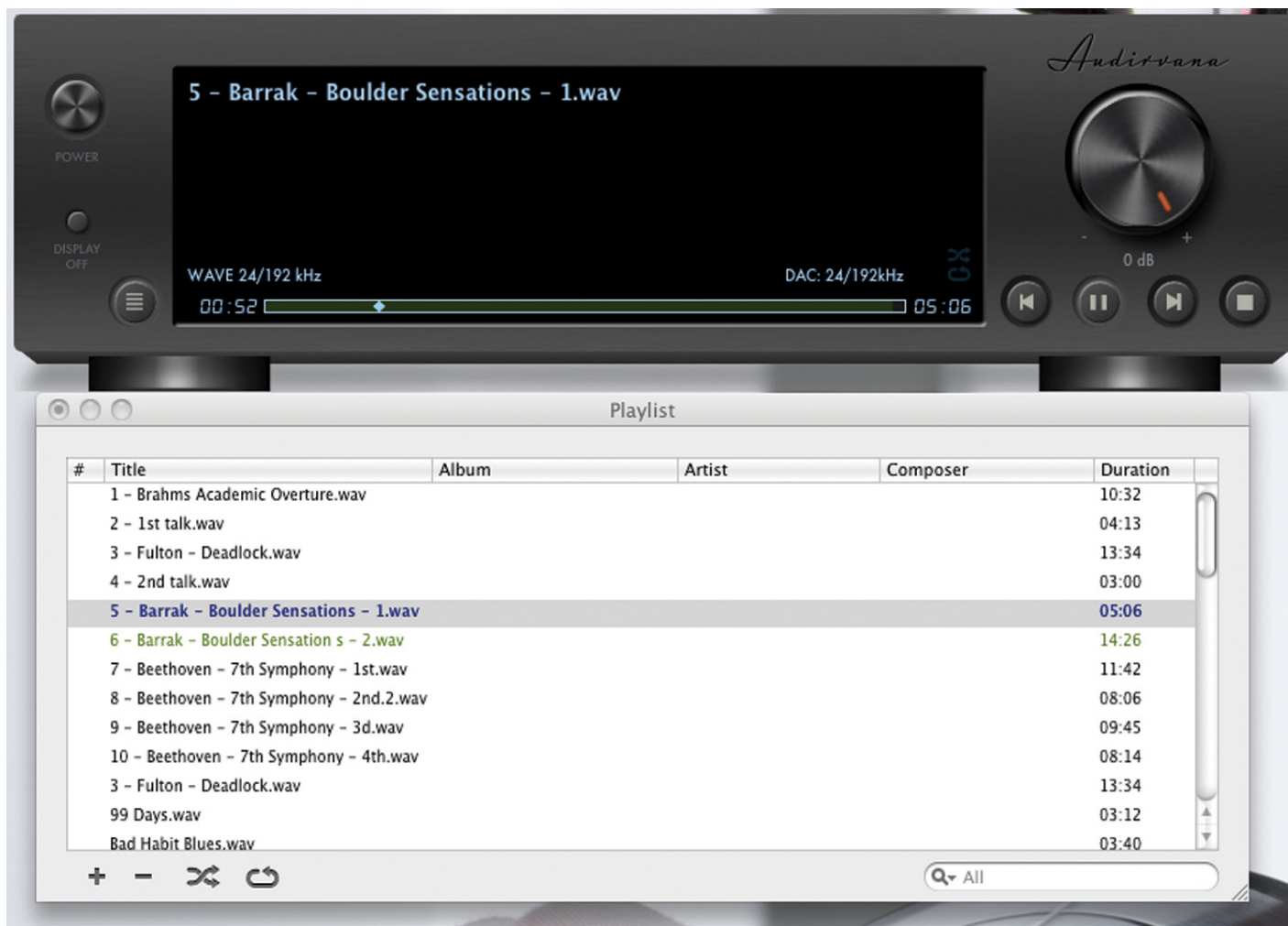
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Audirvana Plus Music Playback Program For Mac

Improving the Sound Quality of iTunes

Steven Stone



In the past TAS has reviewed and awarded Golden Ears Awards to two Mac music-playback programs, Amarra and Pure Music. Now there's another Mac playback program worthy of readers' attention, Audirvana Plus. Priced at only \$50, Audirvana Plus offers several unique features combined with stellar sound quality. As a result, it's become the de facto leader of budget-priced Mac playback software.

In TAS Issue 218 I surveyed Mac playback software, which included Audirvana, a free program that served as a precursor to Audirvana Plus. Both programs share a similar look and some ergonomic functions. Both support memory play (where the entire track is loaded into computer memory and played back from that location rather than from the original drive), gapless playback, device driver optimization and integer mode, automatic sample-rate switching, configurable oversampling or upsampling, and device hot-swapping. Both programs can handle MP3, ACC, Apple Lossless, WAV, AIFF, and FLAC files, but Audirvana Plus also supports DSD, SACD ISO images, DSD-to-PCM

real-time playback, and native DSD playback through compatible DACs.

The free version of Audirvana supports 32- or 64-bit internal resolution, while the Plus version uses full 64-bit resolution. Both have "no limit" on maximum sample rate, but Audirvana uses an open-source sample-rate converter, while Plus employs the Benchmark iZotope 64-bit SRC sample-rate converter, which has advanced sample-rate-tuning parameters. Both offer DAC remote control of volume (if supported by the DAC), but the Plus includes a dithered volume control option and three different noise-sampling algorithms.

From an ergonomic viewpoint Audirvana offers the best of both

EQUIPMENT REVIEW - Audirvana Plus Music Playback Program For Mac

worlds—you can use iTunes as a playlist or make your own independent playlists. I have about a dozen special “review playlists” of high-resolution and specialized music files that I can load and use with one click. But the one ergonomic feature that has endeared me to Plus is its device-switching feature. Unlike Amarra and Pure Music, which must be shut down and re-opened if you switch DACs, Audirvana Plus can instantly switch from one DAC to another in less than five seconds. With this feature you can do real-time matched-level DAC comparisons with ease. If you are trying to decide between two DACs, you *need* Audirvana Plus to make a completely educated sonic decision.

Sonically I found Audirvana Plus to be equal to both Amarra and Pure Music. In matched-level A/B listening sessions of Red Book 44.1/16 files, the differences among the three programs were minor and not reliably attributable solely to software. On higher-resolution files I quickly developed a preference for Audirvana Plus due to its ergonomic ease, but once more sonic differences were harder to reliably identify. The only thing that was clear was that all three programs are substantially more transparent than iTunes.

One area where Audirvana Plus shines is playing back native DSD files. Not only can Audirvana Plus handle 2.8Mbps DSD, but also raw 5.6Mbps files from the Korg MR-1000 DSD recorder, which is something that even Amarra can't do. (Amarra *can* play 2.8Mbps DSD, however.) For playback through the Wadia 121, Audirvana Plus converted the 5.6Mbps DSD files to a 176/24 PCM format. For audiophiles with large SACD collections Audirvana Plus

also offers an easy way to play them through your computer audio system. Merely rip them into your computer (you will need a third-party Blu-ray drive as Apple doesn't officially support Blu-ray hardware) and then add them to the Audirvana Plus playlist and push “Play.”

If you have resisted buying any third-party music-playback software for your Mac, Audirvana offers some compelling reasons to reevaluate that decision. Especially if you use multiple DACs or listen to higher-res files and DSD, Audirvana Plus offers a more ergonomically elegant and sonically superior alternative to iTunes.

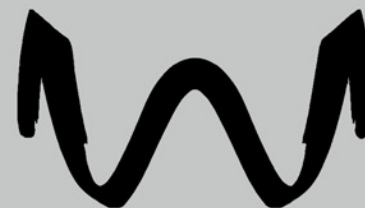
And for readers who need to see and hear for themselves, you can download the trial version of Audirvana Plus for free. For fifteen days you can use the full version with no restrictions. I'd be very surprised if, by the sixteenth day, you haven't anted up that \$50 to become a licensed user. **tas**

SPECS & PRICING

Type: Macintosh music playback software
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Meridian Explorer USB DAC

High-End Emissary

Neil Gader



When I think of British digital electronics, the first name that comes to mind is Meridian. Designers of complete digital systems from transports to fully active DSP-controlled loudspeakers, it makes products that are exquisite, refined, and priced accordingly. Dreams of a true budget-level item from this firm would seem as unlikely as high tea without finger sandwiches. But this was before I was pulled aside in the Meridian room at CES to check out a fresh-off-the-production-line, portable streaming DAC, the \$299 Explorer.

Packaged in a chic, ovular, four-inch-long extruded-aluminum case, the Explorer is an asynchronous, USB-powered, Class 2, high-resolution DAC/streamer. Equipped with a PCM5102 DAC it's capable of streaming files up to 24-bit/192kHz resolution. A series of tiny LEDs along the outside of the case indicate incoming resolution. Also provided are a fixed/variable analog miniplug output with an OS-driven, analog gain control for headphone use, and an optical digital output. Inside this nifty capsule there's little room to spare considering the space required for the headphone amp, a six-layer PC board, XMOS "L1" processor, plus caps and resistors in key circuitry derived from Meridian's full-scale 800 Series. A short USB/mini-cable completes the package.

Setup was glitch-free as I suspected it would be with a product aimed at a youthful on-the-go market. I attached the USB2 mini B socket of the Explorer to my MacBook Pro (Pure Music software/Memory Play setting, and 8 gigs of RAM) and then ran a stereo miniplug-to-stereo-RCA cable (I use an AudioQuest) into the analog inputs of the recently reviewed Hegel H300 (Issue 233). After checking the Mac's MIDI and

EQUIPMENT REVIEW - Meridian Explorer USB DAC

Sound settings I booted up Pure Music/iTunes.

High-end sonics? Heck, yeah. Tonally, the Explorer supplies smooth touches of analog-like warmth and fluidity. Just as impressive was the lack of soundstage constriction. This is a problem that dogs the portable DAC segment. During Vaughan Williams' *The Wasps Overture* with Michael Stern and the Kansas City Symphony [Reference Recordings], the Explorer conveyed the wide expanse of the orchestra with a rewarding sense of depth and air between instruments, and an impressive ambient bloom that opened up the ceiling of the venue rather than holding it down. The music was spacious, detailed, and transparent, inviting comparisons to the more expensive DACs I've been listening to of late.

The Explorer also brings expressive midbass to the streamer segment, with sturdy timbres and purer, cleaner dynamic punch. On higher-res material, such as the 24-bit WAV file of Rachmaninoff's *Symphonic Dances* from Reference Recordings' 24-bit/176kHz HRx Collection, it shined even more brightly. Strings soared more effortlessly; the acoustics of the venue were more immersive.

Sonic subtractions? Sure, but no major complaints. The Explorer's spectral balance is moderately light. Thus, low bass could be weightier and more precise. On Holly Cole's "I Can See Clearly" the Explorer can't quite achieve the pace, muscle, and drive behind Cole's vocals the way more upscale DACs like the mbl CD31 or dCS Puccini can. Even so, perspective please! This is high-res "to-go" for less than the price of a decent power cord.

Of the streamers I've heard recently, the Explorer is neither the smallest (that distinction

goes to the AudioQuest Dragonfly) nor the least expensive (HRT's microStreamer gets that honor). In fact of the three it's the priciest by a slight margin. Sonically all are impressive—miracles if you will—yet the Meridian is a little more intrepid dynamically with a dimensional complexity that makes it stand apart. The Explorer marks a shrewd opportunity to spread the gospel of high-quality portable sound to a much broader (read: younger) audience. Meridian couldn't have chosen a better emissary than this little USB DAC. Highly recommended. **tas**

SPECS & PRICING

Type: Asynchronous USB DAC
Input: USB Mini Type B
Input resolutions supported: Up to 24-bit/192kHz (44.1/48/88/96/176/192kHz)
Outputs: 3.5mm stereo mini-jack variable level headphone output (130mW into 16 ohms); 3.5mm fixed-level (2V) analog output; mini-TosLink digital optical, 96kHz maximum
Dimensions: 4" x 1.25" x 0.7"
Weight: 1.76 oz.
Price: \$299

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AudioQuest DragonFly USB DAC

A Little Thing That Counts

Robert Harley



The high-end industry has long lamented its inability to appeal to regular folks who just like to listen to music. Part of the problem has been that we expect the would-be audiophile to make the giant leap from mass-market audio into our often-esoteric world. Being an audiophile often requires a lifestyle change, such as allowing the audio system to dominate the living room.

What the high end needs is a “bridge” product that brings our aesthetic to the ways in which ordinary people already enjoy music. Such a product would be affordable and require no special setup or change in living arrangements, yet deliver a far better listening experience than mass-market gear. It would be a “stealth” product in that everything about it appears normal save for the sound quality.

I can’t imagine a better realization of that ideal that AudioQuest’s new DragonFly USB DAC. This \$249 unit has the form-factor of the ubiquitous USB memory stick; just plug it into a computer and connect headphones or a line-level interconnect to the 3.5mm stereo mini-jack. It can function as a USB DAC, headphone amplifier, or DAC and preamplifier when driving a power amplifier directly. So far so good for our non-audiophile listener. But the DragonFly wouldn’t be special if low price, cool form-factor, versatility, and ease of use were its only claims to fame. Fortunately, the unit is brimming with high-end parts and design techniques that reflect a real effort by its designers to deliver great sound (more on this later).

Setting up the DragonFly requires entering a couple of menus (Mac or PC) to tell the computer that audio output should be through the DragonFly. Although not as simple to set up as a true UPnP (Universal Plug ’n’ Play) device that configures itself with no user intervention,

installing the DragonFly requires no software downloads.

Once it is set up, operation is very cool. The dragonfly graphic lights up in different colors to indicate the sampling frequency it is receiving—blue for 44.1kHz, green for 48kHz, amber for 88.2kHz, and magenta for 96kHz.

The high-end parts and design I mentioned include the acclaimed ESS Sabre DAC that incorporates a novel (and patented) technique for greatly reducing clock jitter where it matters. Many high-end DACs and disc players use this same chip. To provide even more stable clocking and lower jitter, the DragonFly employs dual master clocks, one for the 44.1kHz family of frequencies (44.1kHz, 88.2kHz) and one for the 48kHz family (48kHz, 96kHz). If you play files of a higher sampling frequency (176.4kHz or 192kHz), the DragonFly tells the computer what frequencies it can decode so that the computer can downsample the data. Note that you can also downsample 176.4kHz and 192kHz in a program such as Pure Music, which is a sonically superior solution to the computer performing the downsampling.

Despite its low price, the DragonFly’s USB interface is asynchronous. This means that the DragonFly is not forced to lock to the computer’s clock. Instead, it uses its own on-board precision clock as the timing reference for digital-to-analog conversion, reducing sonically degrading jitter.

EQUIPMENT REVIEW - AudioQuest DragonFly

DragonFly's asynchronous USB interface runs the same code found in multi-thousand-dollar DACs. In today's world, any USB interface that is not asynchronous is a non-starter.

Rather than allow iTunes or another music-player program to adjust the volume in the digital domain (which reduces resolution), the DragonFly features a 64-step analog volume control. The volume slider in iTunes (or a keyboard's volume up/down buttons) merely sends volume data to the DragonFly which implements the volume change in the analog domain. This is a better-sounding solution in part because digital-domain volume control reduces resolution by one bit for every 6dB of attenuation. The volume control comes into play when driving a power amplifier, headphones, or powered desktop speakers. Those of you who use the DragonFly with a preamplifier will set the volume at maximum (indeed, you should bypass all DSP so that that data remain unchanged) and set the playback volume with the preamplifier. DragonFly's output level for full-scale digital signals is 2V, the same as any full-sized DAC or disc player.

This is an impressive list of high-end design features. How the designers packed all of them into a device that weighs three-quarters of an ounce is beyond me.

I listened to the DragonFly in my reference system driving a Rowland Corus preamplifier through an AudioQuest Angel 3.5mm mini-plug-to-RCA interconnect. Although many listeners will use the DragonFly with a laptop and headphones or as part of a desktop-audio system with powered speakers, I figured that putting it at the front end of a system that included the \$108k plasma-tweetered Lansche No.7 loudspeakers

would be the acid test.

Upon first listen, the DragonFly sounded remarkably relaxed, musical, and engaging. The overall tonal balance was just right—weighty in the bass and midbass without sounding thick, fairly smooth in the midband, with a treble that combined openness, extension, detail, and a real sense of ease. Frankly, for a \$249 DAC I was expecting a thinner tonal balance along with a hard metallic-sounding treble that sounded bright without any sense of air and openness. This kind of presentation would not be out of place even in a \$1000 DAC.

The more I listened to the DragonFly the greater my appreciation grew for just how well it does its job of communicating the music. It struck me that it gets the gestalt of musical involvement right.



The sonic tradeoffs necessary in such a budget product have been cunningly balanced to deliver a surprisingly engaging listening experience. It finally occurred to me that what makes the DragonFly so enjoyable is that this DAC hits it out of the ballpark when it comes to music's dynamics, timing, and pace. Music reproduced through the DragonFly is upbeat, exciting, and involving, with a propulsive quality. Listen to a great rhythm section like the one behind Koko Taylor on "Can't Let Go" from the HDtracks 96kHz download sampler and you'll experience the full measure of this band's upbeat energy and drive. Or the powerful blues grooves of Robben Ford, Roscoe Beck, and Tom Brechtlein on Robben Ford and the Blue Line's *Handful of Blues*. It wasn't that the Dragonfly had the greatest slam, tightest bass, or most dynamic impact I've heard from digital. Far from it. Rather, the Dragonfly just had some sort of sonic alchemy that conveyed music's rhythm and drive in a way that made me forget about sonic dissection and just have fun. I can easily imagine someone whose frame of reference is an iPod or soundcard in the computer hearing the DragonFly and being completely blown away. It's exactly that experience that turns everyday music listeners into quality-conscious music listeners.

Conclusion

AudioQuest's \$249 DragonFly USB DAC is brilliant in every respect: form factor, cool factor, versatility, value, and sound quality. I can't think of a product that makes high-end sound more accessible to more people. Want better sound? Here, plug this into your computer. Done.

I don't know if this was by accident or design, but the DragonFly hits just the right sonic buttons

for fostering musical engagement. It's not the last word in timbral liquidity or soundstage depth, but it has a remarkable sense of ease and engagement. In addition, the DragonFly's exceptional ability to convey music's rhythm, pulse, and flow is key to its powerful musical appeal.

Although you wouldn't mistake the DragonFly's sound for that of a Berkeley Alpha DAC, that's not the point; most DragonFly customers would think that spending \$5000 for a DAC is completely insane. The DragonFly's genius is bringing the technologies, musical passion, and aesthetic of high-end audio to a product that all who love music can afford—and one that easily fits into the way they already access music. **tas**

SPECS & PRICING

- Type: Asynchronous USB DAC
- Output: Stereo 3.5mm mini jack
- Output level: Variable (2V at full scale)
- Sampling frequencies supported: 44.1kHz, 48kHz, 88.2kHz, 96kHz
- Dimensions: 2.5" x .75" by .4"
- Weight: 0.77 ounces
- Price: \$249

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Bel Canto mLink, uLink, and REF Link USB Converters

Three Compelling New Solutions for Computer Audio

Steven Stone



When I reviewed the Bel Canto DAC 3.5 VB in Issue 216 I found it to be an outstanding full-featured DAC/preamplifier that only lacked a USB interface. Bel Canto's thinking was that USB interface technologies were advancing so rapidly that any USB solution included in the DAC 3.5 VB would soon be eclipsed by the next generation of external USB interface devices. So Bel Canto offered an external 96/24 USB converter.

During the intervening time period, Bel Canto's thinking was proven correct—USB interfaces have continued to improve—and now that the technological dust has settled somewhat, Bel Canto has introduced three separate USB interface boxes. While they all share the same core design, the three boxes differ in interface options and power-supply implementations.

Bel Canto's least-expensive USB interface device is the \$375 mLink, which has a USB input and a lone BNC-terminated S/PDIF output. Like all the Bel Canto USB converters, the mLink supports up to 192/24 PCM via USB 2.0. The \$675 Bel Canto uLink is also USB buss-powered and includes an AT&T ST-Type glass optical output as well as a BNC S/PDIF. The top-of-the-line \$1495 REF Link is the only Bel Canto USB device that uses a dedicated low-noise external power supply and adds an AES/EBU output in addition to a BNC S/PDIF and ATT glass optical.

Both the mLink and uLink share the same size

enclosures, and except for the differences in color (the mLink is black and the uLink is silver) and outputs, the two units appear identical. Since they both get their power from USB and weigh well under a pound, they are ideal for someone looking for a completely portable USB interface. The REF Link is substantially larger and has the same footprint as Bel Canto's other half-width components. The Ref Link also has a knob that lets you change the display from bit-rate to firmware version to off. Due to its size and integral AC power supply (the mLink and uLink are powered through the USB buss), the REF Link is the only Bel Canto USB box that is not readily portable.

Shared and Proprietary Technologies

After spending some time with the Bel Canto units I had some technical questions for John Stronzer, Bel Canto's designer. My first was how much technology was common to all three devices. According to John, "The 500MHz USB processing

EQUIPMENT REVIEW - Bel Canto mLink, uLink, and REF Link USB Converters

core daughter-card is shared on all three Links as well as the S/PDIF output circuitry. The mLink and uLink are very similar in sharing buss power and overall power-supply architecture. The real difference is in the quality of the clocks. The mLink uses Low-Phase-Noise clocks, while the uLink uses the new Ultra-Low-Phase-Noise clocks. The REFLink also uses Ultra-Low-Phase-Noise clocks and adds further isolation and low-noise internal power supplies, plus galvanic isolation between the USB processing core, the clock, and output electronics. No power is drawn from the USB buss.”

The Bel Canto Web site has several technical papers and FAQs about the USB Links. The published graphs show exactly how low-noise Bel Canto’s clocks can be. The three Bel Canto USB boxes also meet USB 3.0 specifications.

The Sonics Inside

The primary issue for these USB boxes (or any new component) is whether they deliver superior sonics compared to other similarly priced solutions. I found the answer depended as much on the DAC used with the Bel Canto uLink, mLink, and REF Link as on the devices.

I used the Bel Canto USB converter boxes in four different setups for this review. The first was based around the April Music Eximus DP-1 DAC/

pre. Since it has two S/PDIF inputs I could hook up two different USB converter boxes and do rapid, real-time, matched-level A/B comparisons. The second setup utilized Bel Canto’s DAC 3.5 VB, which also has provisions for two S/PDIF inputs (as well as AT&T glass optical). The third DAC/pre I used was the Wyred4Sound DAC 2 because it has an I²S HDMI digital input. This allowed me to use the Empirical Audio Off-Ramp 5’s lowest-jitter output. Finally I tried a NAD C 390DD digital integrated amplifier to see how USB converters affected a direct-digital amplifier.

The first thing I wanted to do was compare the various Bel Canto USB boxes to each other, but that was not as easy as I’d hoped. Since they share the same driver, when you connect more than one Bel Canto USB converter to a Mac, the Mac defaults to the most recently plugged-in device. To A/B two Bel Canto boxes I had to unplug and then re-plug their USB cables, which took too much time for rapid comparisons.

During longer listening sessions using the new ProAc Tablette Signature monitors I felt that the REF Link consistently delivered the best sonic results, especially on 192k material using its AT&T optical connection. The REF Link’s soundstage had an extra dollop of solidity and edge definition when compared to its siblings. I also

SPECS & PRICING

mLink

Input: High-speed USB type-B receptacle

Output: Coaxial S/PDIF on BNC 75 ohms

Supported sampling rates: 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, and 192kHz

Supported word lengths: Up to 24-bit

Compatibility: Native MAC USB 2.0 compatible on OSX 10.6 and later, custom Windows USB 2.0 driver

Power Requirement: USB Bus 5VDC

Dimensions: 4" x 1.2" x 4.75"

Weight: 1 lb.

Price: \$375

uLink

Input: High-speed USB type-B receptacle

Output: Coaxial S/PDIF on BNC 75 ohms, LightLink ST Fiber

Supported sampling rates: 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, and 192kHz

Supported word lengths: Up to 24-bit

Compatibility: Native MAC USB 2.0 compatible on OSX 10.6 and later

custom Windows USB 2.0 driver

Power Requirement: USB Bus 5VDC

Dimensions: 4" x 1.2" x 4.75"

Weight: 1 lb.

Price: \$675

REFLink

Input: High-speed USB type-B receptacle

Output: Coaxial S/PDIF on BNC 75 ohms, balanced AES on XLR 110 ohms, LightLink ST Fiber

Supported sampling rates: 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, and 192kHz

Supported word lengths: Up to 24-bit

Compatibility: Native MAC USB 2.0 compatible on OSX 10.6 and later Custom Windows USB 2.0 driver

Power Requirement: 120VAC/60Hz or 240VAC/50Hz set internally

Dimensions: 8.5" x 3.5" x12.5"

Weight: 14 lbs.

Price: \$1495

ASSOCIATED EQUIPMENT

Source Devices: MacPro model 1.1 Intel Xeon 2.66 GHz computer with 16 GB of memory with OS 10.6.7, running iTunes 10.6.3 and Amarra 2.4.3 music playing software, Pure Music 1.85 music playing software, and Audirana Plus 1.35 music playing software
DACs: April Music Eximus DP-1, Wyred4Sound Dac2, Empirical Audio Off-Ramp 5, Bel Canto DAC 3.5 VB, NAD C 390 DD digital integrated amplifier
Amplifiers: Parasound A23, Bel Canto M-300, April Music Eximus S-1, NAD C 390DD
Speakers: Aerial Acoustics 5B, ATC SCM7s, Silverline Minuet Supremes, ProAc Tablette Signatures, Role Audio Kayaks, Velodyne DD+ 10 subwoofer
Headphones: Sennheiser HD 600, Grado RS-1, Ultimate Ears Reference Monitors, Beyer DT-880 (250 ohm), Beyer DT-990 (600 ohm), Audio-Technica ATH-W3000ANV, HiFiMan RE-272 in-ear monitors, Audio-Technica AD-900, Audio-Technica A-700, Sol Republic Tracks HD, B&W P3, Etymotic Research ER-4P, Shure SRH-1440, Stax SR-5, Stax Lambda Pro, Stax SRM-1 Mk II headphone amplifier
Cables and Accessories: Wireworld USB cable, Synergistic Research USB cable, AudioQuest Carbon USB cables. PS Audio Quintet, AudioQuest CV 4.2 speaker cable, AudioQuest Colorado interconnect, Cardas Clear interconnect, PS Audio PerfectWave i2s/HDMI cable, Crystal Cable Piccolo interconnect, and Audioprism Ground Controls

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EQUIPMENT REVIEW - Bel Canto mLink, uLink, and REF Link USB Converters

felt the REF Link delivered a blacker, more silent background.

When I compared the uLink with the mLink S/PDIF outputs in matched-level listening tests through the Eximus DP-1, I was hard-pressed to hear much difference. But when I used the uLink's AT&T optical connection tethered to the DAC 3.5 VB, differences did emerge. The uLink's optical connection provided depth recreation and image specificity that almost equaled that of the REF Link. If you have a DAC with an AT&T optical input I'd recommend gravitating toward the uLink's AT&T glass connection. If your DAC only has S/PDIF, the mLink remains the most cost-effective high-performance option.

I compared the Bel Canto's least expensive box, the mLink, with the Musical Fidelity V-Link USB converter (which has been replaced by the V-Link II). While the V-Link still sounds quite good, the mLink was simply better in every way. The mLink had superior focus, a slightly larger soundstage, and a more lively dynamic presentation. In comparison the V-Link lacked a bit of life, giving it a less involving character.

Since I got my first copies of Pure Music and Amarra playback software for the Mac, one of my standard tests for new hardware has been to compare the sound of stock iTunes with the sound of Pure Music and Amarra. Through the Bel Canto USB links the improvements wrought by both Pure Music and Amarra were quite obvious. Regardless of which DAC/pre they were hooked up to, all the Bel Canto USB devices' sonics improved when using Pure Music or Amarra. Depth, image solidity, soundstage focus, and low-level detail were all better than stock iTunes.

I spent the majority of my listening time with the

Bel Canto REFLink, comparing it to my current reference, the Empirical Audio Off-Ramp 5 with a Short-Block USB dongle. And as I discovered during the review, the "best" USB solution depended on which DAC the USB device was attached to and which digital interface methodology was used. For all my A/B tests I used identical 3-meter lengths of AudioQuest Carbon USB cable between my Mac Pro and the USB converters and identical lengths of Wireworld S/PDIF cable between the USB converters and the DAC.

For my first comparison I used the April Music Eximus DP-1 DAC/pre and connected the Empirical Audio and Bel Canto USB devices via S/PDIF. After several consecutive days of listening I was unable to discern any noticeable sonic differences between the two USB converters. Both delivered slightly more precise soundstaging and imaging than the DP-1's own USB interface, but I could not consistently distinguish one from the other in "blind" tests.

Next, I replaced the DP-1 with the Bel Canto DAC 3.5 VB. Once more I had two S/PDIF inputs for A/B comparisons, as well as Bel Canto's AT&T glass optical connection. Once more, during blind comparisons between the Empirical Audio Off-Ramp and REF Link using the S/PDIF, I could not reliably tell one from the other. But when I compared the Rifling's AT&T optical with the Off-Ramp's coaxial I could consistently hear differences between the two converters. The AT&T glass optical input rendered depth more convincingly with greater image solidity and dimensionality than the either unit's S/PDIF.

The last conventional DAC/pre I tried with the Ref Link and Off-Ramp was Wyred4Sound's DAC2. On their S/PDIF connections both USB

boxes once more I could not reliably identify which USB converter I was listening to. But when I connected the Off-Ramp 5 via its I²S HDMI input I noticed a change that noticeably increased the Off-Ramp's fidelity. Through I²S the Off-Ramp had a slightly increased image size, as well as greater solidity. Also when I used the I²S' connection with the Off-Ramp, my own live 192/24 concert recordings sounded more relaxed with a better sense of individual harmonic textures and greater spatial cohesion.

The last system I used for A/B comparisons was the NAD C 390DD digital integrated amplifier. Once again I compared the two units' S/PDIF feeds and once again was unable to tell the two units apart during blind listening sessions. But I could readily tell the difference between them and the NAD's own internal USB connection. Both the Empirical Audio and Bel Canto USB were better.

USB Made Simple?

So what sonic conclusions could be drawn from all this listening? The changes and sonic improvements wrought by a USB converter are not merely a function of the device, but also of how it interacts with the DAC that it is connected to. I

obtained the best sonic results from the Bel Canto REF Link when it was coupled to Bel Canto's own DAC 3.5 VB via its AT&T glass optical connection. The only situation where the REF Link failed to equal or surpass the Empirical Audio Off-Ramp 5 was when the Off-Ramp 5 was connected to a Wyred4Sound DAC 2 via its I²S connection. In both situations when one of the USB converters sonically excelled, it was because it was hooked up via its "best" connection to a device that supported that kind of connection.

Three Choices

With the introduction of the mLink, uLink, and REFLink, Bel Canto has successfully added the missing parts to create an all-Bel Canto 192/24-capable computer-audio system. If you already own a Bel Canto DAC/pre equipped with AT&T glass optical, adding a uLink is almost a no-brainer way to upgrade your system's sonics. For Bel Canto DAC 3.5VB owners, the REF Link's AT&T glass connection makes for an exceedingly synergistic combination. Even if your DAC is limited to AES/EBU or S/PDIF inputs, the Bel Canto Links can deliver a low-jitter stream that should improve the sound from all computer-audio sources. **tas**



Micromega MyDAC USB DAC

The \$399 Miracle

Robert Harley



The term “USB DAC” is starting to become redundant the way “cell phone,” “digital camera,” and “flat-panel television” are anachronisms to one generation and “ink pen” is to those of us two (or more) generations further removed. Those under twenty years old may never have been in the market for a DAC that didn’t offer a USB input, just as they may never have bought a film camera or a CRT television. But to the more, shall we say “seasoned” music lovers, USB is a new-fangled contraption.

As USB DACs (er, DACs) proliferate prices have come way down, performance has gone way up, and products have gotten smaller. This welcome trend is exemplified by the new \$399 MyDAC from Micromega. The French company has a long history in digital audio, pioneering several cutting-edge products back in the early 1990s. Now with founder Daniel Schar back in

the designer's chair, Micromega is again on a roll, producing an outstanding integrated amp/DAC with wireless streaming (the AS-400 reviewed by Neil Gader in Issue 222) among other forward-looking items. The new MyDAC represents by far the lowest-priced component the company has yet marketed, and is one of a full line of entry-level products.

MyDAC looks very much like an Apple AirPort Extreme (not by coincidence, I presume), with its white plastic chassis (black is available) and 5.5" nearly square and 1.4" high form factor. A front-panel wheel, reminiscent of the tuning wheel on 1970s-era Marantz tuners, selects between the S/PDIF coaxial, TosLink optical, and USB inputs. An LED associated with each input blinks when that input is selected but not locked to the source. The LED turns solid when lock is achieved. Output is via a single stereo pair of RCA jacks. While many products of this size employ a wall-wart power supply, MyDAC's power supply is inside the chassis. An AC cord plugs into a small socket on the rear panel. In Standby, MyDAC consumes only 100mW of power.

We're right at the transition point when the USB interface is able to pass audio data with sampling frequencies higher than 96kHz—some products already have this capability. Surprisingly, so does MyDAC; it can be driven natively with sampling frequencies up to 192kHz with 24-bit resolution. Moreover, MyDAC's USB interface is asynchronous for lower jitter and better sound. Other technical details include dual master clocks, one for the 44.1kHz family of frequencies (44.1kHz, 88.2kHz, and 176.4kHz) and the other for the 48kHz family of frequencies (48kHz, 96kHz, 192kHz).

For Mac users, MyDAC requires no drivers or downloads. PC users need to download a driver from the Micromega Web site. I connected MyDAC to a Mac with no problems, and operation was simple. The only minor glitch was a faint high-pitched whistle emanating from the unit itself (not from the audio output) when the unit was turned on. This whistle was only audible when no music was playing and I was standing next to the unit.

Listening

It's often said that the true test of high-end design talent is how much sound-quality the designer can squeeze out of the slimmest of parts-budgets. If that's the measure, then designer Daniel Schar is a genius. MyDAC knocks it out of the ballpark sonically, with spaciousness, bloom, ease, smoothness, and resolution that are good by any standard, but unbelievable from a \$399 product.

The main sonic quality that distinguishes MyDAC from the competition and makes it so musically compelling is its three-dimensionality. Inexpensive digital usually has a flat sound, with instruments sounding like cardboard cutouts stuck to one another on a flat soundstage. MyDAC somehow avoids this, instead conveying a real sense of body with instruments and a wonderful bloom around instrumental outlines, all presented within a spacious and well-defined soundstage. Although tonal balance and purity of timbre are very high sonic priorities, the ability to foster the impression of instruments in real space goes a long way toward musical realism. In this regard, MyDAC sounds like it should cost quite a bit more money.

MyDAC is also exceptionally clean and smooth in timbre, with very little grain and only a hint of hardness in the treble. Strings lack the steely edge often heard at this price level, and cymbals have a delicacy that you just don't get from entry-level digital. These qualities, combined with spaciousness and bloom, make MyDAC easygoing, pleasant, and non-fatiguing.

The bass is well defined and fairly deep, but this is the area in which MyDAC's budget orientation is revealed. The bottom end is full and satisfying, but not the overachievement that MyDAC's soundstaging, bloom, and timbral liquidity are.

EQUIPMENT REVIEW - Micromega MyDAC USB DAC

Bass lines aren't precisely defined, sounding just a bit soft and compressed. It seems churlish to criticize a product because in one respect it's not quite up to the lofty standards set it sets everywhere else. Nonetheless, I would be remiss in not mentioning it.

Compared with the \$249 AudioQuest DragonFly I reviewed in our last issue, the Micromega is smoother and more dimensional, but the DragonFly has a little tighter bass and is a bit more incisive rhythmically. The Micromega is more refined and resolved, sounding like a much more expensive product than it is. Although these products are very different functionally and don't directly compete with each other—the AudioQuest is portable, has a volume control, and can drive headphones or powered speakers directly—the sonic comparison shows just how good entry-level digital can sound nowadays.

To give you an idea of how exceptional the Micromega is I'll relate an incident. I turned on my music server to listen to music after having done some comparisons the night before between MyDAC and the \$4999 Berkeley Alpha DAC Series 2, which I've used as a reference for many years. I sat down and began listening, marveling at how good the sound was through the Magico Q7. After about 15 minutes I happened to look at the display on the Jeff Rowland Corus preamplifier and realized that I had been listening to the Micromega and not the Berkeley. This isn't to say that the two are equal by any means; the Alpha DAC is considerably more spacious and dynamic, better resolved, and purer in timbre, with much deeper and fuller bass. But the ability to enjoy the music, and to consciously think about how good the system sounded, without realizing

that MyDAC was at the front of the chain speaks volumes about this little product's amazing value.

Conclusion

Every so often in high-end audio a product comes along that shatters the price-to-performance ratio we've come to expect in a category. Think of the NAD 3020 integrated amplifier in the 1970s, the Adcom GFA amplifier in the 1980s, the PSB Alpha speaker in the 1990s, and the Cambridge Audio 840C CD player in the 2000s. You can add another future legend to that list: the \$399 Micromega MyDAC.

It's worth an audition even if you were planning on spending quite a bit more. You might find, as I did, that this level of performance for four-hundred dollars qualifies as a miracle. **tas**

SPECS & PRICING

Inputs: USB, TosLink, S/PDIF on RCA jack
Resolution supported: 32kHz-192kHz, up to 24 bits (USB and S/PDIF inputs)
Output level: 2V
Dimensions: 5.5" x 1.37" x 5.5"
Weight: 300 grams
Price: \$399

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Four DACs from \$699 to \$3600

Channel Islands Transient Mk II, Lindemann USB-DAC 192/24, NuForce DAC-100, Synergistic Music Cable DAC

Steven Stone



When the first DACs (digital-to-analog converters) appeared in 1985 they were big and expensive. Sony's first DAC, the Sony DAS-702ES, weighed over 11kg and was built to last a lifetime. Too bad the technology inside the DAS-702ES remained cutting-edge for less than a year. Digital technology has continued to march forward, evolving and improving to the point where the early "Perfect Sound Forever" digital components sound pretty groovy by today's standards.

While I wouldn't be so rash as to state that any new DAC will sound better than even the most expensive ten-year-old model, it's not uncommon or surprising to find that many owners of older kilo-buck DACs are "trading up" to far less expensive DACs that provide superior performance compared to their outdated units. Combined with a computer-audio music library a USB-capable DAC can deliver a level of performance that a scant few years ago was available to only to a few of the very-well-heeled.

Here are four DACs, ranging in price from \$699 to \$3600, that offer better performance than you could obtain at anywhere near their prices just a few years ago. All represent the current state of DAC manufacturing and design. And regardless of their price points, they all attempt to optimize their listeners' musical experience.

Channel Island Audio Transient Mark II USB Converter and DAC (\$699)

The first DAC in our survey is from Channel Islands Audio. This small enthusiast-focused company specializes in high-value, made-in-the-U.S. audio components. Opened in 1997 and located on the central California coast in the town of Port Hueneme, Channel Islands Audio may be best known for its low-noise aftermarket power supplies for the Logitech Touch and SB3, but it also makes power amplifiers, preamps, DACs, and headphone amplifiers.

When I asked Dusty Vawter, chief designer at Channel Islands, whether the new Transient Mark II was principally a USB converter or a DAC, he told me, "I see it as a USB audio multi-tool. Its strength begins with the XM-2A board, making it a state-of-the-art USB to S/PDIF or I²S converter. We wanted a product that could be totally portable and provide the industry-standard 2V analog output. After testing the available DAC ICs, we chose the Wolfson for its musicality. We've surrounded this circuit with very high-grade parts from Nichicon, MUSE, Takman, Vishay, and Wima."

Like the other audio components from CIA, the Transient Mark II exterior is simple and lacks the kind of cosmetic frills, such as ½"-thick front panels, that increase a component's cost without adding to its sonic performance. The front panel has six blue LED lights that indicate the current sampling-frequency and two buttons to control the volume. That's it. Since there's only one input there's no need for an input selector, and all outputs are always active.

The rear panel of the Transient has a USB input, one pair of single-ended RCA analog outputs, a BNC-terminated S/PDIF output, two I²S outputs (one HDMI and one five-pin mini-DIN), and a 5-volt DC power input for the optional VDC-5 Mk II high-current power supply.

The Transient II's volume is adjusted via a digital control. According to Vawter, "a side benefit to

EQUIPMENT REVIEW - Four DACs from \$699 to \$3600

the Wolfson DAC IC is that it has a 24-bit digital volume, which can be accessed in software mode. In that we already required a micro-controller to run the sample-rate indicators, it made sense to make use of the built-in volume control. The high-resolution control works very well and doesn't have the L-R tracking error of potentiometers."

Starting with the very well regarded Wolfson DAC and XMOS chipset as the basis for its design, Channel Islands added its own ideas to the mix. "We developed our own USB-to-I²S board utilizing the XMOS processor. Our XM-2A daughter board uses a compact four-layer PCB and dual ultra-low-jitter (<1 pico-second) oscillators, and can be powered by the USB or external low-noise supply. Then the low-jitter I²S signals from the XM-2A are fed into independent buffers for each I²S output, a low-jitter S/PDIF transmitter (for BNC output), and also into the on-board Wolfson DAC circuit."

Transient Performance

Since the Transient II is a USB-only DAC it spent most of the review period tethered to my MacPro desktop computer. It did not require loading any drivers, and the Mac Sound Control Panel immediately recognized the Transient by the name "CIAudio USB Audio 2.0" and showed support for bit-rates up to 192/24. I used the Transient with iTunes, Amara, Pure Music, Decibel, Audirvana Plus, Audacity, and Audiogate without a single compatibility issue.

How does the Transient II sound? Well, it sure doesn't come across as a "budget" component. Used as a USB-to-S/PDIF converter the Transient rivaled the more expensive Human Audio Tabla (\$995) in S/PDIF when it was running into the April Music Eximus DP-1 DAC/preamp (the DP-1 has

two S/PDIF and two analog inputs, so it's ideal for real-time A/B comparisons). Although the latest Empirical Audio Off-Ramp 5 combined with the new Empirical Audio Short-Block isolation filter did have a slightly larger soundstage and lower noise floor, I had to use my own live recordings to clearly discern the difference—on commercial recordings the two USB converters sounded almost identical.

For optimum performance Channel Islands recommends using the Transient II's I²S outputs. Fortunately, the Wyr4Sound DAC II has I²S connections so I could hear the Transient II's I²S performance for myself. It was easily the best sound I heard from both the Transient II and the Wyr4Sound DAC II. The improvement was principally in dimensionality. Not only did the front-to-back depth increase, all the instruments and voices gained additional solidity and edge definition. It was a lot like going from a very good solid-state power amplifier to a tube amp; the 2-D image morphed into 3-D. I used a PS Audio Perfect Wave 12-1 I²S cable for the connection. I also tried a generic HDMI cable, and while it, too, was superior to the S/PDIF connection, the imaging improvements were far less obvious. When I switched back to the Wyr4Sound's own built-in USB implementation and compared it with the Transient II's S/PDIF output, the dimensional presentations from the same USB source were virtually identical.

As a stand-alone USB DAC/Pre the Transient II gets high marks. If you can get by with one pair of single-ended RCA outputs the Transient II can serve as the center of your computer audio system. I was impressed by the Transient II's lack of electronic edginess. Especially on voices, such

as Emma Kirkby's delicate soprano on the live concert album *Time Stands Still* [Hyperion], the lack of grain and glare lets the music flow with relative dynamic freedom. Unlike some budget gear, which sounds clean yet sterile, the Transient II's overall presentation had an ambience and bloom that were natural and relaxed, without the slow, thick sound of some vintage tube gear.

Listening to my own DSD-format live concert recording of the Boulder Philharmonic performing Brahms' Double Concerto in A minor for violin and cello played back through Audirvana Plus' real-time DSD-to-PCM converter at 176/24, I was most impressed by the Transient's ability to preserve all the subtle spatial details that were present in the recording. The violin and cello soloists were so clearly defined in space that when the violinist turned his body, even slightly while playing, it was immediately obvious. The Transient also did an excellent job of retaining all its sonic virtues even on double-forte passages—the sound didn't get harder or more aggressive during dynamic peaks.

Near the end of the review period Channel Islands sent me its \$329 VDC-5 Mk II high-current power supply. While I didn't detect any improvement or sonic changes in the S/PDIF or I²S streams when I installed the VDC-5 Mk II, I did hear an improvement in the quality of the Transient II's analog outputs. Dynamic contrast improved with greater image stability and focus. According to Dusty Vawter, whether the VDC-5 Mk II makes a sonic difference will depend on a number of factors, such as the noise generated by your computer's video card and the noise on the USB connection. With some portable computers running on their battery supply the VDC -5 Mk II will make no sonic improvements. But if you run

them plugged into AC, the VDC-5 Mk II will reduce the noise coming from the USB power supply. Given the VDC-5 Mk II's cost, I would strongly suggest trying it out on your own system since it may not be the most cost-effective upgrade for the Transient II, especially if you are using the Transient II primarily as a USB-to-S/PDIF bridge. If you have an I²S-compliant DAC I would recommend investing in a high-quality HDMI-type cable before springing for the VDC-5 Mk II power-supply upgrade.

My Transient Response

To say I was impressed by the Transient II's combination of modest price and excellent sonics is something of an understatement. If you are contemplating spending \$700 or more for a USB-to-S/PDIF converter, you should consider the Channel Islands Audio Transient II. For a reasonable price it lets you keep up with the current state of USB 2.0-compliant audio, even if your DAC lacks USB capabilities. And while we wait for the next wave of products with USB 3.0 compliance, the Transient II will keep your music flowing beautifully.

Lindemann USB-DAC 24/192 Converter and DAC (\$1100)

The second DAC in this survey comes from Lindeman. Although in business for more than twenty years, Lindemann is a relative newcomer to the United States. Now distributed by One World Audio, this German company, formed by Norbert Lindemann, opened its doors in 1992. In 1999 Lindemann introduced the first upsampling CD player, and in 2002 the first German-manufactured SACD player. Releasing leading-edge digital

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products is nothing new for Lindemann, and its latest USB DAC is no exception.

Understatement in physical design is a hallmark of Lindeman products. The Lindeman USB DAC is a small 1½" by 4¾" by 5" silver-tone box with a single circular push-button on the front. The rear panel has inputs for USB, TosLink, and S/PDIF, one pair of RCA single-ended outputs, and a power-supply connection. That's it. The only user adjustment is the source-selector button on the front. And while the Lindemann USB-DAC 24/192 may appear, at least from the outside, to be a modest entry-level offering, inside it's packed with Lindemann's current thinking on state-of-the-art digital technology. The USB interface is based on the XMOS DSP chip, and offers asynchronous "bit-transparent" resolution up to 192/24. The digital interface controller is the Wolfson WM8805, and the DAC chipset is the Wolfson WM8742. According to Lindemann's published specifications, the USB DAC 24/192's internal master clock produces less than 2.5 picoseconds of timing errors. The USB 24/192 also uses a "minimum phase" digital filter with an "apodizing" filter to reduce phase, timing, and group-delay issues.

For jitter reduction the 24/192 features an active jitter-reduction scheme that employs a digital PLL (phase locked loop) and memory buffering of the digital stream. According to Lindemann, "The remaining jitter of the signal (not the clock!) is below 50 picoseconds."

Although the analog outputs are single-ended RCA, the Lindemann DAC employs a fully balanced analog output stage with bandwidth that extends up to 200MHz. According to Lindemann, "As a result of the silicon-germanium technology

used for the wafer, the module's supply voltage is limited to 5V. The result of this is an optimal output voltage of 1.4V RMS for 0dBFS. Consequently, the USB-DAC 24/192 is quieter than competitors using standard operational amplifiers." As you would expect from a USB 2.0-compliant device, no additional drivers or plug-ins are needed for Mac use. For Windows machines Lindemann offers a certified driver and installation instructions.

Setup and Ergonomics

Given its level of internal sophistication, the installation, setup, and day-to-day operation of the USB DAC 24/192 were disarmingly simple. Once a USB cable was attached between the Lindemann and my Mac, the DAC was recognized in the Sound Control Panel as "Lindemann USB 2.0 Audio," and I could select it as my output device. Although the Lindemann has no volume controls, its volume can be adjusted in software via iTunes (or other playback software). Since its full level is only 1.4 volts, and many fixed-output devices use 2.0 volts as their standard single-ended output level, in some installations such as those that use a passive preamp with no provisions for gain, the Lindemann might not have sufficient maximum volume. But in other systems this lower output level could allow users to employ the Lindemann without a preamp, using only minimal software gain attenuation. Another option for potential users searching for a minimalist solution could be attaching the Lindemann directly to a pair of powered speakers with gain controls, such as the Adam Artist 5x or PSI A-14M powered monitors.

The USB DAC 24/192 doesn't come with a remote, but chances are you'll never miss it. The only pushbutton on the front panel controls the

input source, and if you have only one source, such as when the Lindemann is hooked up to your computer's USB, even that button will remain untouched.

Unlike many USB DACs, which offer the option of a digital output, the Lindemann has only analog outputs, so it can't be used as a USB-to-S/PDIF converter. While this may limit its appeal to some audiophiles looking for a USB converter as well as a DAC, it does keep things simple—it's the analog out or nothing.

The Lindemann Sound

From the first time I heard the USB DAC 24/192 at CES I thought it was a very fine-sounding DAC. My experiences with the 24/192 at Casa Stone have done nothing to change this opinion. With a musical yet revealing character, the USB DAC 24/192 produces a large and well-defined three-dimensional soundstage that sounds neither digital nor analog—on good recordings it sounds like a microphone feed.

Early in the review I tethered the USB DAC 24/192 analog outputs to the April Music Eximus DP-1 DAC/PRE. This setup let me compare the Lindemann's analog output to that of the Eximus DP-1. Since their USB interfaces are based on the same XMOS chipset I wasn't exactly shocked to find that the two USB/DAC sections had very similar sonic signatures when the Eximus DAC was set to 192/24 oversampling mode. The Eximus DP-1 delivered slightly better low-level resolution and dimensionality, but it had the advantage of one less interconnect in the signal chain. Both DACs also had a very similar harmonic balance and dynamic contrast when the DP-1 was in 192/24 mode.

When the DP-1 was set to non-oversampling native-rate processing the Lindemann USB DAC 24/192 sounded tighter with less harmonic bloom, but with more detail and low-level information. The fact that the differences between the Eximus DP-1's three processing modes were greater than the differences between the Lindeman USB DAC 24/192 and the Eximus DP-1 in 192/24 processing mode tells you how similar to each other these two DACs can sound.

Putting an \$1100 DAC against a \$3500 one would not be considered a fair fight under most circumstances, but to give you an idea of how well the Lindemann DAC performs, that is its competition. The April Music DP-1 DAC PRE has a lot more ergonomic flexibility with its excellent built-in headphone amp, pure analog pass-throughs, and high-quality analog volume control, but based solely on sonic performance the Lindemann USB DAC 24/192 is certainly on the DP-1's level.

Since many users will also be hooking up an S/PDIF source to the Lindemann USB DAC 24/192, I spent time listening to music through the S/PDIF input. To supply the S/PDIF I used the Human Audio Tabla converter (\$995), which utilizes the M2Tech HiFace as the basis for its USB conversion. With its built-in battery power supply and automatic charging via USB, the Tabla doesn't complicate the computer-audio grounding scheme, thereby reducing the chance of ground loops affecting the sound quality. Using the Tabla also let me compare the Lindemann's XMOS USB solution with Human Audio's M2Tech HiFace.

On Alexis Harte's song, "Please Come Out" from his *Six Spoons of Honey* album, the similarities

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between the Human Audio USB interface and the Lindemann USB DAC 24/192 were far greater than the differences. Both created equally large, well-focused, and three-dimensional soundstages. After more than a half hour of going back and forth, the primary difference I heard between the two USB solutions was ever-so-slightly better solidity and fine detail through the Human Audio Tabla USB interface.

On my live concert recording of the Boulder Philharmonic performance of Ruby Fulton's "Deadlock," the sonic differences between the two USB interfaces were miniscule. During the beat-box solo passages I was impressed by the Lindemann DAC's harmonic neutrality and the analog section's transparency. Together they did a superb job of accurately rendering the dimensionality and dynamics of the live-to-DSD recorded performance.

Simplicity Rules

If you like simple ergonomics coupled with high performance, the Lindemann USB DAC 24/192 may be what you've been looking for. Connect a USB, S/PDIF, or TosLink input and get superb music from its single-ended RCA analog outputs. What's not to like? Well, it might not be a stand-alone unit, since you could need a preamp or volume attenuation method if you aren't using software to control volume. Also with its 1.4V maximum fixed output, passive preamp systems might lack sufficient gain to drive your system to full volume levels. But if you use the USB DAC 24/192 with an active preamp its output level won't be a problem, and if audio quality is your primary purchase criteria you'll be hard-pressed to find a DAC that convincingly beats it.

NuForce DAC-100 DAC/Preamp (\$1095)

NuForce's emphasis on high performance at a moderate price has, in a few short years, transformed the brand from "Who dat?" to "Oh, them!" The NuForce DAC-100 marks its first foray into the product category of DAC/preamps. With a feature set that should work equally well in a computer desktop/headphone system or a small-room computer-based system the NuForce DAC-100 packs a lot of features and technology into its svelte chassis.

Although it is part of NuForce's home/desktop product line instead of its reference line, the DAC-100 is sonically and ergonomically a high-value product through and through. What you don't get, and don't have to pay for, is a fancy case, thick front panel, or elaborate chassis. The DAC-100's dimensions are 9.5" by 8" by 2" high, putting it in a ¾-width size category. And while it doesn't take up much space, it does produce some heat, so giving it adequate ventilation, both below and above, is important for optimal operation.

Ergonomic Elegance

NuForce calls the DAC-100 a DAC/preamp, which means it performs the functions of a DAC and a preamp. As a preamp the DAC-100 only supports digital sources. It has four inputs—USB 2.0, TosLink, and two S/PDIF RCA digital. For outputs the DAC-100 includes one pair of single-ended variable-output RCA connectors and a headphone jack on the front panel. The DAC-100's headphone output is designed to support headphones with an impedance range from 120 to 600 ohms, so it may not be suited for all headphones, especially high-sensitivity low-impedance in-ear models.

SPECS & PRICING

CHANNEL ISLANDS AUDIO TRANSIENT II

Digital outputs: S/PDIF via 75-ohm BNC connector (galvanic isolated), I²S via mini-DIN connector (Audio Alchemy/Perpetual Tech/Camelot), differential I²S via HDMI connector (PS Audio/Wyred4Sound)

Sample rates supported: 44.1k, 48k, 88.2k, 96k, 176.4k, 192k up to 24 bits

Analog Output Level: 2V RMS maximum (single-ended RCA)

Dimensions: 4.45" x 2.9" x 5.25"

Shipping Weight: 5 lbs.

Warranty: Five year parts & labor

Price: \$699

CHANNEL ISLANDS AUDIO

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LINDEMANN USB-DAC 24/192

Inputs: USB-B, TosLink, coaxial

Supported sampling rates: 32kHz to 192kHz (USB 2.0, TosLink, coaxial)

Output voltage: 1.4V at full scale

Dimensions: 4.7" x 1.77" x 5.23"

Weight: 395 gm

Warranty: Three years

Price: \$1100

LINDEMANN

ONE WORLD AUDIO (U.S. DISTRIBUTOR)

(415) 244-8663

oneworldaudiousa.com

NUFORCE DAC-100

Inputs: USB, TosLink RCA (x2)

Sampling rates supported: Up to 192kHz

Outputs: RCA, 6.3mm headphone jack

Recommended headphone impedance: 120-600 ohms
Headphone output level: 10.4V p-p, 3.7V RMS at 300-600 ohms

Dimensions: 8.5" x 2" x 9"

Weight: 2.64 lbs.

Price: \$1095

NUFORCE

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Milpitas, CA 95035

(408) 890-6840

nuforce.com

SYNERGISTIC RESEARCH MUSIC CABLE

No specs provided

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The front panel of the DAC-100 contains a rotating volume knob, three bit-rate indicator lights, four input buttons, and a headphone jack. The volume knob also doubles as a standby switch by pushing it inwards. On the back panel are all the inputs and outputs, and the standard IEC AC connector. The DAC-100 comes with a credit-card sized remote that supports basic functions including on/off, volume level, input selection, and the all-important mute button.

Installation was simple: I merely plugged in a USB cable between the DAC-100 and my MacPro desktop computer and the Mac recognized the NuForce in the Sound Control Panel Attachment as “Nuforce 192k DAC—HS.” For PCs you can download the newest driver from NuForce’s Web site. I used the DAC-100 with a variety of Mac playback software including iTunes, Pure Music, Amarra, Audirvana Plus, Decibel, Fidelia, and Audacity with no compatibility issues.

One thing you can’t do with the DAC-100 is use it as a USB converter since it lacks any kind of digital output. If you plan to use it in conjunction with NuForce’s new DDA-100 digital integrated amplifier, the DAC-100 will be getting a digital feed from the DDA-100 via a TosLink connection, and since the DDA-100 will power the main speakers, the DAC-100 will be relegated to headphone-amplifier duties.

Since the DAC-100 only has one pair of line-level RCA outputs, using it in a system that has a subwoofer requires a wee bit of McGyvering. You can either attach Y-connectors to the RCA outputs on the back of the DAC-100 to give you two line-level feeds, or you can use the headphone output on the front panel. Most of the DAC/PREs I’ve reviewed, such as the April Music Eximus DP-

1, mute their line-level output when you plug in headphones to their front panel, but the DAC-100 does not. Because both of the DAC-100 outputs are active and their volume levels are controlled by the same knob, you have a readily available source for the subwoofer feed; all you’ll need is a ¼" stereo-to-female-stereo RCA adapter.

For most of the review the DAC-100 was connected directly to a pair of PSI A-14M powered monitors and a Velodyne DD+10 subwoofer (using the Y-connector scheme), but near the end I used it with NuForce’s DDA-100 (\$549) direct-digital integrated amplifier, an Accuphase P-300 power amplifier, and a Parasound A-23 attached to several of my reference desktop speakers, including the Role Audio Canoe, Aerial Acoustics 5B, Silverline Minuet, and ATC SC-7 speakers.

The only ergonomic issue I experienced with the DAC-100 was with its volume knob. It felt slightly loose and sloppy. Also it doesn’t take very much pressure to push the knob in, muting the DAC-100, which may not have been your intention when you reached for the knob. I much prefer the volume knob on NuForce’s DDA-100, which looks and feels better.

If you look inside the DAC-100 you’ll find a very sophisticated audio instrument. With a 32-bit digital volume control instead of the more-common 24-bit variety, a single-ended 500-milliwatt headphone amplifier, and a non-oversampling 192/24 DAC, the DAC-100 delivers excellent published specifications for jitter, frequency response, and THD+N, as you can see on NuForce’s site.

The NuForce Sound

The NuForce sound, or should I say lack of it, came

as a pleasant surprise. I installed the DAC-100 just after reviewing the Lindemann USB 24/192 DAC. The first A/B comparison test I performed was with these two DACs running into the analog inputs of the April Music Eximus DP-1 DAC/PRE. After critically matching the output levels I was flummoxed to discover that I couldn’t reliably identify one from the other. Both did a superb job of preserving all the subtle soundstage cues and both had equally expansive soundstages. Since they are priced within \$5 of each other, if I were forced to choose I would make my decision based on their ergonomics rather than sound quality. If I already had a good analog preamp I’d opt for the Lindemann, but if I didn’t own a preamp I’d chose the NuForce DAC-100.

Obviously the NuForce DAC-100 is sonically competitive with similarly priced DACs, but how does it rate versus higher-price DACs? I couldn’t do any real-time A/B switches, since testing involved disconnecting and reconnecting interconnects, but after several hours of listening I could reliably identify several sonic differences between the DAC-100 and the April Music Eximus DP-1. First the DP-1 had slightly better low-level detail. In my live DSD recording of The Deadly Gentlemen from Salina Schoolhouse, mandolinist Domenic Leslie turns to fiddle player Mike Barnett and says, “I’ll take the low part.” It’s easier to make out not only his words, but the direction he’s facing through the DP-1 than the DAC-100. Also the DAC-100’s soundstage is not quite as deep or three-dimensional as the DP-1. All the players seem to be closer to the wall behind them through the DAC-100.

To discover how good the DAC-100’s USB implementation was I set up another A/B test, this

time with the Human Audio Tabla USB interface box. I attached the Human Audio Tabla’s S/PDIF output to one of the DAC-100’s two S/PDIF inputs and used Audirvana Plus for playback because it has the fastest switchover between output devices. Once levels were matched I found it impossible to tell which input I was using. While one test isn’t enough for me to state conclusively that the DAC-100’s USB implementation is equal to the Tabla, I can confidently say that adding an external USB interface did nothing to improve the DAC-100’s performance.

I spent quite a bit of time, especially early in the morning while my wife was still sleeping in the bedroom right over my office, listening to the DAC-100’s headphone output. With some headphones, such as the Grado RS-1 and AKG K-701, the DAC-100 headphone output is dead quiet. But with other headphones, such as the Audio-Technica ATH W-3000ANV or the Sol Tracks HD, I could hear a faint low-level hiss. Fortunately the hiss didn’t get louder as the volume increased, but higher sensitivity earphones are more likely to have some background hiss from the DAC-100’s headphone outputs.

A NuForce in USB DACs

\$1000 to \$1200 seems to be a price that many manufacturers are aiming at with their latest high-performance USB-enabled DACs. NuForce’s entry at this hotly contested price point delivers excellent sound combined with a useful feature set, making it one of the DACs that should be on anyone’s “must audition” short list, if he’s in the market for an under-\$1500 USB DAC.

EQUIPMENT REVIEW - Four DACs from \$699 to \$3600

Synergistic Research Music Cable DAC (\$3599)

It takes a certain amount of nerve (or cluelessness) to write that a \$3500 DAC with cables and a built-in power conditioner is a “value proposition.” But that’s exactly what the Synergistic Research Music Cable was designed to be. Synergistic Research practically gives you a 192/24-bit DAC for free with some of its very tricked-out cable. If you add up the cost for a 1-meter length of terminated Synergistic Research Active digital cable (\$1000) and a 1-meter length of Synergistic Research Active Tungsten interconnects (\$2000), a Powercell (\$1250), Galeleo universal interconnect cells (\$1500), and Precision A/C Basik power cord (\$250), it comes to \$6000, and that doesn’t even include a DAC. By anybody’s standards, getting \$6000+ worth of stuff for only \$3599 is a bargain.

The Soup-to-Nuts Solution

Setting up the Synergistic Research Music cable can be as simple as plugging one end into a digital source’s S/PDIF output and the other end into the analog inputs on your preamp. The Music Cable supports up to 192/24 data streams and will automatically detect and set its DAC for the proper data transfer. BNC devotees will be happy to discover that the Music Cable comes with a BNC termination. If your transport or media server uses RCA hardware for its S/PDIF output, you will need to use a BNC-to-RCA S/PDIF adapter.

There are no adjustments on the Music Cable except for a pair of interchangeable Galileo universal interconnect cells. These cells come in three varieties, black, grey and silver, and are designed to affect the overall balance of the

system. Synergistic Research, or its dealers, can make suggestions as to which of the cells would be best for a particular system, but Synergistic Research encourages owners to try all three to determine their own preferences. My preference during the review varied more based on program material than basic system balance. Since switching the cells takes less than five seconds, using them as overall harmonic balance controls is about as easy as turning a knob or changing a low-hanging lightbulb.

I used the Music Cable DAC in a variety of computer-desktop and room-based systems. For computer use I needed to employ a USB-to-S/PDIF converter since the Music Cable accepts only S/PDIF. I used the Human Audio Tabla (\$995) as well as the Empirical Audio Off-Ramp 5 converter box when I employed USB sources. Synergistic Research makes a similarly priced USB-only version of the Music Cable, but it only supports up to 48/16 data files. And while I found its performance on Red Book and MP3s on a par with the S/PDIF version connected to the Tabla, (that was the conversion box I used for the A/B), its lack of support for higher bit-rates makes it less of a future-proof high-value purchase than the S/PDIF version.

During the review I only came across one compatibility issue. When connected to my MacPro system the Music Cable produced a low-level, but audible, hum at normal listening levels, on the right channel only. By repositioning the Music Cable I could lower the hum level, but I could never get the unit far enough away from whatever in the system that was causing the hum to eliminate it completely. None of my other computer- or room-based systems produced a

similar problem. In every other system the Music Cable was dead quiet.

The Synergistic Sound

For a good part of the review period the Music Cable DAC was connected to a stock Logitech Touch music server. I also used the Music Cable coupled to a Lexicon RT-10 universal transport, Oppo BDP-95 universal player, and Meridian 598 DVD/CD transport. Since the Music Cable can only support one input I suspect that most users will want to hook it up to a music server or computer-audio source (for this a USB/SPDIF converter box may be needed) for maximum ergonomic ease.

The first A/B test I conducted after almost a month of break-in time was with the Wyred4Sound DAC II. Since the Logitech Touch has two digital outputs I could use the S/PDIF for the Synergistic Research Music Cable DAC and the TosLink connected to the Wyred4Sound DAC II. Obviously this wasn’t a completely fair test since the Wyred4Sound was saddled with a higher-jitter TosLink connection, but because the Music Cable won’t accept TosLink it was my only option. At least both DACs had the same Synergistic Research Active Tungsten interconnects between the DACs and my Parasound P-7 preamp. For those who think comparing a \$3600 DAC to a \$1500 one isn’t a fair comparison, remember that with the \$2000 Synergistic Research interconnect the Wyred4Sound combo comes to just under \$3500.

Hooked up to the Squeezebox Touch the Synergistic Research Music Cable produced a noticeably more three-dimensional image than the Wyred4 Sound DAC II. Both DACs delivered

equal amounts of detail, but the Music Cable’s increased dimensionality located small details more incisively within the soundstage. Harmonic balance differences were miniscule, with the Music Cable delivering a slightly more relaxed and less mechanical presentation.

To see how much the source quality had to do with the sonic differences I heard, I did additional listening tests using the Lexicon RT-10 transport. Once more the Music Cable got the S/PDIF output, but this time the Wyred4Sound got an AES/EBU signal feed. Based on my tests when I reviewed the RT-10 many moons ago, the AES/EBU was the RT-10’s best-quality digital output. Once more the Music Cable produced its usual remarkably three-dimensional soundstage. But unlike the first test, here the Wyred4Sound’s soundstage wasn’t left as far behind—in fact on some material such as the MA recordings *Wolfgang Amadeus Mozart—Works from His Golden Age—Yoko Kaneko: Fortepiano* I was unable to distinguish between the two DACs in matched-level tests. As a control I also listened to the analog output from the RT-10. After I reduced its output to match the two DACs output levels I was surprised to find how close it came in performance. Only in depth recreation did the Music Cable deliver noticeably superior results. On another MA Recordings release, *Nima Ben David—Resonance*, all three conveyed the same excellent transient response and immediacy of Ben David’s viola de gamba. But the Music Cable preserved the best sense of depth and room bloom. The Wyred4Sound DAC II made the room seem slightly smaller, as if the back wall had been moved forward by ten or fifteen feet. The Lexicon RT-10 had the least depth, but wasn’t too far behind the Wyred4Sound DAC II.

EQUIPMENT REVIEW - Four DACs from \$699 to \$3600

On some material I couldn't hear any discernable sonic differences between the Synergistic Research Research Music Cable and the Wyred4Sound DAC II—specifically Kelly Joe Phelps' *Brother Sinner & the Whale*. Both DACs did a superb job of capturing the grit in Kelly Joe's voice without adding any electronic grain or grit to the sound. Both also preserved the subtle dynamic nuances of Kelly Joe's fingerpicked resonator-style acoustic guitar. Finally, both DACs provided an equal number of spatial cues and the same degree of precise lateral focus.

For a third round of A/B CD-source tests I used my own live concert recordings of the Boulder Philharmonic, down-sampled from DSD to a Red Book 44.1/16 CDR. Once more the Music Cable displayed the best spatial reproduction. The soloists in the Brahms Double Concerto for Violin and Cello were more firmly anchored in space and had a greater feeling of solidity and mass through the Music Cable than from the Wyred4Sound DAC II.

For my last listening tests I went back to the Squeezebox Touch, but with higher-resolution 96/24 and 192/24 music files (yes, the Squeezebox Touch supports 192/24 with the addition of a third-party app, available directly from the Squeezebox's own internal menus). I used the same Boulder Philharmonic recording, but this time it was only down-sampled to 96/24 and 192/24. Again the Synergistic Research Music Cable created a more convincing and dimensional soundstage. On the Frank Zappa composition, "Be-Bop Tango," recorded in 2010, the Music Cable's superior depth recreation was readily apparent, especially during the contrapuntal final passages when the music became rock-n-roll

frenzied.

For 192/24 sources A/B comparisons I had to do a manual disconnect, and reconnect the S/PDIF cables from the back of the Squeezebox Touch because the TosLink connection doesn't support 192 (96k limit). While this was less than ideal due to the lag-time during the changeovers, I still found that the Synergistic Research Music Cable DAC had slightly better depth recreation. The difference was not as pronounced as when the Wyred4Sound was getting a TosLink feed, but it was still noticeable.

Is a Music Cable in Your Future?

If you've read this far, obviously you're interested in the Synergistic Research Music Cable. And despite its ergonomic limitations, with only one non-switchable input, no volume adjustments, single-ended-only analog outputs, and five separate fairly stiff cables to manipulate in an orderly manner, the Music Cable's sonic performance sets it apart from any "convenience" DAC I've heard.

As I wrote earlier, I can easily see the Synergistic Research Music Cable DAC attached to a music server to form the front end of an ultra-modern high-performance music-reproduction system. Even coupled to the modestly priced Logitech Squeezebox Touch the Synergistic Research Music Cable produces a level of audio quality that emphatically checks all the audiophile boxes in double-black magic marker. If you want to keep it simple *and* high-end, the Synergistic Research Music Cable DAC may be all you really need. **tas**



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NAD C 446 Digital Media Tuner

How NAD Saved My Radio

Neil Gader



News. In fact, there was a time when no self-respecting audio system was considered fully dressed without a good tuner. Lamentably you don't hear a lot of chatter about FM/AM radio anymore. In spite of some marvelous programming it's become a victim of portable digital media, downloads, and satellite services—essentially relegated to the car, and counted on mostly for traffic reports and talk radio. Still I remain a stalwart. As does NAD Electronics, which to its everlasting credit remains one of the few high-end electronics companies that hasn't turned its back on this admittedly shrinking segment of the market. Its latest effort, the C 446 Digital Media Tuner, continues the tradition; yet it does so with a considerable and calculated twist over the traditional tuner.

Nifty, Thrifty, and Thorough

The \$800 NAD C 446 is, indeed, an FM/AM tuner, but as part of its mission as a Digital Media Tuner it also gives you access to the near-infinite world of Internet radio, plus the ability to stream a music library from network storage devices, and most

significantly to wirelessly stream from a computer, Android phone, Apple iOS device, or network hard-drive using Universal Plug-and-Play (UPnP). As is the norm today, wireless streaming is limited to conventional 16-bit/44.1kHz resolution.

The C 446 offers support for many popular digital formats including WAV, AAC+, and FLAC, and outputs them via its 24-bit/192kHz DAC. Other features include the ability to digitize FM/AM for output as S/PDIF and a front-panel USB input for thumb-drive playback. The C446 also supports cloud music services so that you can access your music library from multiple devices. Adding NAD's optional IPD 2 Dock permits iPod/iPhone docking/charging via a back-panel input. About the only thing the C 446 doesn't have is a USB DAC—even a company as resourceful as NAD has budgets to meet after all. But don't fret; NAD wasn't napping. NAD has several USB-DAC solutions that can always be added down the road. Even so, the C 446 is a veritable digital crock-pot for music delivery.

Visually the C 446 is definitely NAD—minimalist, elegant, and carefully laid out for ease of setup and control. The large central LED screen is readable even from a modest distance. The back panel is clearly organized, and the remote control is well laid out and intuitive. Kudos to NAD's pictorial Quick Start guide, which goes a long way toward reducing the connection jitters. It calmly walks networking-phobes like yours truly through wireless or wired Internet setups, and believe me I'm a fumbler. Windows users have it easy, since UPnP is built into that OS. For Mac users it's slightly more complicated. Recognizing this, NAD has partnered with Twonky.com as its UPnP client. A quick download from the Twonky site, some legwork in the C 446 set-up menu to create a wireless handshake, and, *voilà*, a familiar fully searchable music library with full playlists appears on the front-panel display. All in all, a relatively straightforward setup. Not as elegant or foolproof as Micromega's iTunes-based AirStream

technology—the Cadillac of its kind—but to be fair the C 446 is a fraction of the Frenchman's cost. Tip: Keep in mind that it's not a bad idea to compile music playlists with material in formats that the C 446 can decode. It won't do AIFF, for example.

Turning to tuner performance, channel selectivity was very good and noise was minimal on all but the weakest stations. Even without a signal-strength meter, it was easy to get a good lock on most stations. The memory feature is useful particularly if you don't want to start all over again spinning the tuning knob. I wish there were a scan feature, or that the numerical keypad could be used to locate stations via their identifying call numbers, but never mind. Channel separation and signal-to-noise were perceivably very good, and more than competitive in this price range. Being a big fan of dedicated tuners like the superb Magnum Dynalab MD106T (Issue 152), I was more than impressed with the immediacy and the smooth, almost buttery musicality of the C 446. On one of my favorite classical stations it threw a wide and vivid soundstage, with solid dimensionality, nicely resolved images, accurate timbre, and a spirited sense of air and hall ambience. Keeping in mind that the FM radio standard has its own well-known limitations in bandwidth, the C 446 did a good job minimizing these shortcomings. In head-to-head comparison with compact-disc playback, the most obvious shortcoming of tuner reproduction will be a truncation of dynamic range. While low-level resolving power is enough to keep you on the edge of your seat, larger dynamic swings lose some energy. In order to maximize performance, a decent antenna is key—an omni rooftop or attic unit like Magnum's reasonably priced ST-2 whip-pole model. You'll likely realize that there's more life left in the venerable tuner than you thought.

EQUIPMENT REVIEW - NAD C 446 Digital Media Tuner

But of all the tools in the C 446's digital arsenal, wireless is the star. Its performance was nothing short of startling over my home network. Startling in this context is that wireless has come to mean more than merely unwired convenience. It's become a performer. The C 446 joins this group. And I say this after spending considerable time with the Micromega's AirDream technology. Like the Micromega, the NAD sonically rivaled compact-disc sources as well as a couple of USB DACs that I had on-deck for review. Key among its performance virtues is how it sheds some of the unyielding hardness I hear in average digital and replaces it with a more supple and I think more natural expression of transient attack. It has a liquidity that I normally regard as the territory of more expensive digital reproduction. Low-level resolving power was very good as well, as I noted during Judy Collins' cover of Jimmy Webb's "The Moon is a Harsh Mistress" from *Judith* [Elektra]. On this track there is an underlying resonance from the accompanying cello that is expressed as if just "under its breath." But in this instance it was distinct and the instrument was reproduced with its full character. Equally informative were the clarity and warmth of the solo violin on this cut. During *Appalachian Spring* [Reference Recordings], the delicate opening segment and the thematic burst of strings were uncongested and open, with a soft lilt in the upper register that seemingly lifted harmonics upward on a bed of air.

There is a small subtraction of transparency that lightly veils the music. The rendering of spatial cues, of hall boundaries, of specific image placement is just a little more ephemeral than the AirDream or Lindemann USB. In addition,

a light amount of granularity seeped into the brass section during *Fanfare For The Common Man*. Also, as I listened to the harmonics of Evgeny Kissin's heavy trills on the concert grand it seemed to me there was a very small bit of smudging. The same track from the compact-disc version was decidedly better defined. Yet the CD was also something of a trade-off, as the disc had a drier, more brittle signature, a trait that can itself create an impression of greater definition. So, yes, I still have some minor quibbles, but wireless is definitely moving into primetime.

The C 446 Digital Media Tuner is a rewarding component that fills a critical gap seen in many audio systems today. Straddling two worlds, it's something old and something new from the company that seems to intuit a market's sweet spot. The NAD is a welcome addition in a rapidly changing audio landscape. **tas**

SPECS & PRICING

Outputs: Analog on RCA, S/PDIF on TosLink

Interface: Ethernet, Wi-Fi

Dimensions: 17.1" x 4" x 13.5"

Weight: 10.25 lbs.

Price: \$800

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Oppo BDP-105 Universal/Blu-ray Player and DAC

Gives “Flexible Flyer” A Whole New Meaning

Chris Martens



In recent years Oppo Digital has followed a simple recipe for success: Just build universal disc players that offer greater versatility, more audiophile-friendly features, and more sensible pricing than the competition does, and then give them decisively better sound and picture quality than their peers. Naturally, this laudable goal is a lot easier to describe on paper than it is to achieve in the real world, but Oppo has made good on its promises, year after year and player after player, in the process earning a reputation as the nearly automatic “go-to” source for players that will satisfy discerning music (and movie) lovers on a budget.

Historically, many of Oppo’s most popular players have sold for around \$499. But with the 2011 release of its BDP-95 universal/Blu-ray player (\$995), the firm began to explore a more upscale market. What set the BDP-95 apart was that it was not merely a “hot-rodged,” sonically tweaked version of a standard Oppo player; rather, it was a unique, dedicated high-end model

with a distinctive configuration all its own.

The award-winning BDP-95 sounded remarkably good both for its price and in a broader sense. Never a company to rest on its laurels, however, Oppo has recently announced the successor to the BDP-95; namely, the BDP-105 (\$1199)—a player that promises to do everything its predecessor could do and then some.

Like its predecessor, the BDP-105 can handle virtually any format of audio or video disc, including Blu-ray Video, Blu-ray 3D, DVD-Video, DVD-Audio, SACD, CD, HDCD, and more. But with the BDP-105 the universality theme doesn’t end with disc playback because the new player is also designed to serve both as a network-streaming player *and* as a multi-input high-resolution DAC (complete with asynchronous USB).

To really “get” what the BDP-105 is about, think of it not so much as a powerful multi-format disc player (although it is that and more), but rather as a multi-function digital media playback hub whose bag of trick includes, but is in no way limited to, disc playback. In practical terms, this means the BDP-105 neatly resolves debates about whether it is better to listen to discs, to stream content from the Internet, or to enjoying audio files stored on computers, because it can quite happily do all of the above.

The BDP-105 comes housed in an all-new steel chassis said to be significantly more rigid than the chassis used in previous Oppo players (including the BDP-95), and it benefits from a fan-less architecture, meaning all internal components are convection-cooled (most previous Oppos required fan-cooling). Do such seemingly small detail changes like a more rigid chassis or a fan-free design make for meaningful sonic improvements? My opinion, based on extensive

EQUIPMENT REVIEW - Oppo BDP-105 Universal/Blu-ray Player and DAC

comparisons between the BDP-105 and 95, is that they do. Specifically, the new player offers a noticeably more solid and “grounded” sound with quieter backgrounds, improved resolution of low-level transient and textural details, and superior three-dimensionality.

Moving on, the BDP-105 uses a beefy toroidal power supply and provides both 7.1-channel analog audio outputs plus two separate sets of stereo analog outputs (one single-ended and the other fully balanced). Interestingly, the BDP-105 (like the BDP-95) features not one but rather *two* costly 8-channel ESS Sabre32 Reference DACs, one to feed the 7.1-channel outputs and the other to feed the two sets of stereo outputs. ESS's Sabre32 Reference DACs are used in some very pricey components, making it impressive that Oppo fits two of the devices into its sub-\$1200 player.

Another new touch is that the BDP-105 provides a built-in headphone amp that runs straight off one of the player's ESS Sabre32 Reference DACs. While the headphone amp offers relatively modest output, it has the undeniable benefit of being fed directly from one of the Oppo's ESS Sabre32 Reference DACs, so that it gives listeners an unusually pure, uncluttered, intimate, and up-close perspective on the music (precisely what you would want for monitoring applications, for example). I found the Oppo headphone amp had more than enough output to drive moderately sensitive headphones such as the HiFiMAN HE-400s or PSB M4U1s, though it might not have sufficient “oomph” for more power-hungry top-tier 'phones (for instance, the HiFiMAN HE-6).

While the original BDP-95 offered a reasonable range of Internet-content options and could play

digital audio files from USB storage devices or eSATA drives, it was never set up to function as multi-input playback device or as a high-resolution audio DAC. The 105 changes all this by offering a greatly expanded range of general-purpose inputs, including two HDMI inputs (one that is faceplate-accessible and MHL-compatible) and three USB 2.0 ports (one that is faceplate-accessible). Moreover, the BDP-105 also provides three dedicated DAC inputs: two S/PDIF inputs (one coaxial, one optical), plus one asynchronous USB input. Finally, to complete the connectivity picture the new player provides both Ethernet and Wi-Fi network connections implemented, respectively, through a rear panel-mounted RJ-45 connector and a handy USB Wi-Fi dongle.

To take full advantage of these network-connection options, the BDP-105 offers DLNA compatibility, complete with support for DMP (Digital Media Player) and DMR (Digital Media Renderer) protocols. In practice, this means the BDP-105 can access audio, picture, and video files stored on DLNA-compatible digital media servers (that is, personal computers or network-attached storage devices) that share a common network with the Oppo within your home.

From this technical overview, you can see that the BDP-105 is an extraordinarily flexible source component, but for most audiophiles the key question is, and always will be, “How does it sound?” Let's focus on that question next.

From the outset, the BDP-105 struck me as being a very high-resolution player—one that made child's play of digging way down deep within recordings to retrieve small, essential pieces of musical information that helped convey a sense of realism. To hear what I mean, try the

track “O Vazio” from the Jim Brock Ensemble on *Jazz Kaleidoscope*—a sampler disc (in HDCD format) from Reference Recordings. Throughout this track the Oppo did a stunning job of rendering the distinctive attack and action of each of the instruments in the ensemble (accordion, bass, drum kit, guitar, trumpet, winds, and other more exotic percussion instruments), giving them a commanding sense of presence with precisely focused placement within a wide, deep, three-dimensional soundstage. In particular, the 105 showed terrific speed and agility on the leading edges of notes (especially on the drums), rendering them with the sort of clarity and impact that reminded me of the sound of far more costly players.

Another song from *Jazz Kaleidoscope*, “Jordan” from the Brock/Manakas Ensemble, contains a brief, quiet passage that reveals another important aspect of the BDP-105: namely, its impressive ability to maintain focus and resolution even when playing at very low levels. After the introduction of the song, which lasts about 35 seconds, the music comes to a dramatic pause that eventually is broken by the extremely faint sound of a cymbal (or small gong?) gently introducing the rhythmic pulse that will supply a heartbeat for the rest of the song. At first, the cymbal is heard so softly that its sound barely rises above the noise floor, yet even so the Oppo gets the sound of the instrument right, preserving all the essential elements of attack, timbre, and decay. This uncanny ability to resolve very-low-level musical information enables listeners to here all the little interactions between instruments and the acoustic spaces in which they are playing. While the original BDP-95 did a fine job in this respect, I would say the BDP-

SPECS & PRICING

Disc types: BD-Video, Blu-ray 3D, DVD-Video, DVD-Audio, AVCHD, SACD, CD, HDCD, Kodak Picture CD, CD-R/RW, DVD-R/RW, DVD-R DL, BD-R/RE

Internal storage: 1GB

Inputs: Three USB 2.0 inputs (one faceplate accessible), two HDMI inputs (one faceplate accessible and MHL compatible), three dedicated DAC inputs (one coaxial, one optical, and one asynchronous USB), one Ethernet port (RJ-45), one Wi-Fi port (via USB dongle)

Outputs: One 7.1-channel analog audio output, two stereo analog audio outputs (one set balanced via XLRs, one set single-ended via RCA jacks), two digital audio outputs (one coaxial, one optical), two HDMI outputs (can be configured for video output on one port and audio output on the other), one headphone output

DAC resolution: (USB Audio) 2 channels @ 192k/24b PCM, (Coaxial/Optical) 2 channels @ 96k/24b

Dimensions: 16.8" x 4.8" x 12.2"

Weight: 17.3 lbs.

Price: \$1199

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EQUIPMENT REVIEW - Oppo BDP-105 Universal/Blu-ray Player and DAC

105 sounds better still.

The voicing of the BDP-105 is generally neutral, with taut, deep, and well-controlled bass, transparent mids, and revealing, extended highs (highs that can, however, expose mediocre recordings for what they are). Pleasing though the Oppo can be, some might find it a bit lean-sounding compared to the deliberately warmer-sounding offerings on the market. If you prefer components that give a voluptuous musical presentation then the Oppo might not be your cup of tea, but if sonic honesty and neutrality are your things you should get on very well with it.

Let me expand on my voicing comments by pointing out that the BDP-105 needs a *lot* of run-in time to sound its best (some say as much as 200 hours or more). As playing time accumulates, traces of leanness and austerity gradually melt away, thus enabling the player to reveal a smoother, more full-bodied, and more forgiving sonic persona.

If you buy the notion that some source components try for a softer, smoother, and thus ostensibly more “musical” presentation, while others aim for maximum musical information retrieval, then I would say the Oppo falls squarely in the information-retrieval camp (as do a great many other high-performance solid-state players). Thus, tonal colors are rendered vividly through the Oppo, but without any exaggeration or oversaturation, so that there is nothing artificially sweetened, enriched, or “glowing” about the 105’s sound. Instead, the Oppo is one of those rare “what you hear is what you get” sorts of players, whose primary mission is to tell you how your discs or digital music files actually sound, which in my book can be a beautiful thing.

As a disc player, the BDP-105 is more than good enough to show in palpable ways that well-recorded SACDs really do sound better than their equivalent CDs (there’s greater smoothness and ease with SACDs, and simply more “there” there, so to speak). But as a DAC, the Oppo really comes into own, sounding much like it does when playing discs, but with subtly heightened levels of tonal saturation and warmth that make the music more engaging and intense.

Are there caveats? Apart from the extensive run-in requirements noted above, I can think of only a few. First, the BDP-105 is an inherently complex product that—at the end of the day—is simpler to navigate and control when it is connected to a display screen. Second, the player’s sound is so unashamedly refined and sophisticated that you may feel inspired (if not compelled) to use top-tier interconnect cables that will wind up costing more than the player does. But trust me on this one: The Oppo’s worth it.

If ever a product deserved to be considered the Swiss Army knife of digital media playback, the BDP-105 is the one. Whether you choose it for multi-format disc playback, for network-streaming capabilities, or to use as a DAC at the heart of a computer-audio system, the BDP-105 will consistently serve up levels of sonic refinement and sophistication the belie its modest price. Enthusiastically recommended. **tas**



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Wadia 121 Decoding Computer

Trickle-Down Technology

Steven Stone



Upon first look it's easy to see the Wadia 121's resemblance to other components in Wadia's "mini" line, including the 171i i-Pod dock and 151 PowerDAC. Like these other components, the 121 was designed for use in a computer-audio system where it functions as a digital preamp, DAC, and headphone amp. The 121 has multiple digital inputs for AES/EBU, S/PDIF (both coaxial and BNC), TosLink, and USB 2.0. It includes two sets of analog outputs—one set of single-ended RCA and one set of balanced XLR. The 121 also has a 1/4" stereo headphone output with its own separate amplifier and power supply on the front panel.

All control functions on the Wadia 121 are operated via its remote. In fact, without the remote there's little you can do with the 121 since it has no buttons, switches, or knobs on its front (or rear) panel. Only indicator LEDs and the headphone jack populate the faceplate of the 121. With no controls on the front panel, the unit is inoperable if you lose your remote. So, don't lose your remote.

The Wadia 121 is a completely digital device with no analog inputs. It uses a 32-bit digital volume control, so all attenuation is also done in the digital domain. Every digital volume control will truncate bit-length (and musical data) if it is used at its very lowest settings. To reduce this effect the Wadia's maximum output level can be adjusted from 4.0V down to 2.0V or even 1.0V, so that at normal listening levels the volume control can be set near its maximum level. On my desktop the 1V setting (using the balanced XLR outputs) was just right.

Since both analog outputs are active simultaneously, hooking up a subwoofer is as easy as connecting a pair of RCA cables between the 121 and the sub. If you require a second, independent line-level output, you can use the front-panel headphone jack. Like many DAC/preamps with headphone jacks on the front panel, when you plug in a headphone the line-level outputs on the back of the unit are muted. But the Wadia goes one better than most DAC/preamps because the 121 stores and remembers the separate volume settings for the headphone and line-level outputs. This prevents the dreaded "Honey, I just blew out my ears when I plugged in my earphones" syndrome.

The Wadia 121 supports up to 192/24 PCM files via its AES/EBU, S/PDIF, and USB inputs. For Mac users the USB input is plug and play, but

for PC owners a new driver must be installed to support USB 2.0 capabilities. Whether Windows 8 will support USB 2.0 via built-in drivers is yet to be seen. On a Mac, if you open up the MIDI control panel you will see the Wadia 121 listed as "Wadia USB Audio 2.0." Under "Clock Source" the control panel reads "Wadia Internal Clock." This last bit of info corroborates the presence of Wadia's internal asynchronous USB clocking. Combined with its proprietary "DigiMaster algorithm and filtering technology" Wadia claims "jitter-free playback" from all digital music sources.

In lieu of a detailed technical description of the 121, I asked Wadia's John Schaffer a series of technical questions about the 121. You'll find his detailed answers in a separate Q&A box.

What a 121 Does

For most of the review the Wadia 121 was tethered to my Mac Pro desktop computer via USB. I also employed several outboard USB-to-S/PDIF converters connected to the 121's S/PDIF inputs. I used both sets of analog outputs, the balanced pair for my speaker amps and the unbalanced pair going to the subwoofer and a Stax headphone amplifier.

During the review the Wadia 121 proved to be stable and reliable. My Mac Pro never had any connectivity issues upon wake-ups or reboots. The only operational glitch I noticed with the Wadia 121 was a high sensitivity to static electricity. Merely getting up from my desk chair and walking several steps and then returning to my desk was sufficient to generate a click from the 121's relays when I touched my keyboard, headphones, or the Wadia itself. Sometimes, if music was playing, the static was sufficient to cause a momentary gap in the playback.

Given that winter in Colorado is a fairly dry, high-

EQUIPMENT REVIEW - Wadia 121 Decoding Computer

static environment, and the fact that the static discharges never caused anything more than momentary dropouts, I doubt most users will experience a similar problem. But if you do have static build-up issues, a static drain pad next to your computer will eliminate this problem.

How a Wadia 121 Sounds

Given the current state of the art in DACs, expecting a particular current-generation DAC to have a strong “sonic personality” that varies substantially from neutral is an exercise in futility. That doesn’t mean that all DACs now sound the same, but the sonic variations between them, especially when given a signal with identical jitter and time-domain characteristics, is certainly far less than it was even a scant few years ago.

The first listening sessions I performed with the Wadia 121 were to compare its USB implementation with that of an outboard USB-to-S/PDIF converter box. I used both the Empirical Audio Off-Ramp 5 with the Short-Block USB filter and the Human Audio Tabla USB converters and found that the three USB streams did sound slightly different through the Wadia 121. My preference was the Off-Ramp 5/Short Block combo, which consistently produced a slightly deeper and better defined soundstage. On the Punch Brothers’ latest CD *Ahoy!* Chris Thile’s Gibson Lloyd Loar mandolin’s characteristic tonality and dynamic verve

came through with the least amount of electronic grain with the Off-Ramp. The Tabla and Wadia’s own built-in USB implementation were virtually identical, and they were a very close second to the Off-Ramp, lacking only the smallest amount of spatial precision and detail in comparison.

Obviously one of Wadia 121’s prime competitors is the Wyred4Sound DAC 2 (\$1495), so for my next A/B test I connected two USB feeds from the Empirical Audio Off-Ramp to these two DACs and listened to the results. Since the Off-Ramp doesn’t have two identical S/PDIF outputs, I gave the Wadia the RCA S/PDIF and the Wyred4Sound got the AES/EBU and I²S connections. After several days of matched-level A/B tests (and switching USB inputs) I was forced to conclude that when fed the same signal from the Off-Ramp, the two DACs sounded virtually identical. The only time I heard a discernable difference between the two DACs was when the Wyred4Sound was fed the I²S while the Wadia got the S/PDIF. I felt that the Wyred4Sound with I²S had slightly better edge definition and the trailing edges of transients seemed to be more distinct.

But just because these two DACs sounded alike when fed the same signal doesn’t mean they sounded indistinguishable. When I A/B’d the two DACs’ own built-in “native” USB implementations I preferred the Wadia 121. It had a slightly smoother and

seemingly more nuanced dimensional presentation with a less mechanical character. I noticed the differences more on classical recordings, such as Benjamin Zander’s interpretation of Mahler’s First Symphony on Telarc, than on pop or rock recordings. Both DACs had equal amounts of inner detail and musical information, but the Wadia 121 did a better job of defining each instrument’s outer edges and fleshing out its relative dimensions within the soundstage. When connected to the April Music Eximus S1 power amplifiers the Wadia 121 had almost as much detail and three-dimensional imaging specificity as the NuForce DDA-100 digital integrated amplifier, which is my current reference for these particular performance parameters.

Speaking of NuForce, its DAC-100 (\$1095) proved to be a worthy competitor for the Wadia 121. Using their native USB implementations I thought the NuForce and Wadia were extremely close in sound quality with the edge going to the Wadia 121 (using its balanced analog outputs) due to its more incisive micro-dynamics. While the two units were quite similar in sound quality, their ergonomics were different—the DAC-100 lacked balanced XLR outputs, and had only four inputs, compared to the Wadia 121’s five. Cosmetically, the Wadia looked and felt more upscale, like a miniature high-end component, while the DAC-100 looked and felt more

SPECS & PRICING

Type: DAC and headphone amplifier

Digital inputs: AES/EBU (XLR), coaxial (RCA and BNC), TosLink optical, USB B

Input data rates: 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz (up to 24 bits)

Analog outputs: One pair balanced (XLR), one pair unbalanced (RCA)

Dimensions: 2.7" x 8" x 8"

Price: \$1299

WADIA

1556 Woodland Drive

Saline, MI 48176

(734) 786-9611

wadia.com

ASSOCIATED EQUIPMENT

Source Devices: MacPro model 1.1 Intel Xeon 2.66 GHz computer with 16GB of memory with OS 10.6.7, running iTunes 10.6.3 and Amarra 2.4.3 music playing software, Pure Music 1.85 and Audirana Plus 1.35 music-playing software

DACs: Weiss DAC 202, April Music Eximus DP-1, Wyred4Sound Dac2, Empirical Audio Off-Ramp 5, Human Audio Tabla USB converter,

Amplifiers: Parasound A23, Bel Canto M-300, April Music Eximus S-1, Accuphase P-300

Loudspeakers: Aerial Acoustics 5B, ATC SCM7s, Silverline Minuet Supremes, Quad 11Ls, Role Audio Kayaks, Velodyne DD+ 10 subwoofer

Headphones: Sennheiser HD 600, Grado RS-1, Ultimate Ears Reference Monitors, Beyer DT-880 (250 ohm), Audio-Technica ATH-W3000ANV, HiFiMan RE-272 in-ear monitors, Audio-Technica AD-900, Sol Republic Tracks HD, B&W P3, Etymotic Research ER-4P, Shure SRH-1440, Stax SR-5, Stax Lambda Pro, Stax SRM-1 Mk II

Cables and Accessories: Locus Design Polestar USB cable, Locus Design Nucleus USB cable, Wireworld USB cable, Synergistic Research USB cable, PS Audio Quintet, AudioQuest CV 4.2 speaker cable, AudioQuest Colorado interconnect, Cardas Clear interconnect, PS Audio PerfectWave I²S/HDMI cable, Crystal Cable Piccolo interconnect, and Audioprism Ground Controls

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EQUIPMENT REVIEW - Oppo BDP-105 Universal/Blu-ray Player and DAC



budget-constrained in comparison.

Since Wadia devoted so much effort to designing and then tweaking the 121's headphone amplifier section, I spent quite a bit of time listening to it through a wide range of earphones so that I could, in the words of TAS's founder, "Take a full measure of its greatness." Even with the most sensitive low-impedance earbuds the Wadia's headphone amp was dead silent without any hums, whistles, or whines. It was also a very-good-sounding headphone amplifier. Compared to the FiiO E17 portable headphone amplifier (\$150) the 121's headphone output was more robust with greater dynamic contrast, warmth, and inner detail.

To find a worthy sonic competitor for the Wadia 121's headphone amplifier I had to move up in price to the new IFI Micro iCAN from Abington Musical Research (\$249). With both the Beyer DT-880 and Ultimate Ears In Ear Reference Monitors the Wadia 121 came out on top, but not by much. The Wadia created a slightly larger soundstage

and had better dynamic contrast than the IFI amp.

To find a superior headphone amplifier I had to go to the headphone amplifier inside the April Music Eximus DP-1 (\$3495). But when you listen to the Wadia's headphone amplifier by itself, without the A/B comparisons, it's hard to fault its presentation.

121 and Counting

In my recent DAC survey in Issue 223 I noted that the \$1000-to-\$1500 arena has become one of the most hotly contested segments of the market for USB DACs. The Wadia 121 further complicates a potential purchaser's buying dilemma by adding one more excellent DAC/pre to the competition. While I can't say that the Wadia "blows away the competition," I can state confidently that few, if any, potential purchasers will be disappointed by the 121's sonics or ergonomics. I know that I could happily live with the Wadia 121—it's that good.

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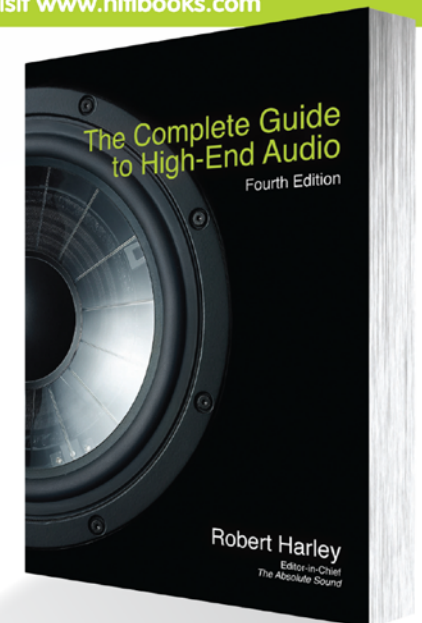
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EQUIPMENT REVIEWS

Headphones



A Survey of Six High-End Headphones

Alternate Paths to the Sonic Mountaintop

Chris Martens

Over the past several years, growing numbers of serious music lovers have turned to top-tier headphones either as their primary listening devices or as complements to more traditional in-room high-end audio systems. There are more complex factors driving this movement than can be summarized here, but among them are a desire to enjoy high-end sound on a 24/7 basis without disturbing neighbors or family members, and a craving for the powerful, intimate, and profoundly revealing musical presentations that today's best headphone-based systems afford.

High-end headphones are also attractive from the standpoint of value. Many audiophiles appreciate (indeed covet) top-tier loudspeaker-based systems, but simply cannot afford them. For those enthusiasts, headphone-based systems offer viable alternate paths to the sonic mountaintop at far more manageable prices.

While top-tier headphones aren't necessarily for everyone, they offer so many compelling benefits that we thought it would make sense to introduce the wider TAS audience to the headphones that in our view represent today's *crème de la crème*.

In this survey, we will discuss three types of high-end headphones: dynamic-driver, planar magnetic-driver, and electrostatic headphones. We will review the basic technologies used in each type and then offer mini-reviews of representative top-tier models.

Dynamic-Driver Headphones

Headphones in this category use piston-type dynamic drivers conceptually similar to the drivers used in many loudspeakers. One huge difference, though, is that headphones typically use single full-range drivers in lieu of dedicated woofers, midrange drivers, and tweeters. Single full-range drivers solve myriad problems in that they are inherently phase coherent and require no crossover networks—differentiators that yield significant sonic benefits.

As in the loudspeaker world, designers of high-end dynamic driver headphones are doing extensive development work to explore exotic diaphragm materials; rigid, low-reflectivity driver frames; and highly advanced and responsive driver motor mechanisms—motor mechanisms that often use incredibly powerful magnet assemblies.

There are two preferred dynamic-driver headphone configurations: closed-back designs, which are favored in studio application owing to their superior noise isolation, and open-back designs, which are prized for audiophile applications owing to their typically high levels of transparency, openness, and free-flowing dynamics. While there are certainly some very good closed-back models available, the majority of today's best-sounding high-end headphones are open-back (or quasi-open-back) designs.



will particularly appreciate the T1 Tesla.

The T1 Tesla offers two interrelated sonic qualities that together make for its greatness: almost unearthly levels of timbral purity coupled with equally exceptional smoothness and evenness of frequency response. The T1 is also remarkably free of grain, which gives a heightened sense of see-through transparency. The T1 Tesla is not necessarily a sonic “thrill ride” in the way that some headphones can be; rather, its pleasure and points of excellence are subtler in nature and take a while to register on the listener. In this respect, the T1 Tesla gives performance akin to that of certain ceramic-driver-equipped loudspeakers (albeit with a vastly more expansive dynamic envelope and very wide-bandwidth response).

Sennheiser HD-800 (\$1499)

sennheiserusa.com

The HD-800 is a statement-class, flagship model from the venerable German firm Sennheiser; it is an essentially hand-built product and looks the part in every way. Among headphone cognoscenti, the HD-800 enjoys the reputation of a headphone that is more respected than loved, for reasons I will partly address below. Measurement-oriented headphone enthusiasts, however, should note that the HD-800 produces some of the best all-around empirical test results of any top-end headphone being made today.

The HD-800 is a brilliant all-rounder that does all (and we do mean *all*) things well. Still, we would observe that there is a distinct gap between the sound of the HD-800 heard under “good” conditions and the sound of the headphone under truly optimal conditions—in fact, for discerning listeners this can be a night/day difference (hence, the “respect” vs. “love” dilemma). The

Models to Audition

Beyerdynamic T1 Tesla (\$1399)

north-america.beyerdynamic.com

The T1 Tesla is the finest headphone that the German firm Beyerdynamic makes and it earned its name by being the first (and, at its inception, the only) headphone featuring drivers whose motors offered a whopping one (1) Tesla of magnetic flux density. Headphone enthusiasts who value purity, smoothness, and inner detail

EQUIPMENT REVIEW - A Survey of Six High-End Headphones



fact is that the HD-800 almost always sounds good-to-very-good when used with a competent headphone amp, but it is also true that the HD-800 only achieves its full potential when pushed by great headphone amps (again, the difference isn't subtle). With the right amp, the HD-800 can sound spectacular—as engaging and evocative as you might ever desire, which is where “love” enters the picture.

Grado Labs PS1000 (\$1695)

gradolabs.com

The PS1000, which is hand-built in very limited quantities, is the top model from the Brooklyn-based phono cartridge and headphone specialist Grado. Grado's less expensive middle-range

'phones have won widespread critical acclaim for their vibrant and highly expressive (albeit somewhat midrange-forward) sound, and the PS1000 represents the culmination of that “house sound,” but with higher resolution, a more neutral top-to-bottom tonal balance, and exemplary extension at the frequency extremes.



A sound that is well balanced, evocative, and incredibly engaging and dynamically alive. With that said, however, we'll let you in on a secret: if you listen to the PS1000 you might think, as we did at first, that it sounds like an upgraded version of one of its less costly Grado siblings (e.g., the \$995 GS1000i or \$695 RS1i). In other words, the PS1000 at first seems to offer the ultimate extension of the Grado sound, giving good results, but results that perhaps do not quite justify its price. With a great amp, however, the picture changes dramatically, as a great amp will enable the PS1000 to “shift gears,” so that it

jumps up to much higher levels of performance than other Grado models can achieve. Hint: To hear the PS1000 at its finest, try powering it with a top-flight tube-powered headphone amp (e.g., Woo's Audio WA5-LE).

Planar Magnetic-Driver Headphones

Headphones in this category use light, responsive, full-range planar-magnetic drivers that are, conceptually, much like the drivers used in Magnepan's award-winning planar-magnetic loudspeakers (on a much smaller scale). Planar-magnetic drivers feature thin, flexible, membrane-like diaphragms upon which conductive circuit traces are arrayed (the circuit traces serve as “voice coils” of a sort). The entire diaphragm is, then, suspended in a grid-like array of magnets, where the magnets are precision-aligned relative to the conductive traces on the diaphragms. When music signals are applied, the entire diaphragm is either pulled toward, or pushed away from, the magnet array, thus producing sound.

The benefits of planar-magnetic drivers include superb responsiveness (because the membrane/conductor is typically much lower in mass than the moving parts of a dynamic driver), plus uncanny cohesiveness (because the diaphragm is driven across its *entire* surface). Much like the designers at Magnepan, designers of planar-magnetic headphones seek to increase driver performance by reducing diaphragm mass (using thin-film diaphragms and reducing conductor mass where possible) while increasing magnetic flux density (by using rare earth magnetic materials and “push-pull” magnet arrays).



Models to Audition

Audeze LCD3 (\$1945)

audeze.com

Audeze is a relatively young American company that specializes in planar-magnetic headphones and whose products have taken the high-end headphone universe by storm. The LCD3 is Audeze's flagship model and it has become a widely used reference for many audio journalists (the author included). What sets the LCD3 apart is Audeze's all-new, ultra-low-mass LOTUS driver diaphragm and “super-efficient push-pull magnet structure.” Many consider the LCD3 one of the two finest headphones now available (the

EQUIPMENT REVIEW - A Survey of Six High-End Headphones

other being the Stax SR-009, described below).

What sets the LCD3 apart sonically are its state-of-the-art bass (and no, we don't use that term lightly), astonishing levels of midrange resolution and nuance, and fast, detailed, silky-smooth highs. What is more, the LCD3 finds the elusive balance point between ultra-high-resolution, on the one hand, and musicality and natural warmth on the other. The miracle is that the LCD3 is extraordinarily revealing, yet also welcoming and engaging—never cold, sterile, or analytical. Furthermore, compared to top-tier competitors, the LCD3 is *relatively* easy to drive (an important consideration for those looking to constrain overall system costs).



HiFiMAN HE-6 (\$1299)

[hifiman.com](#), [head-direct.com](#)

HiFiMAN is a Chinese firm that specializes in high-end dynamic and planar-magnetic driver

headphones, earphones, and portable high-res music players. HiFiMAN's flagship HE-6 uses a very-low-mass thin-film diaphragm with gold conductive traces, plus what the company terms a "super efficient magnetic circuit." The HE-6 enjoys a reputation as a "must-hear" top-end model (arguably one of the three or four best headphones available), but also is recognized as perhaps the most difficult-to-drive headphone on the market. To tap the full performance potential of the HE-6, users must inevitably use *very* high-powered, high-resolution headphone amplifiers.

The HE-6 offers a neutral tonal balance, exceptional transient speed, extremely high resolution, plus a quality of musical "soulfulness." The HE-6 comes ever so close to matching the resolution of Audeze's more expensive LCD3 and does so while offering what some consider even more accurate overall timbre. Remember, though, that the HE-6 is extremely sensitive to and demanding of associated electronics. When pushed by inadequate amps the HE-6 can sound bright, edgy, and ill at ease, but with appropriate amps the headphone's sonic persona changes, becoming powerful, masterful, engaging, and at times downright majestic. Hint: To ensure "known good" results, try powering the HE-6 with HiFiMAN's beefy, high-output EF6 amp.

Electrostatic Headphones

Much like electrostatic loudspeakers, electrostatic headphones feature extremely thin, membrane-like diaphragms, to which a conductive coating is applied, with the diaphragms suspended between sets of mesh-like panels called stators. A very high bias voltage (580V in many models) is applied to the diaphragm, while an also high-



An Exemplary Model

Stax SR-009 (\$5250)

[staxusa.com](#)

For many decades the Japanese firm Stax has been the acknowledged leader among electrostatic headphone makers, so that for some headphone enthusiasts the words "Stax" and "electrostatic" seem almost synonymous. The SR-009 is the best electrostatic headphone Stax has ever made, which is saying a mouthful when you consider the legendary models the firm has produced over the years. The SR-009 offers levels of transparency and detail that beggar both description and belief, and for this reason (and others) many audio journalists consider the SR-009 the best all-around headphone in the world.

voltage push-pull audio signal is fed to the stator panels. As the audio signal flows back and forth, the diaphragm is first repelled from one stator and attracted to the other (and then vice versa as the signal swings back and forth according to the demands of the music).

The benefits of electrostatic designs include extremely good responsive and exceptional transient speed, plus typically low distortion, given that diaphragms are very low in mass and driven over their entire surface area. Electrostatic headphone designers seek performance advances by looking for ways to reduce the mass of conductive diaphragms, to increase the openness of airflow through the mesh-like stator panels, to improve the rigidity of driver frames, and to look for ways and means of better controlling diaphragm-membrane resonance.

The SR-009 is one of the most transparent and faithful-to-the-source transducers on the planet, offering mind-bending transient speed, wide-range frequency response, and both subtle or explosive dynamics on demand. As many critical listeners can attest, one does not listen to the SR-009 so much as *through* it, so that the sound one hears is governed more by the source and amplification components in use than by the headphone itself. The SR-009 is every bit as revealing of inner details and textural nuances as today's most accomplished loudspeakers, regardless of price. If \$5250 seems a huge sum to invest in headphones, consider that to reach this same zenith of performance in loudspeakers could easily cost between 10x to 30x more. Caveat: Be aware that the SR-009 will require a (typically expensive) dedicated electrostatic headphone amp to give of its best. **tas**

FEATURE

Cables



FEATURE

Affordable High-Performance Audio Cables

Chris Martens

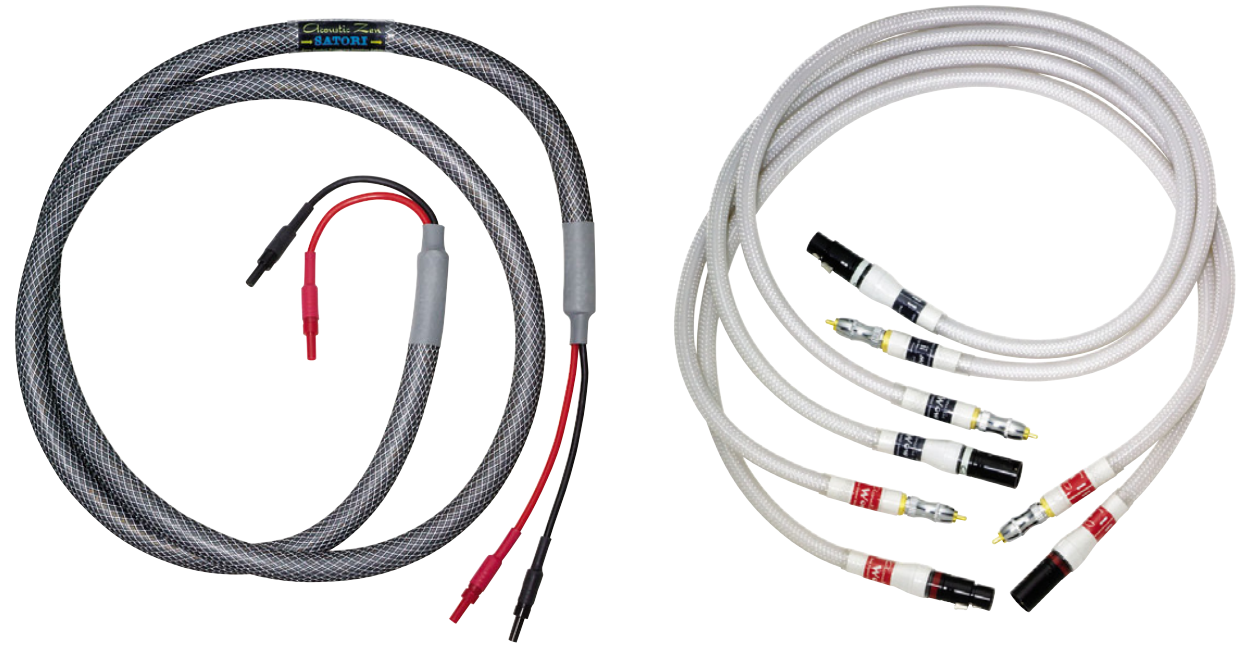
If you are a newcomer to high-performance audio you may be surprised to learn that the cables (wires) used in your audio system can have a big impact on the system's overall sound. This might, at first, seem an outlandish claim (Wires make a difference? Who knew?), but the inescapable fact is that literally thousands of practical demonstrations and listening tests have proven that cables do affect sound.

In traditional audio components, we all expect that the quality and design of internal parts such as resistors, capacitors, inductors, transistors, vacuum tubes, printed circuit boards, etc. will affect sound quality—and they do. The same is true with audio cables. The sound quality of audio cables (even digital cables and power cords) can be greatly affected by the quality and types of conductors, insulators, and connectors used, and—especially—by the precise arrangement of conductors within the cable jacket.

We hope to convey two key points. First, for those who care about sound quality, using “el cheapo” audio cables is just not a great idea—you and your system deserve better than that. Second, it pays to seek out good, cost-effective, entry-level cable sets that can help tap your system's full sonic potential. Note that the advice of a competent audio retailer will often prove invaluable; smart dealers will be happy to show you how to get maximum bang for your hard-earned bucks.

(Note: if you pick a dealer's brains for advice, please do the right thing and actually buy your cables from that dealer...).

To give you some ideas and help you get started we present, below, entry-level audio cable recommendations from a handful of time-proven manufacturers. As you shop, just remember this: wires are audio components, too.



Acoustic Zen

Acoustic Zen Technologies was founded to draw upon the most sophisticated research in the production of musically accurate sonic transmission. Acoustic Zen interconnects, digital, and speaker cables, as well as power cords are crafted using

Zero Crystal copper conductors with 6N plus purity (Continue Casting Copper) and Teflon or formed Teflon insulators. Patented Air-Twisting geometry enables the cables to exhibit extremely low capacitance and inductance. Our cables have been designed for precise musicality, extraordinary sonic dynamics, maximum acoustic transparency, and soundstage accuracy; hence, our slogan: “Music ... No compromise!”

For entry-level applications Acoustic Zen recommends **WOW interconnects (starting at \$248/1M pair)**, **Satori speaker cables (\$598/8-foot pair)**, and **Tsunami power cords (starting at \$350/6-foot)**. acousticzen.com

"...over the top. The sense of seeing through the soundstage to instruments at the back of the hall, and hearing them as separate objects rather than just part of the overall sonic tapestry, is alone worth the price of admission."

Robert Harley—*The Absolute Sound*, July, 2013



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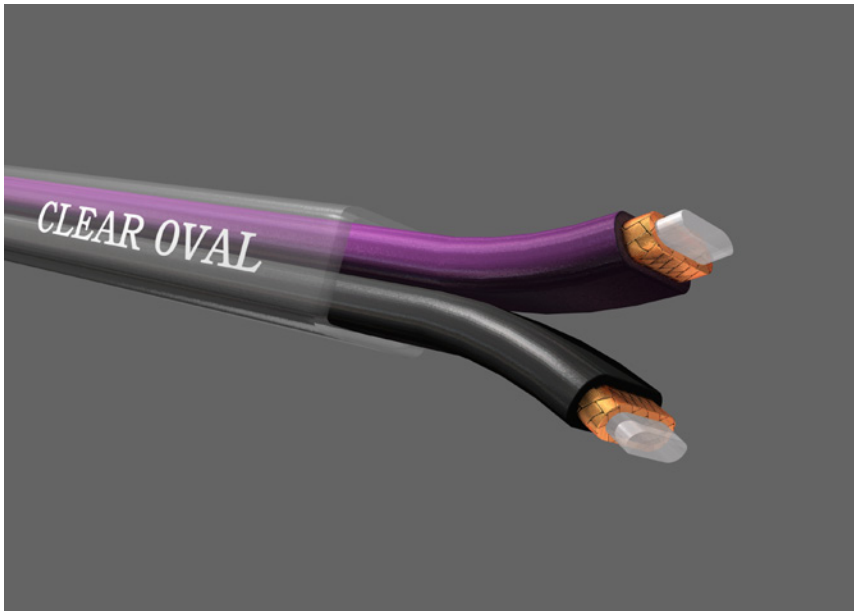


AFFORDABLE HIGH-PERFORMANCE AUDIO CABLES

Analysis Plus

Materials are important in audio cable design, but you must have the correct geometry, too (if you built a titanium Yugo, you still wouldn't have a supercar). The geometry of our patented hollow oval cable minimizes frequency effects and assures that audio signals remains unchanged from the source to the load.

Our entry-level products are giant killers. For example, our **Oval One interconnects (\$99/1M pair)** recently won first prize in a Finnish "shootout" against 30 competing cables. Pair **Oval Ones** with our **Clear Oval speaker cables with beryllium copper banana plugs (\$99/6-foot pair)** and **Pro Power Oval power cord (\$99/3-foot)** and you will have performance you would not think possible at the price. Don't take our word for it; give them a listen. analysis-plus.com



AudioQuest

AudioQuest's "Do No Harm" philosophy stipulates that better cables improve performance by minimizing distortion of the original signal through better design, materials, and precision manufacturing. All AudioQuest designs combat strand interaction, the single biggest distortion mechanism in cables. **NRG-X3 AC power cords (\$99/6-foot)** use semi-solid conductors to minimize strand distortion, while **Forest USB digital audio interconnects (\$35/1.5M)**, **Evergreen analog interconnects (\$29/1M pair)**, and **Rocket 33 speaker cables (\$269/8-foot pair)** employ solid conductors, eliminating it completely. Superior conductor metals with smoother surfaces matter because a conductor is a rail-guide for both the electric fields within a conductor and the magnetic fields outside the conductor. By optimizing geometry and conductor and insulation materials, AudioQuest's cables decrease distortion for sound that's clearer, more engaging, and more fun! audioquest.com

AFFORDABLE HIGH-PERFORMANCE AUDIO CABLES

Cardas

For entry-level audio systems Cardas suggests using its Microtwin interconnects and Twinlink speaker cables. Microtwin cable feature double-shielded, high-grade copper, Litz-configuration conductors, with cross-section dimensions based on the sacred Golden Ratio. Conductors are individually coated to eliminate oxidation and hand-terminated in our Bandon Oregon facility with Cardas-made RCA connectors.

Twinlink speaker cables feature dual 11.5 AWG Litz conductors in a twisted-pair configuration, PFA and cotton dielectrics, and are hand-terminated with Cardas-made connectors (multiple spade-lug sizes and banana plugs are available to fit virtually any amp or speaker combination). Together, Cardas Microtwin and Twinlink cables deliver high performance at a price that leaves room in the budget for more than just cable.

Pricing: Microtwin interconnects start at \$204/1M pair, Twinlink speaker cables at \$332/2M pair. cardas.com



Crystal Cable

Cables are like the highway your audio signals travel; superior materials and careful engineering create an experience that compliments your enjoyment. Although Crystal Cable is best known for its cost-no-object creations, we're pleased to offer the aspiring audiophile a new range we call Special GEM. Engineered from 6N mono-crystal copper coated with Silver and Gold for it's extraordinary conductive properties, we carefully encase these conductors in Peek/Kapton jackets known for their durability and capacity to block external interference. Your sound stage will expand and relax more like the experience of a live performance. Crystal Cable's Special GEM helps your entire system deliver the performance you've always dreamed of.

Special Gem interconnects start at \$400/1M pair, speaker cables \$850/2M pair, and power cables at \$450/1.5M. crystalcable.com

AFFORDABLE HIGH-PERFORMANCE AUDIO CABLES

Kimber

For entry-level applications, Kimber recommends a mix of its cables. First, we recommend our classic PBJ interconnects, which use a three-wire, non-shielded copper braid design with fluorocarbon dielectric. PBJ is known for holographic imaging, tight dynamics, and for highlighting central performers. Next, we suggest our 8VS speaker cables, featuring a 2 x 9 AWG, 16-wire, vari-strand copper braid, with polyethylene dielectric. 8VS is famous for control, big dynamics, and an ability to soften harsh recordings or rooms. Finally we propose our PK14 power cord, offering 14 AWG all-copper construction and Wattgate connectors. PK14 gives systems deep black backgrounds and increased tonal and dynamic range.

Kimber PBJ interconnects start at \$110/IM pair, 8VS speaker cables at \$130/8-foot pair, and PK14 power cables at \$190/4-foot cable. kimbercable.com



The More Things Change, the More Things Stay the Same



Audio Is Fragile, Audio Needs Respect

The frontier of transferring an audio signal keeps moving, the details change. However, the unchanging audio reality is that in every new application, and every way of packaging beautiful sound, audio is in danger of becoming not-so-beautiful ... unless love & respect, and good engineering & clever design, are applied at all times.

AudioQuest is proud to have been pushing the frontier of better cable design for 33 years ... through thick and thin, for analog and digital, for real-time and packetized. We share the fantasy that someday transferring audio will be fully robust and immune to degradation. In the meantime, we are very pleased that AudioQuest can make a huge difference in sound quality, whether for just a few dollars, or for the state-of-the-art.

AFFORDABLE HIGH-PERFORMANCE AUDIO CABLES



MIT

Well known as an industry leader and manufacturer of breakthrough products, MIT Cables has made its exclusive technology available in our entry-level cable family – the “StyleLine Series.”

MIT Cables’ interfaces are engineered to have multiple Articulation Poles optimized for the lows, mids, and highs. Our Poles of Articulation synergistically work together to transport the audio signal with a more even response than just a single cable, as if multiple cables are being used together.

Our Multipole Technology provides better bass, better midrange, and better highs. Make the most of your audio system with the “StyleLine Series”. **StyleLine 3 interconnects start at \$199/1M pair, StyleLine 5 speaker interfaces start at \$499/8-foot pair, and StyleLink USB digital cables start at \$79/1M. mitcables.com**

The Sound of Success

SERIES



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stunning
intensity and
power”

STEREO 6/2013,
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“Extraordinarily
revealing!”

GREG CALBI, ENGINEER
STERLING SOUND
MASTERING, NYC

“Series 7
exceeded my
expectations
in every way”

DAVID SALZ,
WIREWORLD
CEO/ENGINEER

“A huge
step
forward”

STEREOPLAY 6/13,
GERMANY



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AFFORDABLE HIGH-PERFORMANCE AUDIO CABLES

Nordost

Blue Heaven Leif Series cables represent one of the best bargains for “Entry Level Audio Systems”. They consist of the first American made HDMI, AC power, USB 2.0, and 75ohm digital cables with Micro Mono-Filament technology. All Blue Heaven cables, including tonearm, interconnect, and speaker cables, are constructed with high-quality gold-plated connectors, solid core 99.9999 Silver-plated OFC conductors, fully shielded braid, and Nordost’s proprietary high-performance FEP internal insulation. This reduces dielectric properties, increasing signal speeds, deepening bass, neutralizing midrange, and cleaning highs for a captivating 3-dimensional soundstage. For best results use a complete loom of Blue Heaven cables throughout the system.

Pricing: Blue Heaven Leif Series HDMI, \$349/1M; AC power, \$209/1M; USB 2.0, \$249/1M; 75Ohm digital, \$199/1M); tonearm, \$399/1.25M; interconnect \$334/0.6M; and speaker, \$524/1M. nordost.com



Siltech

For 25 years Siltech audio cables have been engineered and fabricated in Holland and are regarded as among the world’s finest. Recognizing the superiority of high-purity silver and gold as conductors, Siltech has long used these materials in its top-tier, cable families. However, these materials have been prohibitively expensive for use in entry-level cables ...until now.

Using single-molecule 6N mono-crystal copper coated with 6N silver and gold, we have created a more affordable alternative conductor that remains stable over time (unlike competing copper-based solutions). This new conductor material, which we sheath in durable Peek/Kapton jackets, forms the basis of our entry-level (but extremely high performance) Explorer-series cables.

Explorer interconnects start at \$500/.75M pair, speaker cables at \$1000/2M pair, and power cables start at \$600/1.5M. siltech.com

AFFORDABLE HIGH-PERFORMANCE AUDIO CABLES

Synergistic Research

Synergistic Research just launched a new value performance line of cables called CORE Series, that feature awarding winning technologies like Active Shielding with Silver and Grey Enigma Tuning Circuits on SE models (tuning circuits let you tailor the cable's sound to best match your system). Also included is our exclusive 2-million volt conditioning process for more open holographic sound. Designed to compete with cables two to three times their price, CORE Series cables deliver no-compromise performance at prices that won't break the bank. CORE Series cables are sold with a 30-day no risk money back guarantee.

CORE Series interconnects start at \$245/1M pair, speaker cables at \$395/8-foot pair, digital cables at \$195/1M (RCA), Active USB and Ethernet at \$345/1M, and AC power cords at \$250/6-foot. synergisticresearch.com



Transparent Cables

Transparent has four affordable, upgradeable* cables for entry-level audio systems: The Link interconnects, The Wave speaker cables, Performance USB cables, and Performance PowerLink power cords.

*All products are upgradeable to higher performance levels in the Transparent line-up for not much more than the difference in cost between the trade-in cable and the upgrade cable.

Transparent's noise-reducing network, cabling, and shielding technologies developed for Transparent's ultimate OPUS Series trickle down to these entry-level cables to provide a level of performance that exceeds expectations. =

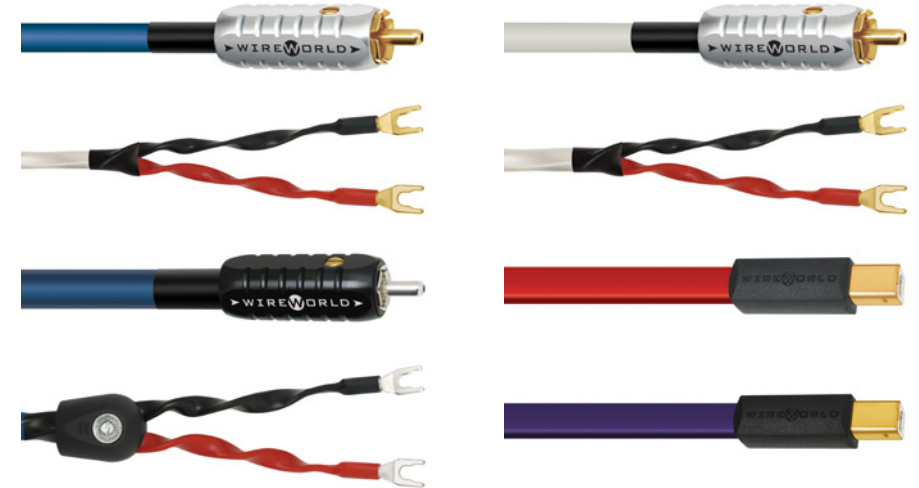
Transparent's intent is to connect first time customers with a great entry-level audio system that leads to a lifetime of listening enjoyment and musical exploration means these award winning, hand built, products must represent extreme performance per dollar spent. **Prices start around \$100.** transparentcables.com

AFFORDABLE HIGH-PERFORMANCE AUDIO CABLES

Tributaries

Tributaries Series 8 cables provide exceptional performance at a reasonable price. Designed by Jay Victor, the Series 8 Cables are engineered using multiple gauges of Long-Crystal Oxygen-Free Copper (LC-OFC) individually insulated and wound in a proprietary configuration. This design ensures a transfer of signal that is musical with a smooth frequency balance, low noise floor and a depth of inner detail. The result is music that is life-like and open with a strong, focused image and balanced sound stage. Series 8 interconnects are available in single-ended or balanced versions, while speaker cables are offer in bi-wire or standard 2>2 formats. Digital, Video or subwoofer cables are also available.

Series 8 interconnects start at \$305/2M pair (RCA) and speaker cables at \$670/6-foot pair (2>2 format). tributaries.com



Wireworld Cable Technology

Well-engineered cables are essential in high-performance A/V because standard cables lose too much of the energy and nuance that make music and video so enjoyable. Superior cables bring you closer to the feeling of 'being there.' Common cable designs are the simplest, but far from the best way to build a cable. Wireworld uses scientifically proven, proprietary technology in both design and materials creating the clearest path for your audio and video signal.

Recognize your system's potential with **Wireworld digital cables (Ultraviolet USB, \$50/1M; or Starlight USB, \$100/1M)**, or our great looking and great sounding **RCA interconnects and speaker cables** such as the **Luna (interconnect, \$40/1M pair; speaker, \$110/2M pair)**, **Solstice (interconnect, \$64/1M pair; speaker, \$140/2M pair)**, or **Oasis (interconnect, \$110/1M pair; speaker, \$310/2M pair)**. wireworld.com

2013 the absolute sound Editors' Choice Awards

Affordable High-End Audio

Welcome to the 2013 edition of *The Absolute Sound's* Editors' Choice Awards, our annual Recommended Products list. On the following pages we present the gear that our editors and writers have selected as most worthy of your consideration. These are the components we ourselves would buy—or recommend to friends and family. Each product category is divided into price ranges, with components listed in order of ascending cost (though a few items, like cables and accessories, are listed alphabetically). Each recommendation is also accompanied by a capsule review, the original reviewer's name or initials, and the issue the review appeared in. Note that in a few cases a product may have been reviewed in one of our sister publications, *Playback* or *AVguide.com*, or the review may be pending publication, or the product may not have been formally reviewed but earns a recommendation based on one or more writer's extensive experience with it. Given that this is the high end, where components generally have long lifespans, some of our recommendations look back several years. At the same time, in an effort to be as selective and up-to-date as possible, we have dropped some components that appeared on last year's list, usually because they have been discontinued but sometimes because fresh competition has caused us to reconsider the choice.

DESKTOP SPEAKERS

Paradigm Shift A2

\$279-\$329

www.paradigm.com

A 2012 Golden Ear recipient, the Shift A2 is more than just a cleverly named loudspeaker. Compact, internally powered, and equipped with DSP bass management and enough back panel inputs to connect to almost any source, this is what 21st century entry-level high end is all about. A combination of sound and value, it extends the welcome mat to budding high-enders that may have felt they couldn't afford the entrance fee. Neil Gader, Issue 224



Focal XS Book

\$399

www.audioplusservices.com

While functioning best as nearfield monitors tethered to a good computer-audio system, the XS Book speakers also work beautifully as part of a small room bookshelf system. For \$399 these powered speakers offer a lot of sound, flexibility, and functionality. And

though, in the end, they are a lifestyle rather than an audiophile product, it's a lifestyle that most people won't mind living. Steven Stone, Issue 224

B&W MM-1

\$499

www.bwspeakers.com

Small and attractive enough to place on a desktop without rearrangements, the MM-1 features B&W's famed Nautilus tweeter technology, a pair of 3" "woofers," and four miniature, Class D, 18-watt amplifiers. The sound is notably natural with vocals, well balanced, and surprisingly open. Although there is no deep bass, what's there will satisfy most, without the need of a cumbersome add-on subwoofer. Wayne Garcia, Issue 204

Magnepan Mini-Maggie System

\$1490 - \$2285

magnepan.com

The Mini-Maggie system is a three-piece, ribbon-tweeter-equipped, planar-magnetic, dipole speaker system intended primarily for desktop use. Featuring small tweeter/ midrange panels that sit atop the desk and a two-channel mid/bass panel that sits in the footwell below, the Mini-Maggie package is arguably the finest desktop speaker made. In detail, resolution, purity, freedom from grain, soundstage width and

depth, and, above all, coherence, it sounds like a pair of Magnepan's exceptional 3.7s on a smaller scale. Chris Martens, Issue 223

LOUDSPEAKERS, \$2500 AND BELOW

Pioneer SP-BS-22, \$129

www.pioneerelectronics.com

Designed by Andrew Jones of TAD, this two-way makes few obvious sonic concessions to the budget market. Its puts just enough heft and weight behind vocal and instrumental images to provide reasonable dynamic scale and imparts a flavor of low bass without sounding stressed. One of the most enticing best buys out there. NG, Issue 228

PSB Alpha B1

\$300

psbspeakers.com

Yet another "how does he do it?" loudspeaker from the prolific mind of Paul Barton. The new, more curvaceous Alpha combines mind-bending dynamics and rich mids in a speaker barely a foot tall. Even the midbass has power and pitch definition rare in this modest price range. Only the nebulous soundstaging is less than excellent. NG, Issue 170

Usher

\$520, \$479

usheraudiousa.com

Four things distinguish Usher's S520 from run-of-the-mill, sub-\$500 mini-monitors: a crisp and revealing treble, an unusually open and dynamic midrange, taut and surprisingly extended bass (no midbass hump here), and eye-popping build-quality.

One caveat: The S520 needs lots of break-in, so be patient. CM, AVgM Issue 10

Focal

705V/706V, \$499/\$699

www.audioplusservices.com

Although nominally a bookshelf speaker, the Focal 706V delivers an oversized presentation, with the bass power, weight, and extension of small floorstanding units. Highly dynamic and visceral, it has a forward perspective that puts vocals right up front. If you can get by with a little less bass extension and output consider the 705V at a savings of \$150. Robert Harley, Issue 173 (706V); SS, Issue 183 (705V)

Magnepan MMG Revised

\$599

www.magnepan.com

At just under \$600, it is hard to imagine a better speaker for the money than this mini-Maggie, provided you have the space

for it and a powerful-enough amplifier. Like all Maggie dipoles, the thing sounds open, airy, and unusually lifelike. Improved in overall coherence in its "revised" version, it is still not the last word in resolution, low bass, or top treble (but who cares?). Jonathan Valin, Issue 177

B&W 685

\$650

www.bwspeakers.com

B&W's 685 has a fine balance, tremendous rhythmic authority, an open soundstage, impressive bass, a singing treble, plays loudly without strain, and, thanks to a forward-firing port, can be mounted on a wall, shelf, or stand. A slight, lingering edge in the uppermost treble makes it both exciting to listen to as well as slightly sharp with female voices. WG, Issue 176

Silverline Minuet Supreme Plus,

\$699

www.silverlineaudio.com

The Supreme retains all of the sonic strengths of the original Minuet, but adds greater dynamic range to the mix. It also does a superb job of preserving the locational cues imbedded in a recording. While the Minuet provides a remarkable amount of lower-midrange and upper bass energy for its size, don't expect it to generate any low bass. Paul Seydor,

Issue 211

PSB Imagine Mini

\$760 - \$830

www.psbSpeakers.com

This tiny speaker plays much "larger" than one might assume. Rolled off below 55Hz and also a bit on the very top end, the Mini still delivers commendable imaging, lively dynamics, and genuinely engaging performance. Kirk Midtskog, Issue 221

REL T-5 2.1-Channel System

\$998

www.sumikoaudio.net

An impressive alliance, the REL T-5 sub (\$699) and the T-5 two-way monitor (by way of Pro-Ject) solve the small room challenge by producing audiophile-quality stereo and home-cinema excitement. The two-way's sonic character is nicely balanced—the midrange offers a rewarding amount of heft and substance for its size range, plus clean articulation of vocals and dialogue. The T-5 sub makes an excellent match. NG, Issue 220

B&W CM1

\$1000

www.bwspeakers.com

Like many small speakers, this tiny, jewel-like mini-monitor trades bass extension and wide dynamics for midrange purity. Through the mids, the CM1 is magical, with a timbral

realism, freedom from grain, palpability, and lack of coloration that many five-figure loudspeakers don't deliver. Stunning on vocals and acoustic music. Robert Harley, Issue 173

Paradigm Reference Studio 10

\$1098

www.paradigm.com

Paradigm's diminutive Studio 10 is inherently warm and full, with a remarkably large presentation that will appeal to a wide range of listeners. It's not the most transparent design, but is nevertheless lively and involving. This front-ported two-way can sit on a shelf, but performs best on a rigid stand placed somewhat into the room. Bass isn't bad, but some will want to add one of Paradigm's subwoofers to fill out the bottom end. WG, Issue 204

PSB Imagine B

\$1100

www.psbSpeakers.com

Think Imagine T minus a midbass driver and a floorstanding enclosure. There's the same voice in the expressive midrange and treble and, with only minor exceptions, the same superb balance. The B can't quite chew on bass lines like the T can, but as if to compensate the B seems a bit lighter and fleet of foot in the upper mids and lower treble. NG, Issue 189

Magnepan MG12/QR

\$1195

www.magnepan.com

This affordable two-way quasiribbon brings you remarkably close to the best performance Magnepan's are capable of. When it is properly placed—around 3' from walls—its clarity is addictive, with a wide deep soundstage and terrific transient response. The MG12 performs satisfyingly down to about 50Hz, and because of its larger panel has a slightly bigger soundfield than the amazing bargain basement MMGs. JV, Issue 177

Sonus faber Venere Model 1.5

\$1198 (stands \$398)

www.sumikoaudio.net

This compact Italiano two-way with a narrow, slotted front port, swooping top panel, and curvilinear enclosure has Sf tradition stamped all over its sound. There's an espresso rich and robust midrange that makes vocals shine and keeps dynamics lively, as well as superior midbass response, minimal colorations, and big-speaker dynamic composure. Venere—Latin for Venus—is love at first sight and irresistible for the money. NG, Issue 230

PSB Image T6

\$1300

www.psbSpeakers.com

Paul Barton's latest creation again sets a standard for performance in this class. The T6's dual 6.5" woofers deliver realistic bass down to 35Hz (−3dB) coupled to a very clean, pure, and transparent midrange. The bass tends toward the warm and "bloomy" rather than dry and tight side. The treble is clean and extended, albeit with a bit of excess energy. Imaging is outstanding. Robert E. Greene, Issue 200

Electrocompaniet EBS-1

\$1490

www.electrocompaniet.com/usa

The two-way EBS-1 impresses with its top-to-bottom coherence and ability to "speak" with a single voice. Dynamic scaling, transient speed, and image focus are also strengths. The speaker's okay but not great with soundstage depth, and of course its bass won't shake the house with large-scale music. It works well on a stand or shelf, thanks to tiny foam port plugs supplied for the latter application. WG, Issue 209

KEF LS50

\$1500

www.kef.com

With its pink-gold Uni-Q coincident midrange/tweeter mounted in bulls-eye fashion atop the uniquely arched baffle of its

beautifully crafted high-density enclosure, the LSiM 50 is as visually arresting as it is sonically satisfying. Imaging is clean and precise. Neutrality is high with superb midrange sonics, nice presence, potent midbass punch, and very little in the way of port coloration. NG, Issue 231.

Nola Boxer
\$1500

www.nolaspeakers.com

The Boxer is an unassuming, two-way, bass-reflex compact with a sound that's unerringly musical—a canny balance of warmth and detail. Images are vivid, and transient reflexes quick. This is not a shy recessed presentation, nor is the treble brittle or fatiguing. Except for the slightest presence-range dip, there's substance to every octave with very little dynamic compression. NG, Issue 203

Polk LSiM 703
\$1500

www.polkaudio.com

Three-way compacts are relative rarities in this price range, but the LSiM 703's terrific output and dynamic headroom make it a winner. With authoritative mids, a strong presence range, and a powerful lower octave, the 703 digs a bit deeper and throws a heavier punch than typical two-ways. Its midrange is a bit forward and there's

a narrow band of treble congestion, but overall the LSiM703 is a rock solid performer. NG, Issue 225

Gallo Classico CL-3
\$1595

www.roundsound.com

Gallo's CL-3 is a 31-inch tall, two-way, 3-driver, transmission line-loaded floorstander that incorporates three of the firm's signature "think-outside-the-box" design features: an inherently crossover-less architecture, a semicylindrical CDT piezoelectric tweeter offering 180 degrees of horizontal dispersion, and proprietary S2 enclosure damping materials. The result is a compact speaker that offers detailed, refined, dynamically expressive, and improbably expansive and full-range sound. Now sold factory-direct. CM, Issue 224

Klipsch Heresy III
\$1700

www.klipsch.com

Klipsch's most compact offering in its Heritage Line features significant driver improvements relative to the original. It's still a three-way closed-box speaker, but with a more powerful woofer, improved tweeter, and midrange compression drivers updated to titanium diaphragms. High sensitivity (99dB) opens up the realm of low-power tube amplification. The horns start

beaming in the presence region making it necessary to carefully adjust toe-in. Tonal balance benefits from raising the speakers off the floor by about two feet. Dick Olsher, Issue 228

Monitor Audio Gold GX50
\$1700

www.monitormedia.com

The smallest member in the GX Series, this two-way standmount with ribbon tweeter shines brilliantly on vocals, with delicate texture, air, and bloom. Tonally it's a little polite in the upper mids, and there's a bit of extra brilliance on top, but the openness of the ribbon tweeter more than makes up for these minor colorations. More a finesse loudspeaker than a headbanger's dream. NG, Issue 229

Monitor Audio Silver RX8
\$1750

www.monitormedia.com

Monitor's Silver RX8 floorstanders leverage technologies originally developed for the firm's higher priced Gold Series speakers. Positive characteristics include fundamentally neutral voicing, surprisingly good resolution, and superb imaging. Revealing, yet easy to drive, the RX8s may need their included foam port dampers to prevent bass overload in smaller rooms. CM, Issue 203



Reference 3A Dulcet
\$1790

www.reference3a.com

True to its name, this Canadian bonbon produces smooth and melodious sound, and as a bonus is reasonably well balanced through the bass range. Its sonic demeanor is such that it should happily partner with an even-less-than-sterling digital front end. DO, Issue 171

Rega RS5
\$1795

www.soundorg.com

With a Rega-designed silk dome tweeter, midrange, and side-firing woofer, the British-made RS5 presents an impressively transparent window to recordings, excellent clarity, an uncluttered stage, a large soundfield, fine focus, and nearly spot-on tonal balance. WG, Issue 196

Sonist Recital 3
\$1795-2195

www.sonist.com

This slim floorstander with ribbon tweeter is an overachiever in its price class, demonstrating a terrific ability to render fine shadings of timing and tone. Its spectral character leans toward the warm rather than the analytic, but with outstanding resolution and articulation. The bass isn't the last word in extension or dynamic impact. An easy load, the Recital 3 can be driven by modest amplifiers. Garrett Hongo, Issue 218

KEF R-300
\$1800

www.kef.com

The stirring performance of this three-way can be summed up in four words—precision, pitch, forward, and focused. Using the latest iteration of KEF's Uni-Q coincident driver, the R-300 has a smooth, gung-ho midrange, impeccable image focus, and rock-solid bass. It's at its best reproducing the human voice, where it achieves a coherence that most compacts in this range can't quite muster. Only under the full weight of an orchestra does the R-300 give up some of its transparency and resolving power. NG, Issue 226

Fritz Speakers Carbon 7
\$1895

www.fritzspeakers.com

A two-way compact that exhibits a generously ripe, rich, dark midrange alive with energy. Plus bass response that plummets impressively into the mid-40Hz range. One of the Carbon 7's great traits is that doesn't lose the weight and resonance of real music. Although it compresses mildly at very loud volumes, it doesn't over-reach in the treble, which makes this a speaker that will wear incredibly well over the long haul. NG, Issue 219

Magnepan 1.7
\$1995

www.magnepan.com

Maggie's first "all-ribbon" (which is to say, "all-quasiribbon") loudspeaker, the 1.7, easily picks up the mantle of the MG 1.6, JV's previous choice for the best affordable loudspeaker, by improving upon the 1.6 in every area (particularly overall coherence). Though lacking the bottom octave, from the midbass up it can stand comparison to some of the stalwarts of the ultra-high-end. A superb transducer and real bargain, provided you have enough space to house it and enough amp to drive it. JV, Issue 205

Salk Sound SongTower Q WT
\$1995

www.salksound.com

A successful and striking implementation of a D'Appolito MTM configuration, integrating two mid/woofers and a 3/4" soft dome tweeter, the SongTower sings cohesively and is capable of performing a convincing disappearing act. The soundstage is exceptionally wide and stable. In-room bass response is extended to about 40Hz, but don't expect the punch of a 12" woofer. Perceived tonal balance is slightly lean and dark, but otherwise pretty neutral. DO, Issue 204

Definitive Technology BP8060 ST
\$2000

www.definitivetech.com

A medium height, slim, versatile speaker with a built-in, adjustable amp to power its 10" side-firing woofer, the BP8060 BP has a full, pleasant sound and a very wide effective listening area. KM, 212

Harbeth P3ESR
\$2090- \$2190

www.fidelisav.com

This latest version of Alan Shaw's subcompact monitor is so cannily designed it almost transcends the limitations of its genre. Neutrality and natural tonal balance reign supreme, but this one can also play

loud and descend to depths in the bass.

Exceptional driver integration, coherence, and openness also characterize the design. PS's favorite mini-monitor. PS, Issue 193

PSB Imagine T
\$2200

www.psbSpeakers.com

Tonally neutral and dynamically turbocharged, this short two-and-a-half-way tower offers a balance of audio virtues that is classic PSB. From the vivid midrange to the powerful midbass, nothing seems out of joint—and that goes for the T's seamless curved enclosure. Not as nuanced as the Synchrony, but more than good enough to make you feel like a big spender. NG, Issue 189

Vandersteen 2Ce Signature II
\$2395

www.vandersteen.com

This classic three-way floorstander delivers excellent top-to-bottom balance and engaging musicality. Moreover, Vandersteen's baffle-less, time-and-phase-coherent design can suggest the spatial focus usually heard with planars. It benefits from bi-wiring and should be placed away from walls. Shane Buettner, Issue 139

Golden Ear Triton Two
\$2500

www.goldenear.com

The Triton Two handles high frequencies via a superb Heil-type tweeter, the all-important middle frequencies via dual ultra-wide-bandwidth midrange drivers, and the low end with a sophisticated 1200-watt DSP-controlled subwoofer. Together these elements give you a slender, full-range floorstander that sounds astonishingly refined, and offers robust dynamics and spectacular 3-D imaging. CM, Issue 214

POWER AMPLIFIERS, UNDER \$1500

Odyssey Audio Khartago
\$895

www.odysseyaudio.com

Shockingly similar in tonal balance to certain high-priced solid-state amps, this 130Wpc stereo amp has no discernible grain, high resolution, and a deep, wide soundstage. Positively, the best budget amp JV has heard. JV, Issue 195

Parasound Halo A23
\$950

www.parasound.com

Parasound's A23 isn't the last word in low-end authority, and it's a bit cool in the midrange, but what it lacks in oomph it makes up for in finesse and pitch definition.

Moreover, this reasonably priced amp is musically quite involving. SB, Issue 138

Belles Soloist 5
\$995

www.belles.com

A paradigm of minimalism and musicality, this small, cool running sixty-five-watter is stuffed with sonic virtues: a forgiving tonal balance, good soundstage dimensionality, and naturalistic depth. Paired with its companion preamp, the Soloist 5 is a great way to get into separates at an integrated-amp price. NG, Issue 174

PrimaLuna ProLogue 5
\$1259

www.primaluna-usa.com

The 36Wpc vacuum tube-powered ProLogue 5 is more authoritative than its rating would lead you to expect, and offers a warm, rich presentation, yet really does not sound "tubey" in any traditional sense, producing clean, deep, tight bass and grand soundstaging. A synergistic match with the companion ProLogue 3 preamp. Sallie Reynolds, Issue 156

PREAMPLIFIERS, UNDER \$1500

NuForce HAP-100
\$595

www.nuforce.com

NuForce's HAP-100 preamplifier/

headphone amplifier offers serious high-end performance at a modest price. A Class A solid-state design, it delivers unusually wide bandwidth with low levels of distortion and noise. Together these characteristics make for a sound that has a purity and clarity quite unexpected at this price. The HAP-100 makes a good headphone amp, too, with one caveat: The NuForce is load sensitive and thus not an ideal match for some of today's more difficult-to-drive top-end headphones. CM, Issue 230

Vincent Audio SA-31
\$700

www.wsDistributing.com

The SA-31 is a well-made entry-level vacuum-tube preamp that provides tone controls and a loudness contour switch. The preamp's sound is characterized by a rich, seductive midrange and solid bass. Though not quite the equal of today's best \$1k preamps in resolution, definition, or high-frequency "air," the SA-31 offers terrific bang for buck. CM, Issue 208

Rogue Audio Metis
\$1095

www.rogueaudio.com

Rogue Audio's Metis is a USA-made, vacuum tube-powered (6SN7-based) preamplifier. The dynamic liveliness and harmonic

richness we expect in any good tube design are present here, at levels that remind us of the sound of \$2500 tube preamps. But unlike tube designs that sound focused in the midrange and soft at the frequency extremes, the Metis remains evenly balanced and finely resolved from top to bottom. CM, Issue 160

Van Alstine Transcendence 8+
\$1299

www.avahifi.com

Configured as a linestage—the optional phonostage (\$199) fared less well, the T8 is one of those rare products that genuinely transcends its price. Its sound is not particularly smooth or euphonic. But it won praise based on its stable imaging and killer dynamics. It benefits from being mated with a romantic tube amp. DO, Issue 173

PrimaLuna ProLogue 3
\$1329

www.primaluna-usa.com

The vacuum-tube-powered ProLogue 3 preamp makes an ideal companion to PrimaLuna's ProLogue 5 tube power amp. Like the power amp, the preamp combines tube warmth and richness with a clear, crisp, precise presentation reminiscent of the best solid-state designs. Bass, too, is taut and clear. SR, 156

INTEGRATED AMPLIFIERS, UNDER \$1500

NAD C 316/C 326 BEE

\$380, \$550

www.nadelectronics.com

The entry-level C 316 is still the go-to amp for audiophile newbies who crave sonic neutrality, good power output, nice tactile feel, and NAD's characteristic quality control. Looking for a little more oomph? The 50Wpc C 326 will make BEElievers of even the most jaded audiophiles. WG, Issue 140



NuForce DDA-100

\$549

www.nuforce.com

The DDA-100 was made for audiophiles who need a moderately priced one-box solution to go from any conventional digital source directly to a pair of loudspeakers. If your speakers are at least 88dB sensitive and you can work around the DDA-100's ergonomic limitations, you may find that the NuForce is simply the best-integrated amplifier you've heard. And for those readers who still firmly believe that all digital amplifiers are for someone else's system, listening to the DDA-100 will be, as it was for SS, a revelation. SS, Issue 229

Jolida Glass FX-10

\$599

jwwq.olida.com

This beautiful display-box of an amp is a great music-maker, capable of wonderfully rich yet nuanced playback of all genres. Its soundstage is deep and wide; its build-quality and ergonomics are terrific; and it sounds even better if you upgrade the tubes and wires. Although the FX-10 outputs only ten watts, those watts are mighty mighty! GH, Issue 222

NAD C356 BEE

\$800

www.nadelectronics.com

The 80Wpc C 356 BEE borrows technologies from NAD's Master Series M3 dual-mono integrated. Its tonal balance leans slightly to the darker side, bringing a bit of extra wood to strings and burnish to brass. The soundstage is large, with a good sense of air around instruments, and a nice sense of depth. WG, Issue 210

Rega Brio-R

\$895

www.soundorg.com

There's a lot to be said for an amplifier that doesn't sound conspicuously solid-state or tube but suggests the strengths of both. The Brio-R impressed with a forthright balance of weight, tonal density, and authority. Particularly

well suited for smaller floorstanders and compact speakers of medium-high sensitivity. NG, Issue 223

Marantz PM8004

\$999

www.us.marantz.com

With 70Wpc, the PM8004 is tonally neutral, clean, clear, transparent, and dynamic into low-efficiency speakers. The preamp section features an excellent moving-magnet phonostage and headphone amplifier, and the circuit has an unusually high number of discrete parts (rather than ICs). High value. PS, Issue 220

Peachtree Audio Nova (now superseded by the Nova 125)

\$1199, \$1499

www.signalpathint.com

The versatile Nova can serve as an 80Wpc hybrid integrated amp, a tube preamp, a Class A tube headphone amp, or a solid-state USB DAC (based on the superb ESS Sabre DAC) with remote input switching. The DAC section alone justifies the

Nova's price, making the other good stuff pure "gravy." CM, Playback 21

PrimaLuna ProLogue One

\$1375

www.primaluna-usa.com

The sweet and affordable ProLogue One features a 12AX7, 12AU7, and

a pair of EL-34s per channel in a very simple circuit. In classic EL-34 style, the ProLogue throws a very wide and deep soundstage, and has a wonderful midrange. Jeff Dorgay, Issue 151

Wired 4 Sound mINT

\$1499

www.wyred4sound.com

Rated at 100Wpc, Wyred 4 Sound's mINT (Mini-Integrated Amplifier) isn't simply a Class D integrated; it also sports a built-in DAC with three digital inputs (USB, TosLink, and coax), a pair of analog inputs, and a dedicated headphone amp. The mINT has an easy, natural musicality, along with good pace and drive. Dynamic range is somewhat limited, as is ultimate volume, but the mINT is consistently able to draw you into the music, no matter the type. WG, Issue 229

DISC PLAYERS, UNDER \$1000

Teac Reference PH-H600

\$799

www.teac.com

Sitting atop Teac's Reference Series, the PD-H600 borrows premium touches from the company's superb Esoteric brand. "Open," and "easy" are words that describe this gem, which is immediately engaging, surprisingly transparent, and refined in over-all character



and tonal balance. The bottom end is powerful and tuneful; it renders a fine sense of a hall's depth and breadth; and it never sounds "digital" in the bad sense of the word. WG, Issue 201

Marantz SA8004

\$999

www.marantzusa.com

Tonally neutral, musically authoritative and natural, with just a hint of warmth, this two-channel SACD/CD player is just about as seductive a component as you could want, especially at its price, which feels like a giveaway. The SA8004 is a music lover's dream for those who favor classical, traditional pop, jazz, folk, world, and any other music with voices and acoustic instruments. The 8004 also features limited music-server and Internet functions. PS, Issue 211

Oppo BDP-95 (now superseded by BDP-105)

\$999 - \$1198

www.oppodigital.com

Oppo has taken a quantum step forward in sonic sophistication with the BDP-95 universal/Blu-ray player. The player's audio section provides exotic, dual 8-channel ESS Sabre 32-bit

Reference DACs supported by purist-grade analog circuitry and a stout power supply. The resulting sound is highly detailed, surprisingly smooth, effortlessly three-dimensional, and rich in subtlety and nuance. Not just "good for the money," the BDP-95 is just plain good. CM, Issue 219

DIGITAL-TO-ANALOG CONVERTERS, UNDER \$1500

AudioQuest DragonFly

\$249

www.audioquest.com

How can you not absolutely love an asynchronous USB DAC packed with audiophile grade design elements in the form factor of a USB stick that costs \$249? The variable output level allows you to drive headphones or a power amplifier directly from its 3.5mm stereo mini-jack output. Amazingly, the DragonFly features an ESS Sabre DAC, analog-domain volume adjustment, and separate clocks for different sampling frequencies for better sound. With a remarkably sophisticated and relaxed presentation, it excels at conveying dynamics and drive. A brilliant product. RH, Issue 226

Micromega MyDAC

\$399

www.audioplusservices.com

Micromega's MyDAC is entry

level in price only. The unit looks very much like an Apple AirPort Extreme, but with a front-panel wheel to select between TosLink, coaxial, and asynchronous USB inputs. The Micromega gives you some sonic attributes usually found in much more expensive DACs—qualities like air around instruments, a sense of three-dimensional space, and a laid-back ease. Timbres are remarkably smooth and free from grain. The bass is solid and tight, although the very lowest bass lacks ultimate authority. RH, Issue 228



Jolida Glass FX Tube DAC II
\$489

www.jolida.com

Whether matched with its companion Glass FX-10 amp or used with other electronics, the compact Jolida Glass FX Tube DAC is an incredible bargain. The attractively displayed tube output section adds great presence and pure sweetness to acoustic music like combo jazz and folk and chamber ensembles. The unit is also high in resolution and can handle complexity and refinement at once, producing punchy, satisfying, and detailed reproduction of electronic rock and orchestral music. GH, Issue 222

Simaudio Moon 100D
\$650

www.simaudio.com

For those accustomed to the run-of-the-mill iTunes experience, computer-based performance through the Simaudio 100D USB will be a revelation. Its USB input accepts a digital audio signal of up to 16-bit/48kHz, but is also armed with both optical and S/PDIF inputs to make the most of its asynchronous sample-rate convertor and its Burr-Brown 24-bit/192kHz high-resolution DAC. Its sonics are excellent for this class with just a hint of a narrower soundstage and reduced dimensionality. NG, Issue 215

Channel Islands Audio Transient II
\$699

www.ciaudio.com

Like the other audio components from CIA, the Transient Mark II's exterior is simple and lacks the cosmetic frills that increase a component's cost without adding to its sonic performance. If you are contemplating spending \$700 or more for a USB to S/PDIF convertor or USB DAC, you should definitely consider the Channel Islands Audio Transient II. For a reasonable price it lets you keep up with the current state of USB 2.0-compliant audio, and does it beautifully. SS, Issue 228

Musical Fidelity M1 DAC
\$799

www.musicalfidelity.com

The M1 DAC looks to be an exercise in simplicity but its performance will strike fear into the hearts of pricey USB DACs everywhere. It supports every sample rate from 32kHz to 192kHz and has a complete set of inputs including USB (now capable of doing 24/96 asynchronously) and S/PDIF and more. The result is a superior soundstage, palpable images, and fast transient attacks. SS, Issue 213

Wadia 151 PowerDAC
\$799

www.wadia.com

For only slightly more than a 21.5" iMac you can own a device that will form the backbone of a revealing and musical desktop or bedroom system. Coupled with a pair of top-echelon monitor speakers such as the Paradigm S1s, Aerial Acoustics 5Bs, or ATC SCM 7s, the 25Wpc Wadia 151 delivers sonics that should enthrall anyone. SS, Issue 204

Rega DAC
\$995

www.soundorg.com

Compared with top-flight USB rigs, this DAC lacks a bit of transparency and microdynamic liveliness, but overall the Rega is

musically at home in leagues well outside its price point—even paired with loudspeakers as ruthlessly revealing as the vaunted mbl 120s. Paired with the Brio-R integrated, it makes for a seamless tag team in which each device plays to the other's strengths. NG, Issue 223

NuForce DAC-100
\$1095

www.nuforce.com

One thousand to twelve-hundred dollars seems to be a price that many manufacturers are aiming at with their latest high-performance USB-enabled DACs. NuForce's entry at this hotly contested price point delivers excellent sound combined with a useful feature set, making it one of the products that should be on anyone's short list if he's in the market for an under-\$1200 USB DAC/pre. SS, Issue 228



Lindemann USB-DAC 24/192
\$1100

www.lindemann-audio.de

The Lindeman USB DAC is a small silver-tone box with a single circular push-button on the front. The rear panel contains inputs for

USB, TosLink, and SPDIF, and one pair of RCA single-ended outputs. With its 1.4-volt maximum output, the Lindemann may lack sufficient gain to drive a system with a passive preamp to full volume levels. But if you use the USB DAC 24/192 with an active preamp its output level won't be a problem. And if audio quality is your primary criterion you'll be hard pressed to find a DAC that convincingly beats it. SS, Issue 228

Wadia 121 DAC
\$1299

www.wadia.com

The completely digital Wadia 121 has no analog inputs or built-in ADC to convert analog to digital. It supports up to 192/24 PCM files via its AES/EBU, S/PDIF, and USB inputs. Though SS can't say that the Wadia "blows away the competition" (these days very few products do), he can state confidently that few, if any, potential purchasers will be disappointed by its sonics or ergonomics. He could happily live with the Wadia 121 for the foreseeable future; it's simply that good. SS, Issue 228

M2Tech Young DAC
\$1499

www.m2tech.biz

Priced at \$1499 with a wall-wart power supply or \$2998 with the

Palmer battery power supply, the Young DAC falls into the low-to-middle price range for a high-resolution DAC. The Young builds on the advances of the HiFace USB interface, but with additional inputs, greater resolution capabilities, and its own built-in digital-to-analog converter. An ideal digital hub and D/A converter for anyone who already owns a great analog preamp. SS, Issue 223

Wyred4Sound DAC-2
\$1499

www.wyred4sound.com

Wyred4Sound has combined a rich feature set with remarkable performance at a price that makes the DAC-2 hard to beat. Factor in the DAC-2's current 192kHz high-resolution capabilities and built-in circuit board upgradability, and you have a DAC that will remain a courrant long enough to make it a satisfying purchase, regardless of how much more you can afford to spend. SS, Issue 210

PHONOSTAGES, \$1000 AND BELOW

Musical Fidelity V-LPS MkII
\$199

www.musicalfidelity.com

At \$189, the V-LPS is a phonostage for all of us. Equipped with dedicated inputs for mc and mm cartridges, it's quiet, clean and ultimately irresistible—more so

with the optional power supply (\$149). Even if the last word in resolution and extension proves elusive, no regrets here. NG, Issue 206

Vincent Audio PHO-8

\$400

www.wsdistributing.com

Vincent's phono preamp features moving-magnet/moving-coil flexibility, a massive outboard power supply, plus a level of build quality unusual in this price range. Its sound is liquid, the soundstage vivid and dimensional with just a hint of warmth and transient softness compared to reference efforts. You'll need a much bigger wallet to beat it. NG, Issue 211

Musical Surroundings

Phonomena II

\$600

www.musicalsurrroundings.com

The sequel to the original Michael Yee design, the Phonomena II is based on the latest discrete circuitry of the top-flight Nova Phonomena, minus the battery pack.

Like the original it's easily adjustable and quite extended, with a kind of heavy gravity in the bass octaves. A bit cooler and brasher on brass fortissimos, the sound is alive and electrifying. For balance and value the Phonomena II is a stunner. NG, Issue 191

Clearaudio Basic Plus

\$1000

www.musicalsurrroundings.com

The Basic Plus is everything a modestly priced phonostage should be. It's compact yet elegantly finished. It's switchable between mm and mc cartridges. A robust outboard power supply is included and yields superb isolation from hum and

RFI. Most significantly, the unit delivers a spacious and delightfully resolved soundstage with heartstopping bass resolution. If you want the last word in isolation, consider adding the Clearaudio Accu+, an outboard NiMH battery supply (\$900). NG, Issue 206

Musical Surroundings Nova

Phonomena

\$1000

www.musicalsurrroundings.com

Grace, poise, low noise, and neutrality characterize this excellent unit, which includes options for fine-tuning the loading and gain of both moving coils and moving magnets. Add the \$600 external power supply for lower noise and distortion, and greater transparency. Some listeners may want more dynamic "punch" and personality, but the Nova is hard to beat for low coloration. PS, Issue 172

TURNTABLES, \$1500 AND BELOW

Pro-Ject Debut Carbon

\$399

www.sumikoaudio.net

The most significant upgrade to Pro-Ject's latest Debut is found in the model's name, which refers to the lighter, more rigid, single-piece 8.6" carbon-fiber arm tube that replaces the Debut III's aluminum tube. Pre-mounted with Ortofon's 2M Red moving-magnet cartridge, the Carbon offers all one expects from a modestly priced 'table. It doesn't excel in any one area but gets the basics so right that it's hard to criticize what's lacking. WG, Issue 226

Rega RPI

\$445

www.soundorg.com

Rega's entry-level 'table today sells for roughly the same price it did some 20 years ago, meaning that Rega's commitment to value remains paramount. The P1 uses the classic Rega motor, drive system, and main bearing, but instead of a glass platter this one is made of MDF. The 'arm is the new RB101, which comes pre-mounted with Ortofon's OM5e moving magnet cartridge. You won't get much frequency extension or wide dynamics here, but what you do get are the pace, musical interplay, and involvement that make analog special. WG, Issue 171

Pro-Ject Xpressions III

\$699

www.sumikoaudio.net

The Xpression III features an acrylic platter, machined cone feet, a carbon fiber arm tube, and other refinements rare at this price. Supplied with Sumiko's excellent Oyster cartridge, the Xpression III has excellent clarity, smoothness, and a wide and deep soundstage. PS, Issue 191

Rega RP3

\$895

www.soundorg.com

With a phenolic-resin "double brace" creating a "stressed beam" between the main-bearing hub and tonearm mount, Rega's RP3 is a significant step forward.

Thanks to a phenolic-resin skin and upgraded particulate core-material, the plinth is also lighter than its predecessor, while the RB303 arm features a newly designed tube said to increase rigidity at the bearing housing, arm carrier, and headshell mount. The result is deeper bass, lower noise, more dynamic pop, increased detail, and improved staging. Things get better yet with the optional TT PSU power supply (\$375). WG, Issue 224

Pro-Ject RM-5 SE/Sumiko Blue Point No. 2 cartridge

\$999

www.sumikoaudio.net

Easy to assemble, Pro-Ject's RM-5 SE features a teardrop-shaped, black-lacquered MDF plinth, a suspended motor assembly, a stainless-steel and Teflon bearing, and a 9" carbon-fiber arm. Supplied with Sumiko's Blue Point 2 cartridge, the RM-5 SE is musically involving, with a warm balance, stunning rhythmic incisiveness, fine dynamic shading, good detail, and natural depth. WG, Issue 180

Clearaudio Concept with Concept MM cartridge

\$1500

www.musicalsurrroundings.com

The Clearaudio Concept turntable package does everything but unbox itself. Preset at the factory, this spinner features a svelte belt-drive chassis, a stunning friction-free, magnetic-bearing Verify tonearm, and the Concept moving-magnet cartridge.

The build and finish of this German-made 'table are superior. For sheer musical engagement and superb speed stability, it's the one to beat in this price range. WG, Issue 205

Rega RP6

\$1495 (\$1990 with Rega Exact 2 cartridge)

www.soundorg.com

Rega's RP6 offers the same phenolic-resin "double brace" found in the RP3, the same

RB303 arm, and a whole lot more. Replacing Rega's traditional glass platter/felt mat is a two-piece, 16mm-thick flywheel/platter made of two joined pieces of float glass. Moreover, the RP6 comes standard with the TT PSU power supply, a must for top performance. Note the large improvements in dynamic nuance and explosiveness, tonal and textural detail, size and depth of stage, and sheer musicality. Reviewed with Exact 2 cartridge at \$1990. WG, Issue 226

SOTA Comet S301

\$1150 (\$1545 with Dynavector 10x% cartridge)

www.sotaturntables.com

SOTA uses internal damping to isolate the Comet from vibration; the bearing cup is made from a Teflon-impregnated self-lubricating polymer; the platter assembly consists of a high-density polymer main platter sitting atop a polymer-based sub-platter driven by a 24-pole AC synchronous motor. The result is an easy, authoritative presentation that's warm, rich, and solid, with wide nuanced dynamics and a large 3-D soundfield. WG, Issue 180

PHONO CARTRIDGES, UNDER \$1500

Shure M97xE

\$89

www.shure.com

An entry-ticket to the world of analog sound, Shure's M97xE moving-magnet cartridge offers generally neutral tonal balance with slight hints of roll-off at the frequency extremes, unflappable tracking, and an overall presentation that is unfailingly smooth. A great starter cartridge. CM, Issue 172

Grado Prestige MC+ Mono
\$90

www.gradolabs.com

Interested in dipping your toes into mono waters, but not in taking a financial bath? This is the cartridge for you. The Grado mono is an excellent tracker that fully shows the virtues of mono LPs—sledgehammer bass and excellent imaging. More expensive cartridges will flesh out the sound more and offer greater detail, but the Grado is a joy to listen to. Jacob Heilbrunn, Issue 180

Ortofon 2M Red and Black
\$99 and \$699

www.ortofon.com

The swansong design of Ortofon's former chief engineer Per Windfeld, the entry-level 2M Red uses an elliptical, the 2M Black a Shibata stylus. The Black's greatest attribute is the way it parses the complexities of orchestral depth and dimension. In comparison, the 2M Red clocks in with a little drier sound, as if it's making more of an

effort in the upper treble. Still this is one sophisticated and musical cartridge—for the price of a nice dinner for two. NG, Issue 182

Grado Prestige Gold 1
\$220

www.gradolabs.com

Grado's Prestige Gold cartridge has its flaws—a lack of inner detail and audible grain chief among them—but its strengths are such that you can easily listen through them. These include a somewhat warm yet pleasant balance, a sweet if not hugely airy treble, and taut if not especially layered bass. WG, Issue 141, CM, Issue 172

Audio-Technica AT440MLa/AT150MLX
\$239/\$485

www.audio-technica.com

The high-gain moving-magnet AT440MLa and its deluxe sibling, the AT150MLX (with a nude-mounted MicroLine stylus), brim with opulent timbres and resounding tunefulness. Both have a relaxed sound, a darker midrange, great weight, and a lower center of gravity in tonal terms. Compared to the finer moving coils they falter slightly trying to hold on to low-level detail and decay, while upper octaves are a little devoid of air. But while they can't match the delicacy and speed of some mc's they offer their own authenticity and rewards

over the longer haul. NG, Issue 216

Grado Reference Platinum 1
\$350

www.gradolabs.com

The Platinum 1 is the most affordable of Grado's mid-tier Reference models, offering reduced coloration plus superior resolution and tracking. Though it could use more openness, detail, and high-frequency "air," the Platinum can nearly equal the performance of \$1k+ moving coils, making it a bargain at its price. CM, Issue 191

Sumiko Bluepoint No. 2
\$399

www.sumikoaudio.net

The second-generation version of the Bluepoint Oyster—long considered a go-to choice among affordable, high-output moving-coil cartridges—the No. 2 offers improved resolution, superior three-dimensionality, richer and more potent bass, and smoother, less aggressive highs. A huge step up from entry-level cartridges. CM, Issue 172

Sumiko Blue Point Special EVOIII
\$499

www.sumikoaudio.net

The EVOIII offers substantial improvements over the original Blue Point Special—a fundamental heartiness, terrific top-to-bottom

consistency, and the ability to gracefully handle tracking challenges. This is one moving coil that will not bite you with excess edge or glare. CM, Issue 147

Ortofon Rondo Red
\$599

www.ortofon.com

The Rondo Red moving coil has a 0.5mV output and an injection molded resin body. Its smooth, warm character is supported by excellent mids and a slightly softer top end. Easy going and natural on vocals of all stripes, it may not be as explosive as some pricier moving coils, but the Red will surely please those who find the current crop of moving coils overly bright. WG, Issue 206

Ortofon Rondo Blue
\$799

www.ortofon.com

The Rondo Blue is an under-a-grand pickup that offers many of the advantages of higher-priced moving coils. It has a natural midrange, an extended but non-aggressive treble, and a bottom end that is a bit on the extravert side. Transparency is good enough not to worry about, and the dynamic presentation is powerful, although the cartridge can be delicate and nuanced too. It is particularly wonderful with voices. PS, Issue 199

Benz Micro ACE S Class
\$900

www.musicalsurroundings.com

The ACE offers a wide-open midrange, plenty of definition and air around instruments and voices, and tight, clean bass. With the right phonostage, it can do a great job of walking that fine line between resolution and smoothness. CM, Issue 147

Sumiko Blackbird
\$1099

www.sumikoaudio.net

This high-output moving coil is smooth yet detailed, with a wide soundstage and fine low-end authority. Massed strings lack the upper-midrange glare one hears with some moving coils; midrange instruments are particularly seductive; images are stable; and transparency, transient quickness, and inner detail are all good. Jim Hannon, Issue 164

Dynavector Karat 17D3
\$1150

www.dynavector.com

Dynavector's 17D3, the third generation of a twenty-year-old design, is ruler-flat top to bottom with all the life and liveliness of past Karats, the see-through transparency, the superb tracking, the crackling musicality, brilliance and clarity abounding. It also throws a sensationally wide and

deep soundstage with extraordinary dynamics and resolution. PS, Issue 172

Benz Micro Glider S Class
\$1200

www.musicalsurroundings.com

It's all about the superlative tonal balance of the medium output (0.8mV) Glider SM. There's a reassuring dash of warmth in the lower mids and bass, a lush midrange, and a presence range and treble that have air and harmonic delicacy but no etch or dryness. Not as warm as the Clearaudio Maestro Wood, the Glider has added inner detail and energy that make the choice between them a tough one. NG, Issue 191

Clearaudio Maestro Wood (now v.2 Ebony)
\$1200

www.musicalsurroundings.com

Sharing the solid Boron cantilever and stylus of the esteemed Insider mc cartridge, the Maestro Wood, a moving-magnet design, gushes sweet sonics like squeezing a ripe, red plum. But it's not a softy in the dynamics department, nor does it smear inner details. Whether it rounds transient details and rhythms too much will be a question of taste. Rated at 3.6mV, it won't tax most phonostages, either. NG, Issue 186