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Contents

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Features

- [Sneak Preview: Oppo PM-1 Headphones](#)
- [On The Horizon: Hot New Products Coming Your Way](#)
- [How to Choose an Audio System](#)



Electronics

- [Featured Review: Wyred4Sound mINT](#)
- [NuForce DDA-100](#)
- [NuForce MCP-18](#)
- [Rotel RCD-1570, RC-1570, RB-1552 MkII](#)
- [Peachtree Audio Nova125](#)
- [Hegel H80](#)
- [Van Alstine FET Valve preamp](#)
- [Special Preview: Lyngdorf TDAI-2170](#)
- [Our Top Picks](#)



Analog

- [Pro-Ject Debut Carbon](#)
- [Rega RP3](#)
- [Clearaudio Concept](#)
- [Acoustic Signature Wow XL](#)
- [Ortofon Quintet Red and Black cartridges](#)
- [Our Top Picks](#)



DACs, Music Servers, and Disc Players

- [Featured Review: Oppo BDP-105](#)
- [AudioQuest DragonFly V1.2](#)
- [Audioengine D3 DAC](#)
- [iFi iDAC](#)
- [Sony PHA-2](#)
- [Meridian Direct DAC](#)
- [Rotel RDD-1580](#)
- [Survey of Three Affordable DACs: Cambridge DacMagic XS, Hegel Super DAC, Resonessence Labs Herus](#)
- [Sony HAP-Z1ES](#)
- [Our Top Picks](#)



Speakers

- [Pioneer SP-BS22](#)
- [Paradigm Shift A2](#)
- [KEF X300A](#)
- [Paradigm Monitor 9, Series 7](#)
- [KEF LS50](#)
- [GoldenEar Technology Triton Seven](#)
- [Focal Aria 906](#)
- [JL Audio e110 subwoofer](#)
- [Our Top Picks](#)



Cables, Power Products, and other Essentials

- [Shunyata Venom PS8, Venom Defender, and Venom3 AC System](#)
- [Our Top Picks:](#)
- [Moon Audio Silver Dragon 2](#)
- [Cardas Clear Light](#)
- [Voodoo Evolution](#)
- [Kimber 8TC and Hero](#)
- [MIT StyleLine SL8 and SL9](#)
- [Nordost Purple Flair](#)
- [Shunyata Anaconda](#)
- [WyWires Blue](#)
- [Wireworld Oasis 7](#)

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publisher..... Jim Hannon
editor-in-chief..... Robert Harley
executive editor..... Jonathan Valin
**acquisitions manager
and associate editor**..... Neil Gader
music editor Mark Lehman
editorial assistant and buyer's guide editor
Spencer Holbert

creative director Torquil Dewar
art director Shelley Lai

webmaster..... Garrett Whitten

senior writers Anthony H. Cordesman
Wayne Garcia
Robert E. Greene
Jim Hannon
Chris Martens
Tom Martin
Dick Olsher
Andrew Quint
Paul Seydor
Steven Stone
Alan Taffel

**reviewers &
contributing writers** Duck Baker, Greg
Cahill, Stephen Estep,
Jacob Heilbrunn,
Sherri Lehman,
Ted Libbey, David
McGee, Kirk Midtskog,
Bill Milkowski, Derk
Richardson, Jeff Wilson

nextscreen, LLC
chairman and ceo Tom Martin
vp/group publisher Jim Hannon

advertising reps Cheryl Smith
(512) 891-7775

Scott Constantine
(609) 275-9594

Marvin Lewis
MTM Sales
(718) 225-8803

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Address letters to the Editor:
The Absolute Sound,
8868 Research Blvd., Austin, TX 78758 or
rharley@nextscreen.com

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*Click here to go to the
previous page.*

FROM THE Editor

Welcome to the 2014 edition of *The Absolute Sound Buyer's Guide to Affordable High-End Audio*. These days there's no need to spend big bucks to build a great high-end system, as evinced in this buyer's guide. In fact, a complete high-end system that includes products found within these pages can be assembled for less than \$1000.

Whether you are a first-time buyer or a veteran audiophile, discovering the highest quality stereo components for your allotted budget is of paramount importance. No matter how large or small the budget, getting the "most bang for your buck" is the top priority, and this buyer's guide will help steer you in the right direction.

In our 2014 *Buyer's Guide to Affordable High-End Audio* you will see familiar features, as well as brand-new content—including five previously unpublished reviews, and two "sneak previews" of forthcoming reviews of the Lyngdorf TDAI-2170 digital preamp/amp and Oppo PM-1 headphones. Neil Gader's *On The Horizon* highlights twelve hot new products to watch in the coming year, and an excerpt from Robert Harley's *Complete Guide to High-End Audio* explains how to choose an audio system that matches your unique listening taste, and build a system around your budget.

We have divided the thirty-three full-length reviews found in this buyer's guide into five easy-to-navigate categories: electronics; analog components; DACs, music servers and disc players; speakers; and cables, power products, and other essentials. At the end of each category, our editors have selected their top picks—the affordable high-end products they would buy or recommend to close friends and family. Many of these top picks are currently found in our expert reviewers' listening rooms—a testament to the amazing performance of today's affordable high-end products.

The world of high-end audio can often be daunting. With so many products to choose from, finding those few that provide the highest performance and greatest musical enjoyment at a given price point can be an arduous, time-consuming task. We've spent countless hours listening to hundreds of products in order to find those that can be truly considered affordable *high-end* components, saving you time and money. Armed with this buyer's guide, you will have the tools to build your next high-end system and reach new heights of musical enjoyment, without breaking the bank.

We hope you consider this buyer's guide exactly that—a guide to your next purchase. We have taken the guesswork out of narrowing down the many options available, and feel that the reviews, features, excerpts, and sneak previews in the 2014 edition of *The Absolute Sound Buyer's Guide to Affordable High-End Audio* will help to make this your best-sounding year yet.

Happy listening!

Spencer Holbert



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Features

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PM-1 Planar Magnetic Headphones

- Life-like, natural sound quality
- Unparalleled emotional connection to the music
- Comfort and style in a premium package

HA-1 Headphone Amplifier

- Smooth and powerful Class A amplification
- USB DAC, stereo pre-amp, and headphone amp
- Bluetooth and mobile phone connectivity



Sneak Preview: Oppo PM-1 Headphones

Comfort Meets Performance

Steven Stone



Oppo is known for its high-value, high-performance Blu-ray and universal players. Its latest offering is completely different—headphones. Using a planar-magnetic driver with a seven-layer diaphragm with a spiral pattern of flat conductors etched on both sides, the Oppo design effectively doubles the number of conductors in the magnetic field, which increases the headphone's sensitivity, damping, and amplifier compatibility.

The Oppo PM-1 ranks as one of the most comfortable headphone designs due to its relative light weight, clever dual-center-point pivot adjustments, and choice of

either leather or velvet-covered earpads. The PM-1 also comes with two cables: a short, lightweight version for portable devices, and a longer, thicker version for stationary listening. Packaging is quite deluxe, with a cloth-covered outer slipcase that holds a glossy humid-quality wood presentation case inside.

With a basically neutral harmonic balance, the PM-1 will appeal to anyone looking for an easy-to-drive, extremely comfortable, open-back headphone that is suitable for a wide variety of musical genres and electronic devices. Watch for a full review in *The Absolute Sound*. tas

Price: \$1099 US



ON THE HORIZON Sponsored by oppo

Hot New Products Coming Your Way

Neil Gader



Arcam FMJ A19 Integrated Amp

The Arcam FMJ A19 integrated amplifier outputs a healthy 50Wpc and includes a moving-magnet phonostage—an ideal fit for those looking for reference-level sound quality at a sensible price. Featuring some of the latest thinking in high-performance amplifier design, the A19 uses components and techniques normally found in Arcam's top-of-the-range products, like its intelligent power supply, which is engineered to supply two of Arcam's class-leading r-Series products in addition to its main job of powering the amplifier. This flexibility allows the A19 to become a digital hub for a whole range of digital-connection upgrades that includes both wireless Bluetooth devices and USB sources.

Price: \$999. arcam.co.uk

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Product of the Year



HEGEL H300 integrated amplifier:

Let's quote from *The Absolute Sound* issue 239 - the award issue:

"A dual mono design of uncommon versatility, the H300 outputs a hefty 250Wpc into 8 ohms via a Class AB circuit that employs Hegel's proprietary SounEngine Technology. The H300 adds a 32-bit DAC stage to its toolbox, along with five digital inputs including USB. Though its flat-back exterior is seriously Spartan, the excitement ramps up considerably once you start to listen. Sonically the H300 is a strictly neutral and quiet in which even the tiniest tonal colorations or electronic noises have been banned from the soundstage. Hegel's approach is holistic - opening a transparent, harmonious window on the sound. For the H300 neutrality is the launch pad for a presentation of pristine clarity, superb edge definition, and micro-dynamic liveliness. And the DAC stage is just as stunning. It produces startlingly well-focused images without any sensation of soundstage phasiness or image smearing. A product that represents the high end at its most rewarding. (Neil Gader, #233)"

Please stop by and have a listen at any of the authorized Hegel dealers. You'll be amazed!



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Audio by Van Alstine Vision Phono Preamp

The Vision phono preamplifier is AVA's new multi-purpose, direct-coupled, split-passive-EQ, solid-state phono preamp. It is designed with high current buffered output circuits to handle long cables, complex tape loops, and other difficult loads. It is user-adjustable for either moving-magnet or low-output moving-coil cartridges, and offers adjustable cartridge loading and gain. And thanks to its 17" wide chassis, the power transformer and high-current regulated power supply board can be kept far from the active circuits to reduce noise even more. In addition to the free-standing version, the Vision phono preamplifier is available right now as an option that can be built into all new or older AVA preamps.

Price: \$599, stand-alone; \$329 as an option built into AVA preamplifiers. avahifi.com



GamuT Phi 3 MKII

The Phi 3 is the smallest speaker in GamuT's updated Phi MKII Series. Improvements to the lineup include a complete makeover of design and drivers, and a fully reoptimized NRLI crossover network. The beautifully designed, laminated, form-pressed enclosure is heavily braced internally, and is normally only found in far more expensive speaker systems. But beauty isn't all: The Phi 3 MKII is a compact, two-way, bass-reflex design. It features a 25mm dual ring radiator tweeter and a 6" mid/bass driver that is based on a wood-fiber cone structure. The driver cones are then hand-doped with an organic leather oil treatment, that GamuT also employs with the drivers in the esteemed RS Series. Sensitivity is 86.5dB.

Price: \$2199. gamutaudio.com



HiFiMAN HE-560

The HE-560 is HiFiMAN's newest, full-size, reference planar-magnetic headphone. Replacing the company's popular HE-500, the HE-560 is 30% lighter than comparable headphones allowing the listener to comfortably enjoy music for hours on end with minimal listener fatigue. A newly designed headband adds to the increased comfort while beveled ear pads provide better fit and improved sound quality. To achieve a rich classic look as well as durability, the ear cups are made of premium teak wood. On the technical front, the HE-560 includes new single-ended drivers in an open-back design that delivers the lifelike soundstage and spatial imaging that HiFiMAN is known for. Efficiency is increased to 90dB, which allows the HE-560 to be properly driven with a modest-size amplifier. To capture every bit of detail, a premium cable of crystalline copper and crystalline silver is included as standard equipment.

Price: \$899. hifiman.com

ON THE HORIZON



MartinLogan Crescendo

Crescendo is MartinLogan's first wireless Bluetooth- and AirPlay-compatible speaker system—premium sound quality in a sleek, compact enclosure. It features a custom-designed front-firing 5" x 7" polypropylene cone woofer and two of MartinLogan's Folded Motion tweeters. At the core of the Crescendo is an advanced 24-bit/48kHz DSP-based preamplifier in conjunction with a Class-D closed-loop 100W amplifier. With six input methods—AirPlay, Bluetooth, Ethernet, USB, 3.5mm analog, and 3.5mm optical—Crescendo allows for the connection of virtually any device. Crescendo is crafted with a solid MDF enclosure that intensifies low-frequency bass performance while minimizing vibrations. It also features an optional subwoofer output via an analog RCA connection that customizes the crossover. A black-anodized extruded-aluminum remote control and sturdy aluminum stand complete the package.

Price: \$899. martinlogan.com



M2Tech HiFace

The M2Tech "HiFace" USB DAC/Pre covers all file formats up to 32bit/384kHz. One HiFace DAC and a laptop, Mac Mini, or even an iPad provide a high-end music-file source for the price of a pair of mid-range digital interconnects. The HiFace DAC includes all necessary features to be the perfect DAC for various types of hi-fi systems. Among them are asynchronous data transfer mode on USB 2.0, compliance with USB 2.0 Audio Class (no drivers needed for Mac OS, iOS, Linux, and Android), very low phase-noise oscillators, and the latest generation IC, capable of 384kHz and 32 bits. While the HiFace DAC is purposely designed to perform best with an amplifier or preamplifier's line-level inputs, its 2.0V RMS line-level output allows it to be used to drive medium- and high-impedance headphones on its own.

Price: \$269. m2tech.biz



PMC Twenty.21

The award winning Twenty.21 two-way loudspeaker is crafted using sophisticated cabinet construction, proprietary drive units, and patented absorption materials and techniques. PMC's ATLTM (Advanced Transmission Line) enclosure technology provides greater bass extension and loudness than a ported or sealed design of a similar size, which produces an effortlessly natural, rich, room-filling sound that suggests a cabinet of much larger dimensions. Moreover, the very consistent bass-driver loading brings the welcome benefit of frequency response (50Hz-25kHz) that remains smooth and even regardless of listening level. This versatile loudspeaker can be used in a two-channel setup or a home theater. The ability to bi-amp and bi-wire make the Twenty.21 ideally suited for any application. Rated sensitivity is 87dB, impedance is 8 ohms. Available in walnut, amarone, diamond black, and oak finishes.

Price: \$2900. soundorg.com

ON THE HORIZON



Pro-Ject Xtension 9 Evolution

Xtension 9 Evolution incorporates Pro-Ject's extensive experience in slim-line design to fit standard audio racks. Its chassis is made from MDF filled with metal granulate, which provides high mass and is non-resonant. Magnetic feet, which decouple the main plinth from its base, are combined with a weighty 16kg total turntable mass. The result is a unique combination of "mass loaded" and "floating turntable" design principles. The final product benefits from a resonance-free heavy platter, which runs ultra-silently on an inverted ceramic ball-bearing with magnetic suspension. Xtension 9 Evolution comes with a pre-mounted top-class tonearm, the 9cc Evolution, four different counterweights suitable for a wide range of cartridges, premium tonearm cable, heavy-weight record clamp, and acrylic dustcover. High-gloss lacquer finish options are available.

Price: \$2499; Super Pack edition adds a pre-mounted Blue Point Evo III, \$2650. sumikoaudio.net

PSB Imagine X Series

In engineering the new Imagine X Series, PSB's founder and chief designer Paul Barton focused on simplicity and distilling the sound to its purest essence. The PSB team was challenged to produce the best-performing speakers with the most value in the market, for real people who want real sound. The form factor of these bass-reflex designs has been simplified, but the object is never less than doing music justice. The X Series represents the culmination of PSB design expertise and the refinement of the firm's traditional virtues. Imagine X consists of four models carefully matched in timbre, giving the user the flexibility to combine any of the models to work seamlessly together in many spaces or system setups.

Price: The new X Series comprises two tower speakers—the X1T, \$899; the X2T, \$1299/pr.; one set of monitors, the XB, \$499/pr.; and the XC center channel, \$399. All Imagine X models are offered in simulated black ash. psbspeakers.com



Rega RP8 "Skeletal" with Apheta MC Cartridge

The RP8 is the first Rega "skeletal" design offering groundbreaking levels of performance and value. It uses custom-designed materials, a new tonearm-bearing assembly, a 24V low-voltage motor controlled by a hand-tuned electronic power supply, and a custom version of Rega's Planar 9 hub-bearing assembly. Low-mass, high-rigidity plinths are combined with electronically controlled low-vibration motors, high-flywheel-effect platters, and lower-mass/higher-stability tonearms. The compact power supply uses a high-stability, crystal-locked, low-distortion sinewave generator. This, along with an efficient drive amplifier fed from a stabilized DC power supply, generates a 24V AC balanced signal of less than 0.05% distortion, which is completely impervious to any changes in voltage and conditions.

Price: \$3995. soundorg.com



ON THE HORIZON



Rega DAC

The Rega DAC is a 192kHz/24-bit D/A converter that incorporates an enhanced version of a Rega-designed circuit. Simple to set up and use, the Rega DAC will optimize the performance from any two-channel PCM-digital-audio source, such as a CD player, PC, or streaming device. The use of high-quality lossless files such as WAV, FLAC, and ALAC offer performance through the DAC equal to and in some cases better than Red Book CD. The Rega DAC is housed in a custom aluminum-and-steel case, and boasts a pair of Wolfson DAC IC's, five user-selectable digital filters, two isolated coax inputs, two TosLink SPDIF inputs, and an isolated USB input.

Price: \$1095. soundorg.com

SVS 2000 Series Subwoofers

The latest addition to the SVS arsenal of subwoofers is the PB-2000. Inspired by the Ultra Series, the 66-pound PB-2000 has a clean, modern look with radiused corners, and a premium black grain finish. The bass-reflex design features an SVS 12" high-output driver matched and maximized to its 500W Sledge STA-500D amplifier. The transducer sports a computer FEA-optimized motor for low distortion, a heavy-duty voice coil for extreme power handling, and an upgraded suspension for improved linearity and control. The lightweight aluminum cone delivers high efficiency and the rubber surround offers excellent durability and long life. Equipped with a stylish and protective, curved, black metal grille. Also available is the SB-2000, a compact 14.2" version in a sealed enclosure. Featuring the same SVS 12" driver and 500W power, yet weighing in at only 35 pounds.

Price: \$799 and \$699, respectively. svssound.com



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OPPO Personal Audio Products

- HA-1 Headphone Amplifier
- PM-1 Planar Magnetic Headphones



How to Choose an Audio System

Excerpted and adapted from *The Complete Guide to High-End Audio* (fourth edition). © 2014 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.

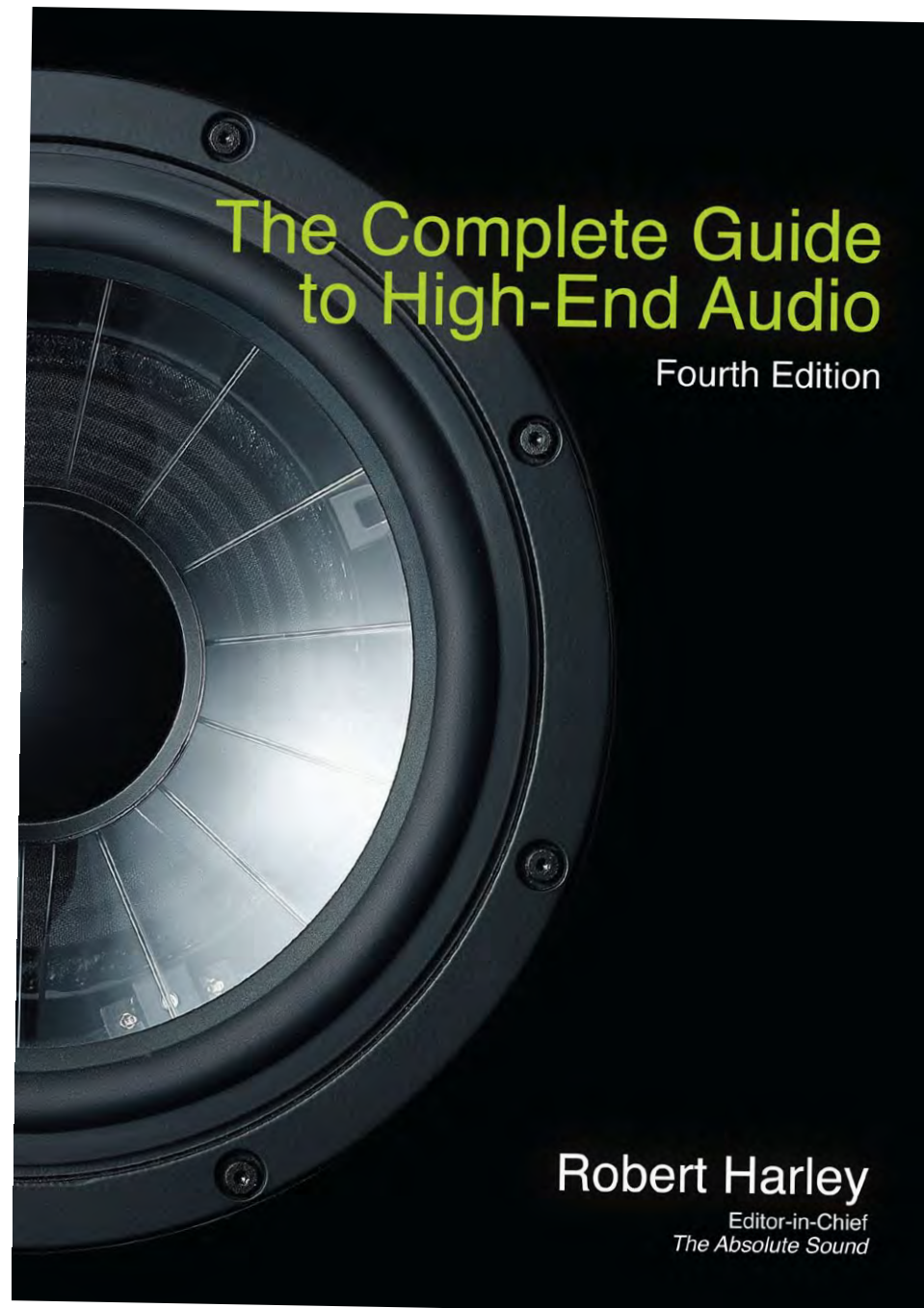
Although selecting hi-fi components may seem a daunting task, a little knowledge and preparation will go a long way toward realizing your dream system—and staying within your budget. The informed shopper knows that choosing the right components, matching those components to each other, and setting them 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 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-



Book Excerpt: How to Choose an Audio System

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 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

Book Excerpt: How to Choose an Audio System

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



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Book Excerpt: How to Choose an Audio System

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

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Book Excerpt: How to Choose an Audio System

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.

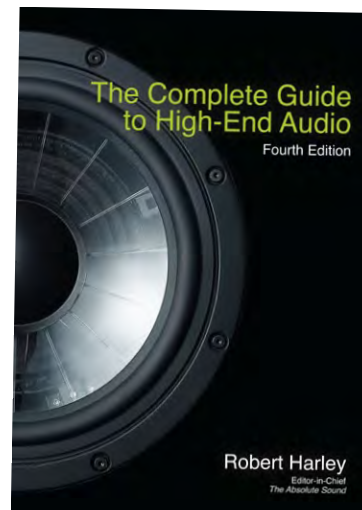
The other source of system-matching tips is magazine reviews. Product reviews published in reputable magazines will often name the associated equipment used in evaluating the product under review. The reviewer will sometimes describe his or her experiences with other equipment not directly part of the 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.

Excerpted and adapted from *The Complete Guide to High-End Audio* (fourth edition). © 2014 by Robert Harley. Reprinted with permission. To order, call 800 888-4741 or visit www.hifibooks.com TAS

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EQUIPMENT REVIEWS

Electronics



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.

WYRED4SOUND MINT

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

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

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. 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."



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

WYRED4SOUND

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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WYRED4SOUND MINT

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 Tele-

caster/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 Wyred4Sound'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 woozy 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

Here is a most versatile and satisfying performer that I can see as the heart of a fine computer-driven desktop system

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. **tbs**





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-

EQUIPMENT REVIEW - NuForce DDA-100 Integrated Amplifier

100. If you try playing full-resolution 192/24 files through the DDA-100 all you will hear is modulated noise through your speakers.

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. **185**

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

NUFORCE, INC.

382 South Abbott Ave.,
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NuForce MCP-18 Multichannel Analog Preamplifier

Transparency at a Budget Price

Steven Stone



Back in the mid-Nineties, I was still in the throes of home-theater madness and wrote: “Very soon, stereo will be only an output setting on your multichannel system.” Obviously, I was wrong. But many audiophiles do require a system that can serve for both home-theater multichannel playback and two-channel music. The majority of dual-system buyers opt for a digitally enabled multichannel receiver or preamp/processor, but some would prefer a more analog way to reproduce their analog sources than a digital preamp. NuForce has a solution: the MCP-18 multichannel analog preamp. It was designed to handle both multi- and two-channel analog sources in the most sonically unobtrusive manner possible. It is basically a source-selector and gain-adjustment device whose signal path has been optimized to obtain maximum transparency and minimum coloration. Priced at \$995, the MCP-18 offers audiophiles a budget high-sound-quality alternative to multichannel digital pre/pros, while still retaining a system’s multichannel capabilities.

Technology and Ergonomics

The MCP-18 looks very much like NuForce’s companion model, the AVP-18 A/V processor. Both have a rhomboid-shaped front panel whose sides and top slant inward. For front-panel controls, the MCP-18 has two good-sized knobs on either side of a centrally located LED display panel. The MCP-18 has two sets of single-ended RCA 7.1 inputs, one pair of two-channel balanced XLR inputs, and two pairs of two-channel single-ended RCA stereo inputs. Outputs for the MCP-18 include one set of 7.1 single-ended RCA and one set of 7.1 balanced XLR connections. Both sets of outputs are simultaneously active.

Although the MCP-18 supports 7.1 channels, the main right and left front channels have a slightly different signal path than the rear, side, center, and subwoofer channels. According to NuForce’s Casey Ng, “What we wanted to do with the MCP-18 was to have it first and foremost serve as a superb two-channel preamp. We borrowed heavily from our P20 and HAP-100 designs. The front left and right channels use a digitally controlled, discrete-resistor-ladder circuit. This

uniquely implemented resistor ladder is in the feedback loop of the high-performance op-amp circuit so as to have minimal impact on the signal chain.”

All of the MCP-18’s channels use silver contact relays for input selection to maintain signal integrity, but only the front two channels employ a resistor-ladder volume control. The other six channels use a combination monolithic switch/input selector and AGC (Automatic Gain Control) volume control. After the volume controls and linestage section, the signal goes through a single-ended-to-balanced conversion circuit (a phase-splitter) that generates the balanced signal.

When I asked Casey Ng about the MCP-18’s circuitry, he told me: “Basically, there is no ‘secret sauce’ in the MCP-18. The only secret is that our NuForce HAP-100 and MCP-18 are the world’s lowest-cost high-performance preamps that offer a stepped attenuator. Our own P20 is \$5k and was originally intended to be the best-priced high-end preamp with a stepped attenuator. The MCP-18 has a very similar circuit and performance.”

The individual output level or trim

EQUIPMENT REVIEW - NuForce MCP-18 Multichannel Analog Preamp

of each channel of the MCP-18 can be adjusted independently via either its front panel or a credit-card-sized remote. The MCP-18 remote can also select inputs, adjust the overall volume, mute the signal, and turn the MCP-18 on and off. One control you won't find on the remote is a left/right channel balance adjustment, but you can use the individual trim settings to achieve the same results.

The Setup

I used the MCP-18 as both a two-channel and multichannel preamp in my desktop and in my room-based systems. Depending on your front speakers' capabilities, the MCP-18's "purist" design and ergonomics may require some re-jiggering of your setup. Obviously, the MCP-18 was designed for use in a 5.1 or 7.1 multichannel system. If you have a player with multichannel analog outputs, such as the Oppo BDP-103, you merely hook up its outputs to one of the MCP-18's two multichannel input sets, select it, and you get 5.1 or 7.1 (depending on your system's capabilities).

With multichannel sources your source device will use its own built-in crossover system to send low-frequency information to the subwoofer and spare the front channels from low-bass duties. With two-channel sources, the MCP-18 gives you two channels of output. But what if you have a system that uses smaller front right and left speakers with limited low-frequency capabilities? With two-channel stereo sources, the MCP-18 sends the full frequency signal to your two front channels without any crossover to route bass into your subwoofers.

If you want to use your subwoofer with two-

channel material you will have to do some extra work. You will need to set up a way to route your two-channel music through a crossover so that the bass will go to the subwoofer. Most subwoofers have low-pass/high-pass crossovers built into them that you could use—merely run the line-level output from the MCP-18 into your subwoofer and then use its built-in crossover. But the disadvantage of this arrangement is that when you go to a multichannel source that already has crossed-over low frequencies to a .1 subwoofer circuit, the sound will have too much bass. To go from multichannel to two-channel and back requires changing the circuit path if you want to use your subwoofers for both two-channel and multichannel material.

Many subwoofers have multiple selectable inputs. This allows you to have one input coming from the MCP-18's sub output as well as a second input—a stereo pair coming from the MCP-18's front left and right output, connected simultaneously to your subwoofer. The front left and right stereo feed will go through the subwoofer's internal crossover and then to your power amplifier. When you want to listen to two-channel sources you'll employ the subwoofer's crossover. But when you listen to multichannel sources you'll go directly from the sub output to your subwoofer. To accomplish this you will need to disconnect the stereo feeds from the subwoofer and connect them directly to your front-channel power amplifier. Depending on the physical location of your subwoofer and front-channel power amplifier, the switchover could be less than convenient.

I have two Parasound P7 (\$1995) multichannel analog preamps, one in each of my two room-

based systems. The Parasound P7 has very similar functionality to the NuForce MCP-18, but includes a built-in crossover for two-channel sources so that you can go seamlessly from two channels to multichannel, using your subwoofer with both kinds of sources. From an ergonomic perspective, it's unfortunate that NuForce chose not to include a similar crossover scheme in the MCP-18.

When I set up the MCP-18 as a stereo preamplifier in my computer-audio system I used a different wiring arrangement. Since I didn't have to worry about multichannel sources I connected the balanced XLR front left and right outputs directly to my front-channel amplifier and then connected the single-ended stereo outputs to my subwoofer. After adjusting the subwoofer's output and crossover points, the setup was done and required no additional adjustments or cable switching.

Sound

Reviewing the sound of a preamp used to be easy. All you needed was another reference preamp that had a tape-loop circuit in it. We used to put the preamp under review in the tape loop and then switch it in and out of the circuit and compare the sound. The only preamp that I own that still has a tape loop circuit is an Accuphase C-200, and when I tried the tape-loop test I could not hear any difference when the MCP-18 was part of the circuit. Although the Accuphase was recently refurbished and operating within spec, either the MCP-18 was completely transparent or the Accuphase was not sufficiently high resolution for me to discern the differences when the MCP-18 was in the circuit. I needed to go to plan B.

Plan B was simple—connect more than one USB DAC via its analog outputs to the MCP-18 and compare the sound. Since my next review will be of several small-footprint USB DACs, this method killed two reviews with one "Stone," so to speak. I connected several DACs to the MCP-18 and began listening.

Comparing DACs through the MCP-18 was enlightening in several ways. First I quickly learned to love the calibrated .5 dB step increments on the MCP-18. Using test tones I was able to accurately match the output levels on multiple DACs so that when I switched from one to the other I could make sure that differences in their different output levels were not affecting what I heard.

SPECS & PRICING

Inputs: Two RCA, one XLR, two 8-channel RCA	Power Consumption: 1W standby, 10W operating
Outputs: RCA and XLR (XLR output is balanced)	Weight: 15 lbs.
Connectivity: RS232 Com Port; X 1; Trigger out: X 1	Price: \$995
THD+N: 0.002% at 1kHz	NUFORCE INC.
S/N Ratio: 105dB	47865 Fremont Blvd Fremont CA, 94538 (219) 363-1328
Frequency response: 10Hz-100kHz -0.06dB; 20Hz-20kHz -0.04dB	nuforce.com
Dimensions: 17" x 3.1" x 13.4"	

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EQUIPMENT REVIEW - NuForce MCP-18 Multichannel Analog Preamplifier

Although I could not do instant A/B switching from one USB DAC to another because the switchover required first changing the MIDI Out setting in my Mac computer, then changing the input selector on the MCP-18, and finally adjusting the output levels to match, I did get to a point where the switchover took under seven seconds. During these A/B tests it became obvious that the MCP-18 was sufficiently transparent for the subtle differences between DACs to be discernable.

During my DAC comparisons I discovered that it was very difficult for me to uncover the MCP-18's intrinsic sound. When I changed DAC sources what I heard was the new DAC, not any colorations that I could attribute to the MCP-18. While I would never be so brash as to call any component completely transparent and neutral, in all my listening time with the MCP-18 I could not come up with any negative sonic characteristic that I could say was part of the MCP-18's fundamental sound.

While I would not dispute that different preamps in different systems can sound better or worse than in others, in both of my room-based systems I was hard-pressed to find any noticeable differences between the sound of the MCP-18 and the Parasound P7 on multichannel sources. On two-channel sources I did hear some differences at first, but after readjusting my subwoofer settings so output levels were identical, the differences vanished. Both preamps produced equally large soundstages with the same amount of detail, dynamic range, and depth information.

Conclusion

If you are in the market for a multichannel analog preamp, you should consider the MCP-18, regardless of how much more money you were prepared to spend. It looks good, sounds virtually invisible, and even has a remote, all for under \$1000. The MCP-18's only drawback is that it has no built-in crossover for two-channel sources, but if you have full-range front left and right speakers this may not be an issue for you.

While I still subscribe to the opinion that no active preamp can be as transparent as no preamp at all, the MCP-18 is one of the most transparent preamps I've heard. It is also the least expensive preamp I've reviewed that has such a high degree of transparency. According to NuForce's head honcho, Jason Lim, "Basically, the MCP-18 is a hidden gem in our products and on hindsight we grossly mispriced it." NuForce's "loss" could be your gain. **tas**



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Rotel RCD-1570 CD Player, RC-1570 P7 Preamplifier, and RB-1552 Mk II Power Amplifier

Rotel Returns to its Roots

Alan Taffel

Once upon a time, the audio forces of America, Britain, and Japan combined to create a company called Rotel. And it was good. Long before others, Rotel demonstrated that high-end sound need not come at a high-end price. First came a now-legendary CD player costing a mere \$400 that outperformed units ten times its price. Following that, the company birthed electronics of all stripes: amplifiers both power- and pre-, as well as splendid DACs. Rarely did Rotel set a foot astray.

Then, quite suddenly, a change occurred. Rotel devotees noticed that new products were less often stereo and more often of an unfamiliar (and unwanted) breed called “home theater.” If that wasn’t disconcerting enough, the company’s lauded Class AB amps were mostly relegated to Class MIA, replaced by wan-sounding units aptly dubbed Class D. “Where,” the faithful cried, “is the Rotel *d’antan*?”

Well, the wait was long, but our old friend appears to be back. Just take a look at this shiny new stack—there isn’t a home-theater or Class D model in it. Ah, but does it live up to Rotel’s “giant killer” reputation from the days of yore? Let us see.

Rotel’s new stack comprises three components that—esthetically and functionally—were obviously designed to be deployed in tandem. First in line is the Wolfson DAC-powered RCD-1570 CD player. This slot-loaded player has both single-ended and balanced analog outs, as well as a digital output. The latter feature somewhat future-proofs the player, as it can still be used as a CD transport in the event its owner buys a higher-end outboard DAC (maybe the RDD-1580). There are also RS-232C and Rotel Link connections for external control.

Next in line is the RC-1570 stereo preamplifier, a fully featured unit with four analog inputs, an additional balanced analog in, and even a

moving-magnet phono stage. But that’s not all: The RC-1570 is equally adept with digital sources, for which there are two coax and two optical inputs, plus two USB inputs (one on the front panel and one on the back). For these, the preamp is graced with the same Wolfson DAC as the CD player, and supports resolutions up to 192/24. With all these inputs and the built-in DAC, the RC-1570 can serve neatly as a versatile control point for a modern audio system.

Finally, meet the RB-1552 Mk II 120Wpc Class AB stereo power amplifier. The amp boasts the sort of holistic design and careful parts selection that have distinguished Rotel’s best amps through the ages. Capacitors, for

example, are of the slit-foil variety. Further, the unit is essentially a dual-monoblock design, with separate left and right rectification. The RB-1552 Mk II accepts both single-ended and balanced connections (the balanced sound way better). In keeping with the versatility theme, the amp has two sets of stereo amps for driving two sets of speakers. And for those whose speakers require a little more oomph, such as Maggie owners, Rotel makes a more powerful (\$600 more expensive) 200Wpc version, the RB-1582 Mk II.

Stacked, these components look purposeful (especially in black), yet elegant (especially in silver) in the reassuring form-follows-function



EQUIPMENT REVIEW - Rotel RCD-1570, RC-1570, and RB-1552

Rotel manner. Their looks will raise the pulse of any Rotel aficionado. Pricewise, too, this gear certainly promises a return to the Rotel of old. Each component is a mere \$999. In today's audio world, that's a major bargain—assuming the Rotel stack truly delivers high-end sound.

The sonic question for components in this price range is *not* whether they can produce a fool-you facsimile of the real thing. Unfortunately, barring a technological revolution, they can't. The more pertinent question, then, is whether they get enough sonic elements right—and whether those strengths are not overly compromised by the inevitable trade-offs—to convey music engagingly. “Engaging” is a word we high-enders use as shorthand for the cumulative effect of a multitude of sonic factors, but I believe that chief among these are the elements that most directly impact musical expressivity. Specifically, I look for good timing, tonality, and dynamics.

Timing not only gives music forward motion; its subtle variations contribute greatly to emotional expression. Proper tonality has myriad benefits. Composers carefully choose their orchestration to convey emotional content through instrumental colors. The contrast between those colors is essential to enabling listeners to follow interleaving melodic lines. And obviously the tonal inflections of, say, a singer's voice is a primary conveyor of emotional intent. Finally, without dynamics we would lose the subtle sweep that defines a melodic line, as well as the grand sweep of an orchestral movement or entire piece.

Of course, there are many other sonic attributes that we associate with high-end

sound, like resolution, speed, spatiality, imaging, and frequency extension. There is no doubt that these add to the engagement factor—but engagement can occur without them. In contrast, the troika of timing, tonality, and dynamics is essential.

I hope I do not appear to be “dumbing down” my standards for affordable gear. The essential sonic elements I have described are not easy to come by! I regularly hear products—even expensive ones—that fail in one or more of these areas. So finding affordable gear that gets them all right is a find indeed. The new Rotel stack, I am happy to report, gets them all right.

Listen, for instance, to the Praga CD of Dvorák *Serenades from Bohemia*. If the timing isn't just so, these octets stall faster than a Jag XKE. If the timbres aren't spot on, instrumental lines become blurred, and if micro-dynamics aren't fully captured, the interplay between musicians and the *lift* of the music is lost. But through the Rotel stack, all of these elements are fully present. Strings are properly rich, bass is weighty, and the piano possesses a lovely round tone. Microdynamics and tiny tempo variations come through clearly, allowing the listener to hear the give and take among the players. Strings may be a touch more strident than would be ideal, but that is a small trade-off—and small trade-offs are precisely what we hope for in affordable components.

This is all great news, but there is icing on this cake because the Rotel stack makes very few apologies even in *non-essential* categories. Point the laser to Mary Guathier's “Falling Out of Love” from *Mercy Now* and you will be amazed at not only the grittiness of her voice, but also

the broad soundstage, well-placed images, and the rock-solid bass—all of which suck you right into her slithery world. Similarly, on the terrific Analogue Productions hybrid disc of Dave Brubeck's *Time Out*, the Rotels not only get the infectious timing and tonal characteristics of the instruments right; their tinkling top piano notes are also airily unrestrained. Again, this last element is not essential to fully digging the music here, but it goes a long way toward hinting at that “real” quality we high-enders seek.

The sound only gets better with high-resolution digital sources. With such material, the RC-1570 exhibits a level of purity that is a skosh higher than it attains when handling the RCD-1570's analog output. With high-res digital sources, instruments and singers step farther forward from a quieter background, adding to the drama of the listening experience. Apparently, Rotel has not lost its touch with DACs.

Modestly priced audio products may not be able to produce the “absolute sound,” but the best of them can fully deliver the heart of the high end. Rotel's 1570/1552 stack falls decisively into this category, forming an incredibly affordable, versatile system that conveys all the music you could want—and more—with very few trade-offs. Rotel is back, my friends. And it is good. **tas**

SPECS & PRICING

RCD-1570 CD Player

Outputs: One pair RCA; one pair XLR; one coax digital RCA

Dimensions: 17" x 4" x 12 5/8"

Weight: 14.7 lbs.

Price: \$999

RC-1570 Preamplifier/DAC

Inputs: Four RCA; one mm phono RCA; one XLR; two coax digital; two optical; two USB

S/N ratio: 110dB (line); 80dB (phono)

Frequency response: 10Hz–95kHz +/-3dB

Dimensions: 17" x 4" x 12 5/8"

Weight: 16 lbs.

Price: \$999

RB-1552 Mk II Stereo Power Amplifier

Power output: 120Wpc into 8 ohms

S/N ratio: >120dB

Frequency response: 4Hz–100kHz

Inputs: One pair balanced (XLR); one pair single-ended (RCA)

Outputs: Two pairs per channel of binding posts

Power consumption: 400W

Dimensions: 17" x 5.25" x 13.4"

Weight: 31.6 lbs.

Price: \$999

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54 Concord St.

North Reading, MA 01864

(978) 664-3820

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Peachtree Audio Nova125 Integrated Amplifier/DAC/Headphone Amp

Power and Refinement to Spare

Chris Martens



Some years ago, Peachtree Audio recognized that a seismic shift in the high-end audio universe was at hand—a shift wherein PCs would step outside of their traditional roles as office tools to become full-fledged digital-audio source components. Thus, long before others began to pursue the idea, Peachtree was hard at work developing integrated amplifiers fitted with easy-to-use, built-in, high-performance DACs. In retrospect, the concept not only seems brilliant, but downright prescient. Peachtree also understood that with the rise of interest in computer audio there would come a golden opportunity for high-end manufacturers to reach out to young music lovers who might never otherwise have considered owning high-performance audio systems of any kind. As a result, Peachtree has always sought to build components clever enough, hip enough, and accessible enough to appeal to young, computer-centric music lovers, but that also offered credible high-end features that appeal to veteran audiophiles. This requires, of course, finding a balance between simplicity and sophistication and between price and performance—a point of balance many Peachtree components have struck in a successful way.

If there is any drawback, I think it may involve the fact that some Peachtree components may suffer from a perception problem: Are they mid-fi (albeit very good mid-fi), or are they the gateway to the serious high end, or perhaps both? What causes these questions to be raised is that earlier-generation Peachtree amp/DACs traditionally have had front-end sections that offered considerably stronger and more sonically sophisticated performance than their associated power amplifier sections did. In fairness, the power amplifier sections of those earlier generation Peachtree amps could perform pretty well when matched with relatively easy-to-drive

loudspeakers, but they offered limited current drive and power output capabilities and thus were not suitable for driving some of today's best, but also most demanding, value-priced speakers (e.g., Magnepan's excellent but power-hungry model 1.7s). Faced with this dilemma, Peachtree Audio founders Jim Spainhour and David Solomon did what high-enders have always done: They upgraded, and in a big way.

Accordingly, Peachtree has revised its entry-level integrated amps by improving their already very good front-end sections and then by equipping their new models with powerful, high-current Class D power amplifier sections. Consider,

as an example, Peachtree's new Nova125 amp/DAC (\$1499), the subject of this review. The old Nova put out 80Wpc into decidedly benign 6-ohm loads. By comparison, the new Nova125 belts out a generous 125Wpc at 8 ohms and an even more impressive 220Wpc into 4-ohm loads. Moreover, Peachtree claims the Nova125's "high-current output stages can comfortably drive any speaker load from 2 ohms."

Then, where the original Nova provided a 24/96-capable DAC with an adaptive USB input and four SPDIF inputs, the Nova125's onboard ESS Sabre 9023 upsampling DAC offers 24/192 resolution (except for the optical input, which is limited to 24/96), with an asynchronous USB input and three SPDIF inputs (two coaxial and one optical). Peachtree points out that the ESS 9023 DAC uses "a patented process called Hyperstream," which "buffers the incoming digital bitstream and reclocks it from thousands of picoseconds of jitter to less than 3 picoseconds." Expanding on this theme, the firm says the new 24/192-capable asynchronous USB input, "keeps digital jitter at bay by not relying on the audio clock in the computer, which can get thrown off by the thousands of processes running in your operating system's background." Finally, the Nova125's DAC section is backed by a decidedly performance-minded new Windows device driver, which is provided on an included CD ROM. In addition to its many digital inputs the Nova125 also provides

one analog input to support any legacy analog components the owner may wish to connect.

Astute Peachtree observers will notice that the old Nova did have a somewhat more generous mix of inputs than the Nova125 does (the old Nova offering five digital and three analog vs. four digital and one analog for the new model). But, given that the new DAC supports higher-resolution formats and asynchronous USB backed by more sophisticated device driver software, there is every reason to think that the sonic performance of the Nova125 should be significantly higher than that of the old Nova.

To give users a measure of control over amplifier voicing, the Nova125 can be run purely in solid-state mode, or, when desired, with a triode 6N1P tube buffer section engaged (the tube buffer can be switched on directly from the Nova125's remote control). The tube buffer also provides a Class A tube-powered output for the Nova125's headphone amplifier. According to the manufacturer, the Nova125 power amplifier section uses "the newest generation of Class D technology" with benefits said to include "extended bandwidth, improved dynamic range, and exceptionally low distortion," plus the aforementioned ability to handle low impedance loads. The bottom line is that, apart from a modest reduction in the net number of inputs supported, the new Nova125 appears to be better than its predecessor in every way, but costs only about \$300 more. All of this, of course, sounds good on paper and in theory, but how does the Nova125 sound in real life?

Well, let me come right out and say it: Peachtree's Nova125 sounds terrific. Taking nothing away from the original Nova (and iNova) designs, I would say this new amp sounds like it belongs in an entirely different and better class of equipment than the

EQUIPMENT REVIEW - Peachtree Audio Nova125 Integrated Amp/DAC

original Novas did. The original Nova had a warm, friendly, inviting sound, but a sound that in truth did not provide the last word in resolution, definition, or focus. What is more, the original Nova's dynamic capabilities were highly load dependent. By comparison, the Nova125 sounds as if someone has turned its resolution, definition, and focus "knobs" up to 12, yet without in any way causing the amp to sound sterile, mechanical, or edgy. More importantly, the Nova125 sounds powerful (and *is* powerful) in a way no previous generation Peachtree Nova Series amp has ever been. In short, this thing flat-out rocks, yet in a quite sophisticated way.

Some will surely ask, "Yeah, but can it actually drive truly demanding speakers?" To settle the question once and for all, I connected the Nova125 to my undeniably power-hungry Magnepan 1.7s, put on a dynamically challenging track, and let things fly. And man, did they ever fly. The track I am speaking of is the exuberant and boisterous all-percussion cut "Stank" from Jamey Haddad's *Explorations in Space and Time* [Chesky]. "Stank" features some low percussion drum thwacks that are likely to loosen your molars, plus a plethora of (somewhat) more delicate higher percussion voices that supply piquant commentary and textures, with the proceedings as a whole captured in a wonderfully reverberant, natural acoustic space. In

short, it's the sort of track where there is a lot going on at once, serving up everything from bombastic, brute-force dynamics to multiple layers of delicate textural and transient detail. There is, quite simply, no place for amplifiers to hide.

Happily, the Nova125 has no need or desire to hide from any types of music or loudspeakers, because on "Stank" it rolled up its figurative sleeves and pushed my Magnepans with serious authority and a welcome dash of brio. The big drums on the track crackled and thundered as they should, while the higher-pitched drums exhibited excellent transient "snap" and beautiful variegated skin sounds that conveyed an impression of real players deftly varying the intensity of their touch and attack from note to note. Through all of this, the Peachtree did not whimper, whine, or wilt; instead, it just cranked out the song's ultra-funky groove for all it was worth. In my view, this is something the old Nova could never have done—at least not with Maggie 1.7s. With the Nova125, then, Peachtree has cooked up a sensibly priced amplifier that possesses, in roughly equal measure, both serious dynamic muscle and a generous measure of finesse.

To explore the finesse dimension more fully, though, I decided to put on one of my favorite orchestral recordings: namely, the Michael Tilson Thom-

as/San Francisco Symphony performance of the Henry Brant-orchestrated version of Charles Ives' *A Concord Symphony* (SRS Media). In particular, I focused on the third movement of the symphony, entitled "The Alcotts" (each of the symphony's movements is named for an important figure or figures in the American Transcendentalist movement). What I've found appealing about this live recording (captured in Davies Symphony Hall in San Francisco) is the way it provides rich but believable amounts of orchestral detail, while also placing the orchestra within the context of a naturally resonant, three-dimensional performance space (or at least that is what should happen with good electronics driving a music system).

Happily, the Nova125 did not disappoint. It did a lovely job with the voices of the various orchestral sections at hand, offering a particularly fine rendition of the winds and brass. Indeed, the brass theme introduced about three minutes into the movement sounded heart-meltingly beautiful, conveying that elusive mix of transient bite and blooming burnished "glow" so characteristic of brass at its best. Throughout the movement, the Nova125 also revealed enough low-level detail to remind me that the recording was captured live, yet without pressing details forward so insistently as to make a nuisance of itself. While the Nova125 can and does sound very focused—much

SPECS & PRICING

Power output: 125Wpc into 8 ohms, 220Wpc into 4 ohms

Inputs: One asynchronous USB, two coaxial SPDIF, one optical SPDIF, one stereo analog, one 12V control signal.

Outputs: Speaker taps, 1/4-inch headphone jack, one variable level stereo preamp output

DAC: ESS Sabre 9023

Jitter: <3ps measured at master clock.

Resolution levels supported: MP3, 16/44.1, 16/48, 24/88, 24/96, 24/176, 24/192

USB: Asynchronous up to 24/192

Optical: Up to 24/96

Coax: Up to 24/192

Tube complement: One 6N1P (used for headphone amp, switch-selectable tube buffer stage)

Frequency response: 20Hz-20kHz +0.5dB S/N: 96dB

Dimensions: 14.8" x 4.37" x 11.5"

Weight: 21.65 lbs.

Price: \$1499

PEACHTREE AUDIO

2045 120th Avenue NE

Bellevue, WA 98005

(704) 391-9337

peachtreeaudio.com

ASSOCIATED EQUIPMENT

Digital Sources: AURALiC VEGA Digital

Processor, Rega Isis CD player/DAC, Musical Fidelity kW SACD player, Oppo BDP-105 universal/Blu-ray player. Windows PC feeding the DAC sections of the above devices with uncompressed digital audio files.

Linestage Preamplifiers: Burson Audio Soloist, NuForce Reference P8, AURALiC TAURUSMkII

Power Amplifiers: NuForce Reference 9 Special Edition monoblocks

Integrated Amplifier: Rega Osiris

Speakers: GoldenEar Triton Seven, Magnepan 1.7.

Headphone Amplifiers: Auralic Taurus MkII, Burson Audio Soloist, HiFiMAN EF-6, and more.

Headphones: Audeze LCD-3 and LCD-2 with Rev2 drivers; HiFiMAN HE-400 with Rev2 drivers, HE-5LE, HE-500, and HE-6; and more.

Cables: Furutech Flux-series interconnect, speaker, and power cables; Kimber B Bus Ag USB cables.

A/C Power: Furutech Daytona 303 power filter/distribution system, power cable as above, PS Audio Soloist in-wall power conditioner.

Equipment Racks and Room Treatments: Auralex Studiofoam panels, RPG B.A.D. panels, Solid Tech Rack-of-Silence Reference racks with various vibration control accessories

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EQUIPMENT REVIEW - Peachtree Audio Nova125 Integrated Amp/DAC

more so than the original Nova did—there is also about this amp/DAC combo an over-arching quality of “just-rightness” that reminds me of the old adage regarding the importance of enjoying all good things in balance and moderation.

How did the Nova125 fare as a DAC? To find out, I used an Oppo BDP-105 as digital transport to test the SPDIF inputs and a Windows PC loaded with 100% uncompressed digital audio files to try out the asynchronous USB input. As a comparison standard, I used my reference Rega Isis CD player/DAC. What I discovered was that the Nova125's DAC and SPDIF inputs sounded, again, more detailed and focused than the DAC section of the original Nova did. However, I felt that the DAC section's best performance was realized through the asynchronous USB input, which was even more refined, tightly focused, and generally more spacious and three-dimensional than the SPDIF inputs. While the Nova125 could not match the even higher levels of resolution and all-round refinement of my Rega Isis, I felt it acquitted itself admirably given the huge price differential between the two components.

What of the Nova125's 6N1P tube buffer? Frankly, I came into this review thinking that I might enjoy using the buffer, since I have been a proponent of hybrid tube/solid-state amplifiers in the past. However, in doing some admittedly crude “blind testing” with and without the tube buffer, I consistently found that I preferred the clearer and, to my ears, more explicit and less colored sound of the Nova125's solid-state circuitry. Your mileage, of course, may vary, but for the bulk of my listening tests I felt more comfortable with the tube buffer disengaged (though I continued to try it from time to time, just to keep an open mind).

Finally, I wanted to check out the Nova125's headphone amplifier section and for this purpose I listened through my reference Audeze LCD-3 planar-magnetic headphones, comparing back and forth between the Nova125 and the superb Burson Audio Soloist headphone amp (the Burson is essentially a handmade Australian headphone amp/preamp that sells for just under \$1000). What I found was that the Nova125 sounded very good, with plenty of output for powering the Audezes (which are not the easiest-to-drive headphones around), a reasonably low noise floor, and a rich (but not overly rich) and articulate sound. Nevertheless, the Burson sounded even better, with more detail, superior three-dimensionality, and an even lower noise floor. In fairness, though, let's acknowledge that the Burson costs two thirds what the Nova125 does, yet provides only a fraction of the Nova125's functionality. Once you throw that consideration into the mix, I think the Nova125's headphone amp section has got to be considered icing on the cake.

To sum things up, I would say that Peachtree has taken the Nova125 forward, not just by a small incremental step, but by a giant leap. Relative to the original Nova, which was a very high-value product in its own right, the Nova125 offers a front-end DAC section that is better, an asynchronous USB input that is much better than the original Nova's USB section, and a power amplifier section that is just light years ahead of the original Nova's amp. Perhaps best of all, the Nova125 has lifted many of the equivocations and qualifications that applied with the original Nova; at last, Peachtree has given us an affordable amp/DAC that can drive fine but power-hungry speakers in an effective way. **tas**

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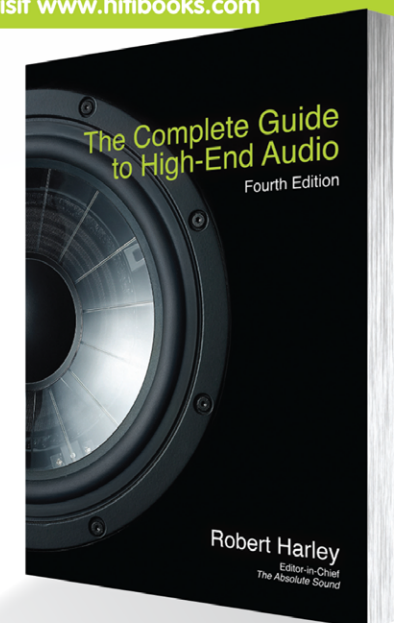
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Hegel H80 Integrated Amp

High Performance, Reasonable Price

Kirk Midtskog

Hegel Music Systems has been on a roll. Since my review of the H100 integrated amplifier in September 2010, the Norwegian company has released three DACs, a preamp, a headphone amp/DAC, a power amp, and two integrations, as well as updating a power amp already in the line. Hegel strikes me as a company driven by original engineering aimed at providing the highest possible sound quality at reasonable prices. The company's \$15,000 H30 may raise some eyebrows on that score. It is worth noting, though, that given the H30's high performance level, Editor-in-Chief Robert Harley said in his Issue 223 review, "The Hegel H30 is not just a great-sounding amplifier, it's also a tremendous bargain." Associate Editor Neil Gader also had some very nice things to say about the 250Wpc H300 integrated in Issue 233. Hegel's H200 integrated amp, which I reviewed in 2011, won Product of the Year, and the H300 received two Golden Ear Awards in 2013. Hegel has been busy indeed, and its efforts have been well received by consumers and the audio press.

In general, Hegel products are user-friendly, offer good value, and tend toward understated cosmetics, as if to say, "We let the music do the talking." The 75Wpc, solid-state H80 integrated amplifier with on-board DAC is a case in point; it allows a lot more of the music to "do the talking" than I thought

possible for \$2000. On the nuts-and-bolts side, it has three analog inputs (one balanced, two unbalanced—one of which can be configured as a home-theater bypass), and five digital inputs (two coax, two optical—both types supporting 24/192—and one 24/96 USB). The supplied small plastic remote operates normal preamp functions and also includes buttons to skip, go back, play, and pause through the attached computer's playlist—with most media players via the USB port. A much nicer metal remote is available as an upgrade for \$180. I recommend it.

In a way, the H80 is a perfectly ordinary-looking, average-sized, minimalist integrated amp. Closer inspection reveals a nicely finished product, weighing about 24 pounds with a gently curved, glass-blasted faceplate and control knobs for input and volume. In a departure from other Hegel integrations, the H80's power switch is located on the bottom of the chassis in the front left corner instead of in the center of the faceplate just below the display. This makes more room on the H80's faceplate for a larger display which, by the way, can be easily read from across a fairly large listening room.

The sound of the H80 is not ordinary at all, though. It delivers a nice measure of musical verve, accompanied by a lack of listener fatigue that one rarely encounters in \$3000 integrations—let alone in one priced at \$2000. Conversely, many integrated amps near its price with a low listener-fatigue factor too often also sound overly polite or reserved. The H80 is musically involving, well balanced, and surprisingly powerful for its rating. While I realize that an amp's nominal output figure doesn't necessarily tell the whole story when it comes to its ability to drive real-world speakers, I wasn't quite prepared for the sense

of power the H80 can deliver—even while driving the 85dB, 4-ohm Dynaudio C1 II. In a word, it sounded more "commanding" than I expected. It imparted commendable bass extension and control, maintained its baseline tonal balance during difficult music passages, and served up plenty of rhythmic drive. Some of my sense of its outsized power delivery may be the result of a greater-than-1000 damping factor. (Damping factor represents a measure of an amplifier's ability to control a connected woofer and is related to the amp's output impedance.) When pushed beyond its output power envelope—and at fairly loud volume levels, mind you—the bass-heavy synth lines in Bjork's *Greatest Hits* version of "All is Full of Love" [Elektra] or the dense climaxes in various movements of Stravinsky's *Rite of Spring* [RR] could become grainy and unstable. Even so, the H80 sounded considerably more composed than I had a right to expect from a 75Wpc, solid-state integrated amp.

The overall tonal balance of the H80 is very similar to all the other Hegel amplifiers I have used in my system: the H100, H200, H300 integrations, and the H30 power amp. That is to say, the H80 sounds neutral without glare, harshness, or graininess—unless, as already noted, the amp is pushed beyond its over-achieving power limit. In general, Hegel amps have a marvelously clear and smooth quality, but do not achieve that smoothness by sounding rolled-off or veiled. The H80 is no exception. It sounds tonally even-handed and texturally smooth while transmitting enough resolution to allow a wide selection of musical nuances to come through with their "essence" intact. Predictably, you will notice better resolution, refinement, power output, and soundstaging—especially the rendering of depth—as you move up the Hegel amplifier line.

EQUIPMENT REVIEW - Hegel H80 Integrated Amp

As such, the H80 still offers a commendable level of the company's characteristic neutrality and smoothness at a relatively low price.

I omitted the H100 in the above comparison because I no longer had one on hand, but I recall the H100 I reviewed in Issue 206 as sounding very smooth and beautiful but also noted some "reticence" in its delivery, as if its rhythmic timing were a bit hampered. Happily, I can report the H80 is not at all reserved or reticent. In fact, I consider its agility and deftness of timing to be among its greatest strengths. The H80 is just plain fun to listen to. It ably communicates much of the natural liveliness in music and does so without an associated leanness or "presence region" emphasis, which wears poorly over time. For example, Alanis Morissette's "That Particular time" on *Under Rug Swept* [Maverick] retained the recording's forward emphasis of Morissette's upper register without veering into piercing territory, as some amps do. The forward momentum of the next cut "A Man" was also well served as drummer Gary Novak switches from high hat to ride cymbal at about the 3:24 mark. The clangy sheen of Novak's ride cymbal came through but did not become strident. Essentially, what you forgo by opting for the H80 over a H200, H300, or one of Hegel's pre/power combos, amounts to some sins of omission (losses of overall resolution, power reserve, and the rendering of depth), rather than sins of commission like an unnatural tonal emphasis, a fatigue-inducing glare, or some other characteristic that registers as anti-musical.

The H80 creates a soundstage of respectable width and depth for an amp of its power rating and price. In my setup, its listener perspective

was roughly in the front section or mid-hall, and the soundstage started just behind the speakers and filled in rearward from there. I mentioned a perception of depth-foreshortening compared to Hegel's more expensive offerings more to illustrate what you get when you move up the product line, rather than to draw attention to a shortcoming in the H80. I consider the H80's depth portrayal to be better than most other solid-state integrated amps in its price category. I believe it is unrealistic to expect truly fleshed-out depth presentation from a solid-state integrated amp that includes a DAC for \$2000.

Speaking of the DAC, it's a really good performer. I compared it to Hegel's stand-alone HD20 (\$2000) and could not discern appreciable differences. The HD20 may have a bit more body and weight, but my impression could be influenced by cabling differences as much as anything else. This is truly impressive performance from the H80's DAC—apparently a scaled-down version of the DAC found in the H300 integrated amp reviewed by Neil Gader in Issue 233. I tried both the USB and SPDIF input on all three DAC sections (H80, H300, and HD20) and preferred SPDIF, in all cases, for its greater liquidity and clarity. The H80's USB input supports 24/96 files and, as mentioned, allows the remote to control most media player functions like play, skip, back, and pause. The two coax/SPDIF and two optical inputs support 24/192 files but do not allow the remote to control any playlist functions. (I kept all playback set to 24/96 to maintain the same resolution as that of the USB port for my comparisons of USB vs. SPDIF). I didn't try the optical inputs. Hegel DACs are about as easy to set up as they come; "plug and play" really does sum it up. My PC recognized whichever DAC I plugged

into within a second or two, and I could then resume music playback for fairly quick side-by-side comparisons.

Hegel has leveraged some new technology derived from its P20 preamp into the H80 and employed a price-scaled implementation of Hegel's patented SoundEngine technology in the power amp section. SoundEngine uses a feed-forward technique (instead of feedback) to reduced distortion as the signal passes from one amplifier stage to another. Apparently, it also greatly reduces crossover-notch distortion (as the positive and negative halves of the signal switch over to each other). The isolated voltage input gain stage and output current gain stage each have their own power supplies, and Hegel uses a rigorous parts-sorting protocol to make sure complementary device pairs are closely matched. Chief designer Bent Holter told me at CES 2014 that Hegel is taking a relatively low profit margin on the H80 to keep the price at \$2000. Judging by the H80's build and sound quality (and Holter's straightforward, unassuming manner), I have no reason to doubt him.

The H80 represents much of what is right in the high-end-audio scene. Those who are (sometimes justifiably) frustrated with escalating prices, take heart; the Hegel H80 answers the call for high-performing audio kit at a very reasonable price. No, it does not have the seamless liquidity, high resolution, and fundamental solidity of the more expensive stuff, but it gets you enough of the high-end essence to be more than a great place to start. I hope more people will participate in the deeper enjoyment of music in their homes because products like the H80 make it more accessible. The H80 is the real deal...and a sweet deal, too. **tlb**

SPECS & PRICING

Power output: 75Wpc	HD20 DACs
Inputs: Analog, two RCA, one XLR; digital, two SPDIF, two optical (both types 24/192), and one USB (24/96)	Phonon stage preamp: Ayre P-5xe
Outputs: One of the RCA inputs configurable as HT by-pass (power amp in), speaker terminals	Line stage preamp: Ayre K-1xe, Hegel P30
Dimensions: 16.93" x 3.94" x 13.80"	Integrated amplifiers: Hegel H200 and H300
Weight: 26.4 lbs.	Power amplifiers: Gamut M250i, Hegel H30
Price: \$2000 (RCB remote control upgrade, \$180)	Speakers: Dynaudio Confidence C1 Signature, YG Acoustics Kipod II Signature Passive, Enigma-Acoustics Mythology M1
HEGEL MUSIC SYSTEMS USA	Cables: Shunyata Anaconda ZiTron signal cables, Analysis Plus Big Silver Oval speaker cable, Audioquest Coffee USB and Hawk Eye S/PDIF, Shunyata Anaconda and Cobra ZiTron power cables
david.cohen@hegel.com (508) 405-0910	A/C Power: Two 20-amp A/C lines, Shunyata SR-Z1 outlets and Triton/Typhon power conditioners
ASSOCIATED EQUIPMENT	Accessories: Stillpoints Ulra SS and Mini footers, Shunyata Research DFE V2 cable elevators
Analog Source: Basis Debut V turntable with Vector 4 tonearm, Benz-Micro LP-S cartridge	Room Treatments: PrimeAcoustic Z-foam panels and DIY panels
Digital Sources: Ayre C-5xeMP universal disc player, Sony VAIO VGN-FZ-490 running J River MC 17, Hegel HD2 and	

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Audio by Van Alstine FET Valve CF Preamplifier

Modern Tube Sound at its Best

Dick Olsher

There is good news for all of us glass-audio aficionados: Audio by Van Alstine (AVA) now offers an all-tube version of its linestage preamp. I don't know about you, but I find the model name a bit confusing, so for the record let me make clear that this is not a FET-Valve hybrid. The new linestage does indeed feature an all-tube signal path, relegating MOSFETs to the role of power-supply voltage regulators. The basic circuit is rather straightforward: two cascaded gain stages (12AT7 dual triode) followed by a 12AU7 dual triode connected in parallel and configured as a cathode-follower buffer. Frank Van Alstine tells me that this circuit was initially evaluated as far back as 2004 and was put on the back burner because it failed to provide the performance boost he was looking for back then.

In the intervening years, AVA developed a unique method of powering tube stages, which provides a separate high-voltage power supply for each individual plate. The improvement in musicality and transparency was apparently so dramatic that Frank decided recently to revisit the all-tube linestage project with, I might add, spectacular results. The new tube linestage design includes six regulated power supplies, two for each 12AT7 tube section and one for each of the 12AU7 tubes. Adjustable high-voltage regulators are used as a reference for the power supplies, replacing much noisier zener diodes. In addition, capacitor and resistor values have been tweaked and 1k-ohm grid-stopper resistors added for each tube. All capacitors in the signal path are now polypropylene types. A new PCB motherboard houses all active gain stages and power supplies, with room for an optional phonostage. And as an added bonus, the cost to build is less than before, which is reflected in a lower retail price (\$2099). Other features are unchanged. There are six line-level inputs, a tape input, a tape/CD-recorder output, dual line-level outputs, a low-gain switch, and a high/low filter to tame aggressive source material. A headphone amplifier is standard, though I did not test it. Remote volume control is a \$299 option. Other options include a phonostage (\$249 mm, \$299 mc) and buffered tape outputs (\$149).

Possibly this design's major takeaway is that there's still plenty of magic to be found in plain-vanilla circuit topology. Series-regulated push-pull (SRPP) and Mu-follower stages have been quite popular in recent years, and each topology has its adherents. Differences in tube operating points and tube types make it difficult to reach a definitive conclusion about which is better,

though I would concede that when mated with a plain-vanilla power supply the more exotic totem-pole circuits have the advantage. However, the sophisticated power supply deployed by AVA makes all the difference. This was the approach used by Audio Research in its highly successful SP3a preamplifier. In fact, Audio Research revolutionized the high-end scene in the 1970s, riding the paradigm of power-supply regulation to market supremacy.

I should mention that a bit of negative global feedback (NFB) is taken from the buffer stage and returned to the cathode of the first gain stage. For those of you who are NFB-phobic or wary of cathode-follower stages, I would simply ask you to give the FET Valve a serious audition. You'll be surprised by its dynamic prowess. To be sure, it's a bit unusual to deploy NFB in what is truly a single-ended Class A voltage amplifier. One consequence is a reduced distortion spectrum and hence less euphonic residuals. It's not difficult to imagine that someone in search of aural thrills might actually be attracted to a tube preamp precisely because of a particular euphonic sonic signature. Pervasive tube warmth that blankets the midrange irrespective of the program material falls in this category, and has proven to be a siren call for many tube-o-philes. The FET Valve is far from being a euphonic linestage. It did not imbue the presentation with any tubey coloration. And its frequency response is sufficiently wideband to avoid softening transients and overly liquefying harmonic textures. So if you're in the market for a linestage that loudly communicates its tube lineage then look somewhere else. In addition, the tonal balance is quite neutral and lacks the overly lush lower midrange that some vintage tube preamps bring to the table.

EQUIPMENT REVIEW - Audio by Van Alstine FET Valve CF Preamplifier

If you were to ask me what I dislike the most about new-production 9-pin miniature preamp tubes, it would have to be their grainy harmonic textures. That has been a chronic complaint of mine for years, as the differences in textural smoothness between vintage and new-production types can be rather dramatic. Kudos to the audio guru who phrased it as follows: "I'll take a decent amplifier with the finest tubes any day over the finest amplifier with mediocre tubes." And that's audio verity you can take to the bank. It should therefore not come as a surprise that it didn't take me too long to replace the stock JJ Electronic tubes. Now let me make it perfectly clear that I don't fault AVA, or any other manufacturer for that matter, for shipping product with new-production tubes—it would be insane to try to do otherwise. When you are dependent on a steady supply of tubes, there is no rational alternative other than purchasing lots of new stock tubes. But for the end user there are other options, and in my experience it's pretty easy to locate a few primo vintage preamp tubes at boutique prices. I settled on two of my favorite brands: Philips Miniwatt 12AU7 and Mullard M8162/CV4024 for the 12AT7. More accurately, I tried these lovely tubes first and so had no good reason to go any further.

This vintage tube complement totally civilized harmonic textures to the point that the FET Valve performed brilliantly even when coupled with ultra-high-end power amps such as the Lamm Audio M1.2 Reference monoblocks. In this context it was able to generate a believable sense of space with plenty of soundstage depth. In particular, soundstage transparency

was simply spectacular with absolutely no discernible veiling. The upper octaves were airy and nuanced and excelled at resolution of brushed cymbals. There are many tube preamps out there that give the impression of enhanced detail by virtue of an overly bright presentation. No worries here. There was always plenty of low-level detail in evidence, but it emerged naturally from the music's fabric. The bass range was both well defined and sensitive to dynamic gradations. In a nutshell, this combo, a "David and Goliath" mismatch price-wise, was able to boogie with rhythmic conviction.

Enter Pete Millett's R120 SET amplifier, which is light years removed from the technology of the Lamm Audio monoblocks. There are only about 2 watts on tap, but the first watt, the one that sets the stage, is simply superb. The music's ebb and flow is totally relaxed and effortless while musical textures are beautifully layered and richly colored. The FET Valve did little to alter the R120's intrinsic sonics. In fact, with every power amp substitution I could identify the character of the amp without any editorial interference from the preamp.

My review sample was outfitted with the moving-coil-cartridge option and factory set to a nominal input impedance of 200 ohms. Note that the phono input is assigned to the first line-level input. I understand that AVA is working on a small stand-alone version of the internal phonostage, with about a \$399 price tag. That would represent pretty impressive pricing since it is said to include nearly \$100 worth of semiconductors. The phonostage is based around the Burr-Brown OPA627, a well-regarded FET op-amp, and uses passive RIAA

EQ. This high-speed precision op-amp is known for sounding slightly dark and a bit warm in the midrange, though it clearly lacks the effusive warmth of tubes. In my listening tests it went head up against the much more expensive Pass Labs XP30 phonostage, yet another "David and Goliath" matchup. I'm pleased to report that the FET Valve held its ground pretty well. There was plenty of detail to hear, and in this regard, I didn't feel it was lacking relative to the XP30. Transient speed and control were also excellent. On the debit side I noted a slight reduction in soundstage spaciousness while tonal colors were a bit darker than the real thing and not as fully saturated. Overall, I'm inclined to rank the phonostage as a 7.5 on a scale of 1 to 10, relative to the XP30.

If you're tired of putting up with the worst excesses of vintage tube sound, then you've come to the right place. The FET Valve represents modern tube sound at its best. Its twin virtues, really a happy blend of neutrality and accuracy, guarantee that it will not dominate the personality of your audio system. It responds well to vintage tube substitutions, and so configured, it is without a doubt the best-sounding AVA preamp I've auditioned to date. And by extension, I'm inclined to accept that it is likely the best affordable full-function preamp money can buy. Consider it as a mandatory audition for anyone with a budget under \$6k. **tas**

SPECS & PRICING

Inputs/outputs: Five line inputs, one headphone input, two tape inputs; two tape and two RCA main outputs

Gain: 20 dB

Noise: <1mV broadband (line or phono circuit)

Input impedance: 47k ohms

Output impedance: 600 ohms

Dimensions: 17" x 12" x 3.5"

Weight: 17 lbs.

Price: \$2099

Options: MM phonostage \$249; MC phonostage \$299; remote control \$299; buffered tape output \$149

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ASSOCIATED EQUIPMENT

Basszilla Platinum Edition Mk2 DIY loudspeaker; Lamm Audio M1.2 Reference monoblock amplifiers, Coincident Speaker Technology Dynamo 34SE and Pete Millett R120 SET amplifiers; Apple Mac BookPro running Sonic Studio's Amarra Version 2.6 software, EAR DACute and AYON Stealth DACs; Sony XA-5400 SACD player with ModWright Truth modification; Kuzma Reference turntable; Kuzma Stogi Reference 313 VTA tonearm; Clearaudio da Vinci V2 phono cartridge; Pass Labs XP-25 phono stage; FMS Nexus-2, Wire World, and Kimber KCAG interconnects; Acoustic Zen Hologram II speaker cable; Sound Application power line conditioners

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Sneak Preview: Lyngdorf Audio TDAI-2170 Digital Preamp/Amplifier

The Future Is Now!

Robert E. Greene

The TDAI-2170 offers a surprising array of functions in a compact and stylish-looking package. It is a true digital amplifier (not merely a Class D amplifier) with 170Wpc and features the familiar RoomPerfect room-correction system, which is both easy to use and very effective. It has a full range of digital inputs, including a USB port, volume control, and ultra-high-quality analog-to-digital conversion so that the digital amplifier can accept analog signals. The TDAI-2170 can be used without a linestage preamp for analog sources. The TDAI-2170's RoomPerfect system also allows alignment (with time delay) of subwoofers so you can use, for example, the highly effective, EQed and time-adjusted, corner woofer system (discussed in earlier reviews of Lyngdorf

products). In effect, the TDAI-2170 is a complete system except for source components and speakers. The sound is truly exceptional, with a strong sense of hearing directly back to the source material, not to mention repairing the damage your listening room does, if you want the repair done—and you will, you will. Experience with this and other Lyngdorf Audio devices tends to make the listener feel that this approach to amplification and to audio in general is the way of the future—and that the future is here. The price is surprisingly reasonable, considering that what you get both in features and absolute sonic performance is all but incomparable. (Full review forthcoming) *tas*

Price: \$3990; with upgraded options (modular design) \$4990

Product of the Year



HEGEL H300 integrated amplifier:

Let's quote from *The Absolute Sound* issue 239 - the award issue:

"A dual mono design of uncommon versatility, the H300 outputs a hefty 250Wpc into 8 ohms via a Class AB circuit that employs Hegel's proprietary SounEngine Technology. The H300 adds a 32-bit DAC stage to its toolbox, along with five digital inputs including USB. Though its flat-back exterior is seriously Spartan, the excitement ramps up considerably once you start to listen. Sonically the H300 is a strictly neutral and quiet in which even the tiniest tonal colorations or electronic noises have been banned from the soundstage. Hegel's approach is holistic - opening a transparent, harmonious window on the sound. For the H300 neutrality is the launch pad for a presentation of pristine clarity, superb edge definition, and micro-dynamic liveliness. And the DAC stage is just as stunning. It produces startlingly well-focused images without any sensation of soundstage phasiness or image smearing. A product that represents the high end at its most rewarding. (Neil Gader, #233)"

Please stop by and have a listen at any of the authorized Hegel dealers. You'll be amazed!



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Hegel H8 \$2000

The H80 represents much of what is right in the high-end-audio scene. Those who are (sometimes justifiably) frustrated with escalating prices, take heart; the Hegel H80 answers the call for high-performing audio kit at a very reasonable price. An incredible integrated with 75Wpc, a plethora of analog and digital inputs, and a built-in DAC capable of 192/24, the Hegel H80 offers everything you need in one slim package.

[hegel.com](#) (reviewed this issue)



Rotel RCD-1570, RC-1570, and RB-1552 Mk II

RCD-1570: \$999

RC-1570: \$999

RB-1552: \$999

The Rotel RCD-1570 CD player, RC-1570 preamp, and RB-1552 Mk II power amp—also known as the “Rotel stack”—is a return to Rotel’s roots as a true high-end manufacturer. This is a stack that stays true to music, delivering the heart of the high-end experience. An affordable, incredibly versatile system the Rotel stack handles every kind of music, and does so with very few sonic trade-offs.

[rotel.com](#) (242)



Wyred4Sound mINT

\$1499

Rated at 100Wpc, Wyred4Sound’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.

[wyred4sound.com](#) (229)



NuForce DDA-100

\$549

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 amp), one TosLink digital output, and one pair of speaker terminals. NuForce even throws in a nice little credit-card-sized remote. Put a computer on the front end and a pair of speakers on the back and you’ve got a completely modern audio system. And, SS will brashly add, the DDA-100 sounds better than any conventional integrated amplifier he’s heard priced under \$2500. If you have high-sensitivity speakers, at least 88dB, and can work around the DDA-100’s ergonomic limitations (no headphone or dedicated subwoofer outputs), you may find that the DDA-100 is simply the best integrated amplifier solution you’ve ever heard.

[nuforce.com](#) (229)



EQUIPMENT REVIEWS

Analog

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CLEARAUDIO CONCEPT TURNTABLE W/ VERIFY TONEARM

W/O CARTRIDGE \$1400 | W/ CONCEPT MM \$1600 | W/ CONCEPT MC \$2200



The Absolute Sound 2010 Product of the Year Awards (January 2011, Issue 209) says, "The CLEARAUDIO CONCEPT TURNTABLE PACKAGE does everything but unbox itself. For sheer musical engagement and superb speed stability it's the 'table to beat in this range.'" — Reviewed by Wayne Garcia



"My first impressions were of a very smooth-sounding, quiet turntable-to-tonearm-cartridge assembly. Those ended up being my lasting impressions as well."
— Michael Fremer, *Stereophile*, June 2011



"Dynamic potency is never in doubt, and the Concept's timing is crisp enough to grant momentum and drive to the trickiest of recordings without losing composure or focus."
— What HiFi, April 2010

The Clearaudio Concept is a winner. For many, it may be the turntable that gets them into this hobby. Others may find it all the turntable they'll ever need."
— Erick Lichte, *Stereophile*, July 2012

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— NEIL GADER, *The Absolute Sound 40th Anniversary Issue*, July 2013



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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 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.

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

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

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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—lost energy equals lost music!"

With the RP3—as well as the new RP6

EQUIPMENT REVIEW - Rega RP3 Turntable

(\$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, unsuspended 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

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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

High Value

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 varieties 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-racking 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 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

EQUIPMENT REVIEW - Clearaudio Concept

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

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Associated Equipment

TW-Acoustic Raven One turntable; Tri-Planar Ultimate VII arm; Transfiguration Phoenix moving-coil cartridge; Artemis Labs PL-1 phono stage; 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 Element Spider equipment racks; Feickert universal protractor; AcousTech electronic stylus force gauge; Musical Surroundings/Fosgate Fozzometer azimuth adjust meter; Analogue Productions Test LP

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Acoustic Signature WOW XL Turntable

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Spencer Holbert



What's the ultimate purpose of a turntable? To spin a vinyl record at a precise speed without introducing any vibrations into the cartridge. Of course, this is the holy grail of turntable design, and basically an impossible task. Turntables are constantly in a miniature battle to counteract opposing forces. When the Beach Boys sang about "good vibrations," they weren't talking about their turntables. Many turntable manufacturers go to great lengths to reduce the effects of unwanted vibrations, but as the designs become more exotic, so do the prices. So when a turntable comes along that does its job well—and does it without costing a year's salary—that's something to celebrate. Maybe somebody at Acoustic Signature had a wry sense of humor when he decided to name this 'table the Wow; irony aside, the Wow XL is all wow factor without all of the *Gleichlaufschwankung* (the bad wow).

The Setup

The \$2395 Wow XL is one solid piece of precision German engineering. The plinth is a beveled design about the same thickness as the platter, though it is a combination of aluminum and wood (the wood is masked by the outer shell of the plinth). Three height-adjustable feet allow for easy leveling of the entire 'table. The platter alone weighs fourteen pounds and is over one-and-a-half inches of solid aluminum; it could probably be used for home defense, if necessary. Be ultra-careful as you slide the platter spindle into the bearing, as the fit is a bit

snug. The heavy weight of the platter can easily pinch a finger, so make sure to drop it in while holding the outer circumference. The bearing is Acoustic Signature's "signature" Tidorfolon bearing, which is the same proprietary bearing design used in all AS turntables, including AS's flagship Ascona turntable reviewed by Jonathan Valin back in 2012. Luckily, you don't need to spend \$34k to benefit from the bearing technology employed in this 'table.

The Wow XL is driven by an ultra-precise synchronous motor that employs a 20MHz microprocessor that provides "perfect" speed stability and fine-tuning. Two small recessed buttons on the back of the 'table allow $\pm 0.1\%$ speed adjustments, so you can dial-in the speed during initial setup. I checked the speed after I set up everything, and it was spot on. I checked it three weeks later, and things were still spinning correctly. It's safe to assume that once you initially set the speed, you can leave it be without worrying—it's always good to check speed if you move the 'table, though. The motor is extremely quiet, too. Fitting the belt was easy, and once the motor was turned on any twists were straightened out after a few revolutions. Two stainless-steel buttons are located to the left of the platter, an on/off button and a 33/45 button to easily switch speeds. Turn the turntable on, and a red LED blinks above the speed button until the precise speed is reached.

When I first pulled the 'table out of the box, I wondered why there was an Ethernet port in the back of it. The interesting thing about the power supply is that it plugs into the back of the turntable using what looks like an RJ45 Ethernet cable. My one quibble is with the wall-wart, which is so large (roughly 3" x 4.5") it blocked two adjacent outlets on my power

EQUIPMENT REVIEW - Acoustic Signature WOW XL



The Sound

I struggled for a bit to determine exactly what the Acoustic Signature Wow XL's sound was. It's an extremely neutral turntable, which is exactly what you want, but something that I wasn't expecting for \$2395. If anything, the 'table—paired

conditioner. Plus, the wall-wart is so long that I had to slide my power conditioner to the very back of the rack to let the power supply hang over the edge. This might not be an issue with every power conditioner, but it's something to be aware of; you wouldn't want to spend \$3k on a conditioner and have three plugs taken up by the Wow XL's wall-wart.

My Wow XL review sample was shipped with a Funk Firm FXR-II tonearm (\$2400), which makes a really superb combination with this 'table. (Most dealers will receive Acoustic Signature 'tables in this price range with the Funk FXR-II, the Funk F6 thread-bearing tonearm [\$600; see my Funk Flamenca review in this issue for more], or the Rega RB202 [\$400].) The 'table sans tonearm is \$2395. The FXR-II was a breeze to set up: adjusting VTA takes no time with the supplied Allen wrench, and the detachable headshell allows for easy cartridge mounting and azimuth adjustment. I used the Ortofon 2M Black moving-magnet cartridge (\$720) for this review, and a Pro-Ject Tube Box II (\$450) with a pair of Mullard 12AX7 tubes for the phonostage. All told, it took about an hour to set up the Wow XL, with periodic adjustments here and there to fine-tune the sound.

with the Funk Firm FXR-II tonearm—is a bit on the analytical side, which I tend to prefer. There wasn't any of the false impression of warmth that some turntables give to vinyl. Of course, some of this can be attributed to the Ortofon 2M Black, which has won multiple TAS Editors' Choice and Product of the Year awards; yet even with a fast, slightly forward cartridge like the 2M, the Wow XL imparted little overt sonic character of its own. It was this lack of sonic signature that was most apparent while listening to Ludovico Einaudi's *In a Time Lapse*, particularly on the track "Experience," during which Einaudi's soft piano notes are joined by the soft plucks of a harp situated toward the back of the room.

It's the way the Wow XL resolves these delicate, single notes that really shines. If you enjoy the minimalist approach of many modern composers—especially Phillip Glass, Hans Otte, or Ludovico Einaudi—the Wow XL does an amazing job of letting the music be music, with only the faintest traces of image smear. I actually question whether I would have noticed any smear at all if I hadn't heard this record on the superb Kronos turntable a few days earlier at the Montreal Audio Show.

There were some minor tracking issues during

certain passages of Stravinsky's *Rite of Spring* [Everest], but this is a torture test for even the best cartridges and tonearms. Some of this is due to the turntable's minimal vibration control. If your rack is an afterthought and in need of an upgrade, the Wow XL will benefit from improved vibration control. Since the feet on the Wow XL are solid aluminum, vibrations from an inferior rack might be an issue, depending on your setup. I experimented with several isolation devices, including the Symposium Acoustics Svelte Shelf and AudioQuest's affordable SorboGel Q Feet, which improved imaging. But this isn't to say that the Wow XL is going to have major issues when you set it up at home—far from it. The 'table itself is of such solid construction that it acts as one large vibration-control device, from the high-mass platter to the equally heavy plinth. This, of course, is a methodology to which not every turntable manufacturer subscribes, but Acoustic Signature has hit the mark with this one, and at a price that is affordable for the dedicated vinyl listener.

Taking the Leap

The Acoustic Signature Wow XL sits right in the middle of two turntable worlds. On the one hand, it's a 'table that is pretty much ready to go as soon as you take it home, especially if your dealer sets it up for you, and represents an amazing amount of quality—both sonically and in construction—for the price. But, unlike a manufacturer that pairs its 'arms with its 'tables, it's a 'table that takes you into the world of mixing and matching tonearms, which can be a little daunting for someone who isn't ready to make that leap. If you're ready to delve into this world and start experimenting, the Wow XL is about as good a 'table as it gets. It's

German engineering at its most affordable, and it allows you to start with a solid base and slowly upgrade your tonearm until you find the one you like best. You can get out the door with the Rega RB202 for \$2795, then move on to more expensive—and more elaborate—tonearms. For me, this is exactly the kind of turntable I want to own, because it doesn't break the bank, yet allows for lots of perfecting. If picking out tonearms seems scary, have your local dealer guide you through the process; once you're comfortable with your newfound freedom of choice, you'll thank yourself for having a solid foundation upon which to build—which is exactly what the Acoustic Signature Wow XL was designed to be. **tas**

SPECS & PRICING

Drive unit: Synchronous, electronically regulated internal motor	PRO AUDIO LTD (U.S. DISTRIBUTOR) Brian Tucker proaudio@comcast.net (847) 561-4008
Bearing: Tidorfolon proprietary bearing	GOERNER COMMUNICATION Reinhard Goerner (514) 833-1977 info@goernercommunication.com
Chassis: 10mm aluminum and 25mm wooden plinth	
Platter: 34mm solid aluminum	
Dimensions: 16" x 6.5" x 13"	
Weight: 35 lbs.	
Price: \$2395 ('table only); \$4795 as reviewed	ACOUSTIC SIGNATURE Ulmer Strasse 123 73037 Göppingen Germany

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Ortofon Quintet Cartridges

The Red and the Black

Neil Gader



It's hard to believe but it's been over five years since the Ortofon 2M collection of moving-magnet cartridges was introduced—cleverly color-coded to indicate entry-level to top-tier pricing. I reviewed the 2M Red and 2M Black in Issue 182 and walked away shaking my head in admiration at the performance of these modestly priced mm's. The Red was a paltry \$99 for goodness sake—roughly “the price of a nice dinner for two,” I said at the time.

As with a hit cable TV series, popularity bred spin-offs, and Ortofon has taken it to the next level with Quintet, a set of five low-to-midpriced moving-coil cartridges that replaces the aging Rondo Series of moving coils. (See reviews of the Rondo Red in Issue 206 and the Rondo Blue in Issue 199.) The Quintet line mirrors the 2M series with the same color-coding, beginning with the least expensive Red, ascending to the Blue and Bronze, and topping out with the Black. A mono version is also offered. The Red, Blue, and Mono have a 0.5mV output that's compatible with most mc phonostages. The Bronze and Black benefit from a lower 0.3mV output—fewer windings save weight and often yield sonic benefits, particularly in speed and dynamic nuance. The entire line uses neodymium magnets.

Ortofon parcels out the upgrades progressively

at each level. Hot-rodding includes coil wire-quality, which ranges from copper to Aucurum (a gold-plated six 9s copper), and most particularly stylus type. Quintet carts use a nude elliptical, while the Black gets the royal treatment with a nude Shibata, known for its asymmetric front-to-back profile. The other key difference is that the Black uses a boron cantilever. Typically found on higher-end offerings, boron is preferred over aluminum for its stiffness and lower mass. (Maintaining the lowest possible moving mass in the stylus/cantilever assembly is key to allowing the cartridge to pick up the finest groove modulations.) Ortofon recommends >20 ohms loading, which makes practical sense given that lower-priced phonostages often feature a single 100-ohm setting. The weight and compliance on these models have been optimized to mate with all medium-mass arms.

Setup was a breeze. The biggest adjustment required was raising my SME V tonearm a few millimeters to accommodate the relatively tall cartridge bodies of the Quintets. I settled for a VTA just south of neutral—a slightly negative rake. Ortofon lists the tracking force range as between 2.1 and 2.5 grams, and I ultimately chose the suggested 2.3 grams. Note: Don't forget to check your cartridge lead-wire connections carefully for fit and wear. Ortofon offers upgrades in three versions, and made its LW-7N lead wire available for this review (high-purity seven 9s copper with rhodium-plated terminals, price \$59).

Truthfully I'm not loyal to any particular camp of phono cartridges. Moving magnet, moving iron, or moving coil...I'm happy to give each an equal shot with no agenda on my part. In that spirit, the Red does a more than respectable job of living up to the values that fans of moving

EQUIPMENT REVIEW - Ortofon Quintet Cartridges

coils have come to expect. It's damn responsive, rhythmically lively, and especially light on its feet in transient response. Imaging is stable, and soundstage cues and overall dimensionality are well defined.

It never fails that whenever I receive a couple of fresh cartridges for review I begin cueing up my old 45rpm LP dance remixes. Why? These studio-contrived sonic spectaculars with their wide-open groove-spacing are not only a nostalgic hoot but also present tracking, bass, and dynamic hurdles that challenge the "can-do" of any cartridge from cantilever to coil. Favorites (don't laugh) are Lionel Ritchie's "All Night Long" [Motown] and Huey Lewis and the News' "The Power of Love" [Chrysalis]. The former's got a blazing brass section, an army of hyper-busy percussion players, and background partying like you've never heard before. The Red tracked very well and reproduced a soundstage that stretched from edge to edge of the Audio Physic Classic 30 and ATC SCM19 loudspeakers' enclosures (reviews to come). It was responsive to the ever-deepening layers of multi-tracking that drives this dance tune forward. Brass cues, however, though clearly EQ'd, were still a little hotter than I'd encountered with my reference carts. Moving to the Lewis track, the Red grew a little looser in the midbass trying to corral the Godzilla-scale of the electric bass doubled by kickdrum from the remix, but once again it tracked without a whimper.

On classical music its midbass response seemed slightly overripe and discontinuous during Tchaikovsky's *1812 Overture/Marche Slav* [EMI]; the bass drum and tympani cues succumbed to some added thickness that

reduced pitch definition a bit. On Norah Jones' "Sinkin' Soon" [Blue Note] the contrasts in timbre and transient energy from the interplay of percussion instruments was also somewhat reduced. In terms of low-level resolution the Red short-sheeted some of the finer gradations—a reduction that led to a flatter soundstage compared to the higher-priced spreads.

At \$299 the Quintet Red is obviously on the low end of the price scale for moving-coil cartridges, but it doesn't sound like a cheapskate. It drops some resolution and tonal purity at the frequency extremes and lacks some micro-information everywhere, but it retains a persuasive feel for the distinctive musicality of LP playback. It's a slam-dunk for any thoughtful starter system. Those who are a little less inclined to compromise and have the bankroll to back it up, read on.

In some areas, the leap from the entry-level Red to the top-gun Black was smooth. Certain basic traits made the transition, namely the speed, the enriched bass response, and broad soundstage. The Black took these virtues and amplified them, while at the same time minimizing the Red's modest vices. Specifically, the Quintet Black conveyed a more settled and even neutrality across the tonal spectrum, while adding a bit more midrange warmth. It has both a lighter touch and a more commanding sense of control.

In comparison to the Red, the Black's upper-octave edges have been rounded off and polished. Violins are more fluid and airy. It also sweetened and clarified treble information more completely. For instance, Joni Mitchell's soaring vocal in "A Case of You" [Reprise]

had more bloom and warmth, which focused the performance more precisely. The Black also lifted the dulcimer beyond a dull drone and fully illuminated the many acoustic and transient facets that Mitchell wrings out of this quintessentially American lap instrument. There was also a shift in bass response during the Ritchie and Lewis 45rpm remixes. Both were a bit tighter, more controlled, and better defined in pitch. There was certainly a reduction in midbass coloration and more bottom-end extension.

Turning back to the Tchaikovsky *1812*, the Black provided a crisper, more defined snare sound and cleaner brass volleys, and the pealing church bells of the finale were more refined and focused. Similarly during the third movement of Shostakovich Symphony No. 8 [EMI] the unrelenting low string ostinato had a greater sense of layering, while the intensity of the trumpet fanfare had a golden aura that seemed to add fullness to the entire brass section. During Stravinsky's *Pulcinella* [Argo] the Black found the sweet spot of the soaring piccolo trumpet at a moment where every element of a system needs to align or those same brassy transients quickly turn as steely and stressed as high-tension wire.

Having now reviewed both of Ortofon's "Black" versions (Quintet and 2M) I find I'm leaning towards the Quintet Black overall. I'll grant that the 2M has a bit more midrange warmth, but its top end lacks the clarity and nuance of the Quintet. The latter is also singularly more transparent, illuminating more low-level information. But the Black is also marginally pricier and unlike the high-gain 2M it requires a

phono amp with a lot more pep. Still, at the end of the day perhaps the greatest tribute I can pay the Quintet Black is that I haven't felt the urge to quickly return to one of my pricey reference cartridges. I don't need to tell you that for this analog junkie, that's really saying something. **185**



SPECS & PRICING

Type: Moving coil	ORTOFON INC
Output: 0.5mV (Red); 0.3mV (Black)	500 Executive Blvd Suite 102
Recommended load impedance: >20 ohm	Ossining, NY 10562 (914) 762-8646
Cartridge body: ABS	ortofon.us
Coil wire: Copper (Red); Aucurum (Black)	
Weight: 9 grams	
Tracking force 2.1-2.5 grams	
Price: Red, \$299; Black, \$999	

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OUR TOP PICKS ANALOG



Rega RP1
\$449

It's notable that Rega's entry-level 'table today sells for roughly the same price it did some 20 years ago. That doesn't mean the RP1 performs at exactly the same level as the original P(lanar) 2 or 3, but it does mean that Rega's commitment to value remains paramount and its knowledge of materials and manufacturing techniques has deepened. Building on success, the RP1 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 mm cartridge. You won't get much frequency extension or wide dynamics here, but what you do get is the pace, musical interplay, and involvement that makes analog special. [soundorg.com \(171\)](#)



Clearaudio Concept
\$1400; \$2000 with Concept MC

Clearaudio's Concept turntable and cartridge offer a hugely rewarding analog experience at a very attractive price. The sleek, belt-drive 'table and new magnetic-bearing Verify 'arm, which the company calls "friction free," sell for \$1400; when bundled with the \$800 Concept MC cartridge, the pre-set-up package sells for a trim \$2000. Though the Concept's performance may not equal that of the very finest out there, its combined strengths in resolution, dynamics low-noise, and sheer musical engagement won't leave you wanting. Couple this with terrific German build and finish, and the Concept is a hands-down bargain. [musicalsurrroundings.com \(205\)](#)



VPI Scout 1.1
\$1995

The Scout 1.1 is the first major upgrade to VPI's ten-year-old platform. Gone is the familiar acrylic platter and in its place is a big chunky one made from aluminum, and oil-bath bearing and a new, included, gimbaled tonearm round out the major advancements over the outgoing model. Still "Made in Jersey," still belt-driven, the Scout with its outboard motor is rock-solid and provides excellent speed control. Sound quality is uncomfortably good for the money. Its not necessarily an entry-level 'table at this price; nonetheless, you can, and probably will (at some point), spend far more and get less. The challenge you'll find, however, is to spend more and actually get a significantly better-sounding turntable. It's not as easy as it sounds—good luck. [vpiindustries.com \(234\)](#)



Acoustic Signature WOW XL
\$2395

The Acoustic Signature WOW XL is the perfect base turntable around which to build one superb analog front end. Weighing in at a massive 35 lbs. (fourteen of which is the platter), the WOW XL is the kind of turntable that allows you to continually upgrade 'arms and cartridges as money permits, without needing to worry that your base 'table might be the cause of any sound degradation. Though this turntable will benefit from a good rack with vibration control, the 'table itself is its own giant vibration absorber, as its mass cancels many of the ill effects of poor-quality racks. To sum it up, this is the turntable you want to own if you're looking for a serious analog front end, without the serious analog price. [acoustic-signature.com \(244\)](#)



Ortofon Quintet Red and Black
\$299-\$999

Five years after Ortofon launched the venerable 2M Red and 2M Black moving-magnet cartridges that made such a splash in the high-end world, Ortofon has done it again with their Quintet series Red and Black. Still budget friendly, the Quintet series is low-end price with high-end quality, and made vinyl-junkie Neil Gader eschew his higher-priced reference cartridges in favor of these superb examples of great analog. [ortofon.com](#)



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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.

OPPO BDP-105

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-rodded," 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 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

SPECS & PRICING

<p>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</p> <p>Internal storage: 1GB</p> <p>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)</p> <p>Outputs: One 7.1-channel analog audio output, two stereo analog audio outputs (one set balanced via XLRs, one set single-ended via</p>	<p>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</p> <p>DAC resolution: (USB Audio) 2 channels @ 192k/24b PCM, (Coaxial/Optical) 2 channels @ 96k/24b</p> <p>Dimensions: 16.8" x 4.8" x 12.2"</p> <p>Weight: 17.3 lbs.</p> <p>Price: \$1199</p> <p>OPPO DIGITAL, INC. 2629 Terminal Blvd., Suite B Mountain View, CA 94043 (650) 961-1118 oppodigital.com</p>
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OPPO BDP-105



The Absolute Sound Product of The Year Awards Oppo BDP-105: Disc Player of the Year

The BDP-105 is more than just a disc player, though it will handle virtually any type of video and/or audio disc you'd care to name. In fact, depending upon your frame of reference, you might rightly consider it to be a powerful video-processing engine, a high-quality headphone amplifier, or a highly capable, multi-input high-resolution DAC. Clean, clear, and decidedly detail-oriented, the Oppo hews somewhat toward sonic leanness, but is far more revealing than it has any right to be for the money.

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-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. **100%**

AudioQuest DragonFly V1.2 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 than AudioQuest’s new DragonFly USB DAC, now in an improved “V1.2” version. This \$149 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

EQUIPMENT REVIEW - AudioQuest DragonFly V1.2

digital-to-analog conversion, reducing sonically degrading jitter. 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 \$149 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



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TRANSPARENT
CLOSEST TO THE MUSIC

EQUIPMENT REVIEW - AudioQuest DragonFly V1.2

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 \$149 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: \$149

AUDIOQUEST

2621 White Road
Irvine, CA 92614
(949) 585-0111
audioquest.com

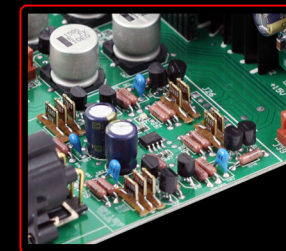
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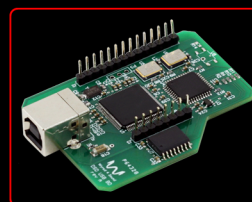
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Audioengine A2+ Desktop Speakers and D3 DAC

A Perfect Starter Combo that Sports an Easy Entry Fee

Spencer Holbert

Though they weren't that long ago, I haven't owned a pair of desktop speakers since my college dorm days. Space was at a premium back then, and the hi-fi system that I loved had to stay at home and collect dust until I moved into larger accommodations. Once I got my stereo back, I never thought twice about computer speakers—that is, until I learned I would be reviewing Audioengine's A2+ Powered Desktop Speakers and D3 DAC. It was with a mixed sense of excitement that I opened the door a week later and found a box from Audioengine on my front porch. I mean, they're *computer speakers*; how good could they really sound? But then again, if *The Absolute Sound* wanted a set of desktop speakers reviewed, then they must be decent, right? It was time to discover the truth.

The first thing I noticed when I opened the box was the amazing amount of care Audioengine takes packaging this system. Each speaker—as well as the power supply and cables—is placed in its own microfiber bag, and everything in the box fits snugly together in such a way that it seems almost impossible for shipping damage to occur. The Audioengine A2+ is as turnkey as it gets; the speakers will accept virtually any high-level source you can throw at them, as long as that source outputs via RCA, USB, or 3.5mm. If you are in the market for some affordable powered desktop speakers, that means you will be able to connect all of your source components to these bad boys with nary a worry: TVs, computers, iDevices, Blu-ray players, external DACs, Betamax, five-second anti-skip CD players...er, childhood flashback. They even have a variable RCA output so that you can connect a subwoofer (maybe Audioengine's S8 powered sub?) or one of Audioengine's wireless streaming devices. Included in the box are two meters of 16AWG speaker wire to connect the left and right channels (the binding posts also accept banana/spade-terminated speaker cables), a 1.5-meter 3.5mm mini-jack audio cable (for those iDevices and Walkmen), a 1.5-meter USB cable, a power supply, and all necessary documentation. Short of a puppy with a red bow, the A2+ Powered Desktop Speakers come with everything you need to start rockin' in no time flat. An extra surprise was also shipped along with the A2+ speakers—the Audioengine D3 DAC, which I will discuss in a bit.

The only source I used with the A2+ speakers—except for a stint with rabble-rousing friends who took turns playing iPod DJ via the 3.5mm input—was my MacBook Pro, which is presumably the kind of source most consumers of Audioengine products will use. I definitely ran the gamut of

digital audio quality, from lossy MP3s to hi-res WAV files, Netflix streaming movies to DVDs, and even Pandora. I also tested every possible combination of audio format with the stock cables all the way up to audiophile-grade connections and speaker wire, just for the fun of it. But let's stick with what comes with the A2+ speakers and go from there.

Starting with USB input (which is a new feature that the last version, the Audioengine A2, does not have), I connected my laptop directly to the A2+ using the stock USB cable, launched iTunes *sans* any third-party audiophile software, and played one of my favorite "soundstage test tracks," Radiohead's "Everything In Its Right Place." I love this track, not only because it's great music, but also because the way Thom Yorke plays with phasing and the soundstage. But when the track started, my heart sank: It sounded as if I were listening in a phone booth, plus there was some serious cone breakup and distortion coming from the left channel (the channel that houses the amp and inputs). I checked all my settings and everything looked correct, so I decided to step away for an hour, let the speakers break in for a bit, and come back for another listen. Interestingly enough, that did the trick; after only an hour on repeat, the speakers sounded much better, and the left-channel distortion had vanished. The lesson is to let these speakers play for a while before judging them (Audioengine allows for a 30-day audition, lucky you).

Actually, the A2+'s sounded really good. *Really* good. I would have never thought that 6" desktop speakers could sound like this, except for maybe those studio monitors that call themselves desktop speakers. But these are actually *designed* for use with your computer, hence Audioengine's tagline, "Join the computer audio [r]evolution."

EQUIPMENT REVIEW - Audioengine A2+ Desktop Speakers and D3 DAC

Okay, where do I sign? I suddenly had that ole music-lover's itch to play as much music as possible (the best kind of itch, I might add), and selected numerous tracks from downtempo-ambient artists on the Ultimae record label. Want to really test a speaker's capability? Then choose any album in Ultimae's catalogue (ultimae.com) and be prepared to stretch for the highest highs, lowest lows, and widest soundstage you could possibly imagine. Well, the A2+ speakers performed beautifully. Not only did they provide enough bass extension to satisfy any bass head (65Hz response seems a lot lower when speakers are so close; then there's that S8 powered sub you can add on), they proved extremely forgiving in the set-up department. I set mine at arm's length (roughly 25" from ear to tweeter) and toed-in directly at the flanks of my ears, which provided the best soundstage. Did I mention they were forgiving? Whether I hunched over my computer, slouched in my chair, rested my head on my hand (à la a tired college student), or sat up in that sonic sweet spot, the A2+ speakers sounded great. Let's check that price tag again: Yep, for \$249 you can't ask for any better than this.

Okay, now for some music that most readers of TAS will recognize: Leonard Bernstein's classic rendition of *Le Sacre du Printemps* in 24-bit/96kHz from HDtracks. Uh-oh. Twenty-four-bit is a no-go via the USB input on the A2+ speakers, which is a somewhat disappointing, yet very understandable exclusion, as most people who buy the A2+ powered speakers won't have a large collection of high-res audio files. If you have a bunch of high-res files and want to use these speakers at work or elsewhere, you'll need an external DAC capable of 24-bit audio. Luckily, I also received the Audioen-

gine D3 DAC, but hold your horses; we first need to test the 3.5mm analog-input mini-jack. Just as you might expect, sound quality took a step back, but this seemed to be an across-the-board decrease, which is less grating than a sudden drop within a certain frequency range. Still, the 3.5mm mini-jack input is great for plugging in that iDevice and rockin' out while working in the garage or having friends come over and connecting their phones. And at 15W RMS, these puppies can crank. They were loud enough to fill my house with music and drown out the clang of pots and pans as I cooked breakfast, or, if you're so inclined, the noise of dorm- and roommates.

During this first stage with the A2+ speakers—i.e. without a DAC—I was breaking in the sleek Audioengine D3 24-bit/96kHz USB DAC with a pair of Grado PS500s. This thumbdrive-sized aluminum-shell DAC is very pretty to look at, and matches surprisingly well the look of my aluminum-cased MacBook Pro—something that might be attributed to the designers' days at Apple. I was at a coffee shop with the D3 when someone tapped my shoulder and asked, "Why are your headphones plugged into your thumbdrive?" Thirty minutes and a quick audition later, the D3 had successfully converted the inquirer into a freshly minted junior audiophile, flush with excitement and on a quest to listen to high-quality music. If that's not a litmus test, then I don't know what is. For a piece of audio equipment—whether the \$189 D3 or the \$110,000 dCS Vivaldi—to have the ability to cause even the most curmudgeonly people to spontaneously combust with aural happiness is really what counts. No, I'm not saying you'll get dCS-level performance for \$189; I'm saying that for \$189 you'll have something with the power to

inspire that fits in your pocket.

I really wanted to hear that Stravinsky, so let's get back to what the combination of the A2+ speakers and D3 DAC sounded like. With Amarra Hi-Fi turned on and the D3 DAC plugged into my computer (connected to the A2+ speakers via the 3.5mm mini-jack), I played the 24/96 version of *Le Sacre du Printemps*. All right, I'll admit that this might be cheating; there's no way that such little speakers could recreate the power of a live orchestra, but they still elicited an "air-conductor" session where I threw my arms around Bernstein-like. The D3 DAC did exactly what it's supposed to do—make digital audio sound great. At \$189, the D3 DAC is a must-have piece of the A2+ puzzle. Plus, it comes with a nice ¼" adaptor cable, so you can plug in those beefier headphones and enjoy all the music you've been missing because of that sorry built-in computer DAC.

I'm not going to go audiophile on you and describe the minutest nuances of the speakers, because that would completely miss the point: these are desktop speakers and are only \$249, and for \$249 you get such quality sound it's ridiculous. They sounded so good that I started listening to them *instead* of my main stereo—that's how much I liked the A2+ Powered Desktop Speakers. As aforementioned, I even went a little crazy and switched all the stock cables with audiophile-grade versions from AudioQuest and Wireworld. Unnecessary? You bet. But I mention this because how many 6" desktop speakers have USB, RCA, and 3.5mm inputs, RCA output, can accept banana, spade, or bare speaker wire, *and* sound this good for only \$249? At that price, the A2+ speakers seem like the perfect gift for the recent high school graduate, or college student, or really any-

one who needs great sound in a small form factor. Sprinkle a little sugar on top with the D3 DAC, and you've got a winning combination that can now improve on-the-go sound for grand total of \$438. *Ahem*, I have USB cables that cost more than that. Now if only I had had a pair of these when I was in college, life would have been sweet. **tas**

SPECS & PRICING

A2+ Powered Desktop Speakers

Inputs: USB (up to 16-bit/48kHz); RCA; 3.5mm mini-jack

Outputs: Variable RCA Out

Drivers: 2.75" Kevlar woofers, 0.75" silk dome tweeters

Frequency response: 65Hz-22kHz +/-2dB

Power: 15W RMS (60W Peak)

Dimensions: 4" x 6" x 5.75"

Weight: 10 lbs.

Price: \$249

D3 24-Bit DAC

Frequency response: 10Hz-25kHz +/-0.5dB

USB transfer mode: Asynchronous (dual clock)

Input: Up to 24-bit/96kHz

Output: Analog audio mini-jack

Price: \$189

AUDIOENGINE

126 Industrial Dr. Bldg B

Burgaw, NC 28425

(877) 853-4447

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iFi iDAC, iCAN, and iUSBPower

The Little Boxes That Could

Steven Stone



Ever hear of iFi Audio? Me neither. But at the 2012 Rocky Mountain Audio Fest, there was a quartet of miniature products bearing the iFi logo in the Avatar Acoustics room. Darren Censullo, head honcho at Avatar, was very excited about his role as U.S. distributor for iFi. He claimed that at their price its products were not merely outstanding values, but offered performance that would compete with any component with similar functions. He went on to tell me that one particular iFi product, the iPower, offered an entirely new and better-performing solution for devices that use USB power as their power source. Obviously I took his comments with a grain of salt. But I was intrigued enough to request the iDAC, iCAN, and iUSBPower for review (the fourth iFi product, the iPhono, was outside my primary area of expertise, so I passed on it).

After several months of putting this trio through its paces, I understand why Darren was so enthusiastic. All three devices offer a level of performance and ergonomics that a scant few years ago would have been impossible from a similar device, regardless of price. And even in today's highly competitive audio marketplace the iFi devices deliver an exceptional combination of performance, features, and value. That's not too shabby for a company's first efforts.

Three for the Road

A big reason for the iFi trio's exceedingly high level of performance is due to "trickle-down" technology. All of iFi's designs were created by Abbingdon Music Research, a U.K.-based high-end audio firm that's been making high-end components since 2000. AMR doesn't directly manufacture iFi products; instead AMR licenses the technology to iFi, which assembles the units at its own facility in China.

All three iFi devices share the same-sized silver-toned chassis which is approximately 158mm x 68mm x 28mm. Obviously iFi realizes substantial economies of scale with these components since they share one of the most expensive parts in most audio gear. Other shared parts are the external power supplies and the volume knobs. These volume knobs were nicely machined, but they do have one flaw—they are a pressure-fitted and can easily be pushed back too far so that their back edge touches (and scrapes) the chassis when you turn the knobs. Yes, you can eliminate the problem by pulling the knob out slightly, but chances are, the next time you use the iFi device, you will push them back in and the scraping begins again. Sure, this is a minor annoyance, but it diminishes the overall quality of the iFi products.

Given their size and weight (the heaviest is under 0.43 pounds), the iFi devices were created with the traveling audiophile in mind. Although not designed to be completely portable, since all but the iDAC require an external power source, they are aimed at "road warriors" and other frequent travelers who wish to have a compact, yet high-quality audio in their hotel rooms or vacation condos. The iDAC can be used with any device that has a powered USB-compatible output, including an iPad or laptop.

The iDAC

The \$299 iDAC, as you would surmise from its name, is a D-to-A converter. It also has a headphone amplifier, whose output is controlled by the volume control on its front panel. Although I wrote "front panel," in point of fact the iDAC doesn't really have a front and back like a full-sized component. On one end the iDAC has

a volume control for its headphone output level, a mini-jack for headphone output, and a pair of fixed-level RCA outputs. The opposite end has a single USB input. When in use the iCAN will always have something plugged into the USB and at least one cable (either a headphone or pair of RCAs) plugged into the other side. That makes for a potential wire jumble. It's a shame there wasn't a clever way to have both the USB and RCA cables exit from the same side.

On the USB end the iDAC uses the same asynchronous interface as the \$5000 AMR DP-777. This employs firmware based on the XMOS processor, but with custom "turnkey" modifications developed by AMR specifically for the iFi iDAC. The "heart" of the iDAC is an ESS Sabre DAC chip, used directly "without additional filtering" according to AMR. The iDAC's designers paid special attention to the iDAC's power supplies for its digital devices. Instead of generic 3-pin regulators, the iDAC employs "more modern types" of regulators that have "300 times greater noise suppression" than the usual 3-pin types. Also the USB receiver, XMOS processors, and input/output circuits have their own separate power supplies. On the analog side iFi employs a "DirectDrive" technology for both its headphone and RCA outputs that is similar to a directly coupled output.

During listening sessions I used the iDAC both alone—powered by my computer's USB output—as well as 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. Unfortunately for the owners of some especially large-barreled

EQUIPMENT REVIEW - iFi iDAC, iCAN, and iUSBPower

premium RCA cables, the iDAC's RCA outputs are situated so close together that employing these cables may be difficult, if not impossible.

The iDAC's headphone output drove a wide variety of full-sized headphones successfully, including the Sennheiser HD600, Audeze LCD-2, and Beyer-Dynamic DT-990 (600 ohm.) On the other end of the sensitivity spectrum, the iDAC's headphone output did produce some low-level hiss with the Shure SE500 in-ear monitors, but was virtually silent with the Etymotic ER-4P.

One small quirk I noticed was that with some brands of basic no-name RCA interconnects the headphone output was noisier than with well-shielded ones. With the Shure SE500s, the overall noise floor dropped precipitously when I disconnected the RCA cables (which were connected to a Benchmark DAC 2 HGC). When I connected the iDAC to the SicPhones high-current headphone amplifier, the noise when the RCA interconnects were connected between the iDAC and the SicPhones amp was even louder and more pronounced. When I substituted the iUSBPower device for the stock AC power source, the iDAC's noise level remained the same until I flipped the ground-lift switch. When I lifted the ground the noise level dropped back down to almost as silent as when nothing was connected to the iDAC's RCA outputs. It seems that the iDAC is quite sensitive to noise or ground loops generated by whatever device is connected to its RCA outputs. I strongly suggest disconnecting the iDAC's RCA cables when doing any critical listening using its headphone outputs, even when employing the iUSBPower supply.

The iDAC's overall sound quality was noticeably

superior to the Fiio E-17, both through its headphone and line-level outputs. In comparison the iDAC not only had more dynamic life, but a much greater sense of dimensionality. When I listened through ProAc Jubilee Anniversary Tablette, the iDAC's imaging precision (with the iUSBPower supply) was on a par with both the Benchmark DAC-2 and the Mytek 192/DSD DACs. I was also impressed by the iDAC's well-defined space between instruments and vocals, which certainly equaled these far more expensive DACs.

On my own 192kHz/24-bit live concert recordings I was especially impressed by the iDAC's ability to portray the recording space accurately with all dimensional and spatial cues intact. My recording of Richard Stoltzman with the Boulder Philharmonic performing Copland's Clarinet Concerto captured all the lushness of Stoltzman's impeccable tone while preventing it from blending with the woodwind section, even during the loudest passages. The words "dynamically implacable" came up often in my listening notes, be it my own classical recordings or bombastic pop such as Toy Matinee's "Last Plane Out," where the gunshot 2:36 into the cut pushes the limits of any DAC.

Yes, the iDAC is a very good USB DAC. In point of fact, so good that it could be used in a system where you would usually be sorely tempted to "move up" to a far pricier USB DAC solution. If your budget for a USB DAC is above the combination price of \$448, I strongly advise you to listen to the iDAC/iUSBPower solution before climbing the price-point ladder.

The iCAN

The \$249 iCan, like all the iFi devices, shares the same case as the iDAC, but it definitely has a front and a back. On the backside of the iCAN you'll find its power supply input as well as a single pair of RCA inputs. On its front there's a volume control knob, 1/4" full-sized single-ended headphone output, and a pair of three-way toggle switches. The first of these switches is iFi's XBass control. It has three settings, "direct" (no bass boost,) "average," and "for bass-shy headphones." According to iFi's Thorsten Loesch, "The XBass boost is 3dB/7dB at 50Hz relative to 1kHz. However, this number does not as such describe adequately the operation of XBass. XBass is not intended as a traditional tone control or loudness circuit (nor is it based on these). The response is rather different and is intended to compensate suppressed bass and excessive LF phase-shift found with many headphones."

Most "bass enhancement" schemes and circuits I've heard have, at best, been merely "fun" features rather than anything of value to audiophiles. The iFi XBass is different. While I still preferred most of my reference headphones in the "direct" mode, I found that with one particular pair of in-ear monitors (Shure SE500s converted by Fisher Hearing into custom in-ears) the "bass shy" setting provide just the right amount of bass to turn what were sorely bass-deficient in-ears into well-balanced cans. I've tried to accomplish the same bass augmentation using iTunes, Pure Music, and Amarra's EQ functions with much less satisfactory results. If you have a headphone that you love that lacks the last bit

of bass punch and impact, the iFi XBass might be just what your audio doctor ordered.

The second toggle switch on the iCAN controls iFi's "3D Holographic sound" circuit. The three settings are "direct," "3D for flat recordings," and "3D for recordings with excessive stereo effect." According to Thorsten Loesch, "Our 3D Ho-

SPECS & PRICING

iFi iDac	Dimensions: 68 x 28 x 158mm
Device type: USB DAC/headphone amp	Weight: 0.43 lbs.
Input: USB Audio Class 2.0	Price: \$199
Output: RCA (single-ended), minijack for headphone	iFi iCAN
Output power: 150mW (headphone amp)	SNR: >117dB (A-weighted)
Signal-to-noise ratio: 97dB(A)	Frequency response: 0.5Hz to 500kHz (-3dB)
Dimensions: 68 x 28 x 158mm	Dimensions: 68 x 28 x 158mm
Weight: 0.43 lbs.	Weight: 0.48 lbs.
Price: \$299	Price: \$249
iFi iUSBPower	US DISTRIBUTOR
Device type: USB power supply	AVATAR ACOUSTICS
Input: USB (Type B)	545 Wentworth Court
Output: USB (Type A) power only, USB (Type A) power + music	Fayetteville, Georgia 30215
	(678) 817-0573
	avataracoustics.com
	dcensullo@avataracoustics.com

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EQUIPMENT REVIEW - iFi iDAC, iCAN, and iUSBPower

lographic Sound circuit is not based on the Linkwitz crossfeed. We did not find the Linkwitz circuit adequate to provide even a crude first-order approximation of the time and frequency domain responses needed. Further, for both operations the sets of coefficients are based on internal research and listening tests and in part derive from work I was involved with in the 1980s at the RFZ (then East Germany's equivalent of the IRT). The coefficients are fairly complex and not simply expressed by a simple number of XdB at YHz."

I found the iCAN's 3D options less useful than XBass. The 3D setting for "flat sounding recordings" introduced a slight lift to the midrange and lower treble that changed harmonics in ways I did not find appealing. The "excessive stereo" correction setting was better, but very few recordings seemed to benefit from the reduced soundstage width of this setting. Most of the time, I came back to the "direct" setting.

Like the iDAC the iCAN employs iFi's "DirectDrive" circuitry, which Loesch says, incorporates two sets of features. "First a negative voltage is generated on board to allow a ground-referenced, direct-coupled output and greater output levels, while still operating with a single low supply voltage. In most cases headphone outputs require substantial 'build out' resistors to ensure that the amplifier remains stable. We are able to dispense with these, so the output resistance of our headphone amplifiers is mostly down to the contact resistance in the socket and a little bit for PCB traces. This means the damping factor is maximized and excessive source resistance does not alter headphone response. All this together is what we call DirectDrive."



Traditional wisdom is that good headphone amps are big, heavy, and expensive. The iCAN makes a strong argument against such generalizations. Not only did it have the raw power to drive high-impedance headphones such as the 600-ohm version of Beyer-Dynamic DT-990 with ease, but it also delivered a black, low-noise background to the high-sensitivity Shure SE500 in-ear monitors. Even the Bryston BHA-1 couldn't generate as little noise with these high-sensitivity earphones as the iCAN.

My favorite headphones with the iCAN were the Audeze LCD-2 (version 2.2) with upgraded Cardas headphone cabling. The combination produced a high-resolution, yet full-bodied presentation that rivaled my reference Stax setup, which consists of the SR-X Mark 3 and SRM1 Mark-2 amplifier. The LCD-2/iCAN combo matched the Stax in low-level detail and immediacy, and beat the Stax when it came to low-frequency impact and dynamics. The Stax SR-X Mark 3 headphones still had an edge when it came to high-frequency air and detail. But in the critical midrange both setups delivered a level of finesse and musicality that distanced them from all the other headphone/amp combinations I've heard recently. For the price, the LCD-2/iCAN combo makes an unbeatable pairing.

The iUSBPower

Aftermarket power solutions are nothing new, but iFi's approach to the problem of cleaner USB power is unique. Instead of resorting to a battery and some sort of battery-charging scheme, iFi has opted for regulating, isolating, and cleaning up the USB power supply itself. The \$199 iUSBPower has a single USB 2.0 (it will also take 1.0) input with an AC power input on one end and a pair of USB outputs on the other. One USB output is designated "power only" while the other passes both power and audio signals. For most applications the power and audio combination USB output will be the one used, but if you have a USB device in need of 5.0V power the iUSBPower can supply it via its "power-only" output.

In my nearfield desktop system replacing the stock AC power supply with the iUSBPower lowered the iDAC's already low noise floor to the point where it sounded very much like what I'm used to hearing from a live microphone feed. Micro-dynamics seemed more pronounced when the iUSBPower was attached and the smallest details buried in the mix were easier to hear.

The only glitch I experienced with the iUSBPower device was when connected to my

Mac it "took over" as an über USB connection—the other two USB DACs connected to my Mac disappeared from my sound devices selection box, leaving the "AMR USB audio 2.0" as the only selectable sound device. To add additional sound devices I had to disconnect the iUSBPower from my computer and perform a reboot. If you don't use a Mac or only have one sound device connected to your system (most setups) you won't experience this problem.

Is There an iFi in Your Future?

I suspect 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. That could be a mistake. Why? Because once you hear the iFi iDAC, iCAN, and iUSBPower in your main system, you may be forced to buy a second set, because they won't be coming back out. That's how well the iFi gear performs. **tas**

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Sony PHA-2 DAC/Headphone Amp

Road Warrior

Steven Stone



As part of its “high-resolution initiative” Sony has rolled out several exciting new products during the past year including the HAP-Z1ES and HAP-S1 digital players, the NW-F887 portable player (Asia only), and the PHA-2 portable DAC and headphone amplifier. I reviewed the HAP-Z1ES in Issue 241. It proved to be an outstanding value that has shaken up the digital audio player marketplace.

The Sony PHA-2 portable headphone amplifier and DAC was created to be a digital “bridge” product, designed to improve the sound from smartphones, iPods, iPads, and computer USB sources. For the on-the-go audiophile who wants to own and carry only one DAC/headphone amplifier on his travels, the Sony PHA-2 could be just what the traveler ordered.

A Tech Tour

The 270-gram (0.6-pound) PHA-2 is housed in an aluminum enclosure that features a zinc-alloy bumper as well as a unique rail/edge design. It has provisions for digital inputs from a

PC via a micro-USB, or an iPad/iPhone/iPad via a standard USB, or a high-resolution-supported Walkman via Sony’s own proprietary mini-USB connector. The PHA-2 also accepts analog via a mini-stereo input that doubles as a line-level output. Outputs include one mini-stereo headphone output plus the line level. One side of the PHA-2 has a pair of toggle switches to select between the line-level and headphone outputs and to choose the normal or high-gain amplifier-output levels.

Controls on the PHA-2 include a large volume knob, nestled underneath one of the alloy bumpers, that also turns the unit on and off.

Next to the volume knob are two small LEDs. The “power” LED glows green when the unit is playing and also tells you the charge level of the internal rechargeable 3.7-volt 2160mAh Li-ion battery via a series of blinks when you initially turn it on. Three blinks signify a full charge, two a partial charge, and one blink means you don’t have much time before recharging will be needed. The other LED glows red during recharging.

On the bottom of the PHA-2 you’ll find three digital inputs as well as a small toggle to select which one is currently active. If you’re looking for a mute button or any way to navigate through a music library, you won’t find it on the PHA-2. Whether you’re using the PHA-2 as a DAC or as a headphone amplifier, Sony assumes that any device you hook up to the PHA-2 will have its own navigation and playback controls. During the review period I used the PHA-2 tethered to a variety of devices including an iPhone 5 (via a direct-digital lightspeed-to-USB connector) the Astell&Kern AK100 (via the analog input), the Astell&Kern AK240 (via analog), and several of my Macs via the micro-USB digital input.

The PHA-2 DAC section supports a wide variety of digital formats including PCM up to 192/24, and DSD 2.8 (64x), and DSD 5.6 (128x) via any of its digital inputs. Sony’s technical literature notes that DSD 5.6 is not available for the Mac (with Audirvana Plus software 128x material is automatically converted to 176.24 PCM for playback). The PHA-2 employs an asynchronous USB 2.0 transfer mode that uses a proprietary driver for Windows; no drivers are needed for Mac.

Setup and Use

With all the portable and computer playback devices I tried with the PHA-2 setup was virtually plug-and-play. The only “tricky” part

was selecting the right position for the PHA-2’s digital-input toggle switch. Occasionally, when going from DSD material to WAV on my Mac, I could “trick” the PHA-2 into spitting out noise instead of music. Resetting the audio preferences in Audirvana Plus quickly solved this minor glitch.

Battery life on the PHA-2 is spec’d from 7 to 15 hours. If used as a DAC/headphone amplifier the figure will be the lower number; if used solely as a headphone amplifier you can expect battery life to be closer to the fifteen-hour figure. Recharging the PHA-2 can only occur while it is not playing music. This means that if you use the PHA-2 as your PC’s DAC you need to turn the volume to “off” at the end of the day if you want to have a full charge for the next day’s playback. If you forget to turn the PHA-2 off, yet leave it attached to your PC, it will *not* automatically recharge overnight.

One clever ergonomic feature on the PHA-2 is the “rail” edges. These edges are for attaching the two stretchy rubber straps that are designed to hold your playback device so it’s firmly connected to the PHA-2. I used the bands with the iPhone 5 as well as the Astell&Kern AK100. In both cases you end up with a fairly substantial mass that is too thick to fit in anything except a large cargo-pants pocket (if carrying your player and phone in your pocket is your plan.) Also, when you add the weight of the PHA-2 to your portable playback device, you are very likely to wind up with a package that weighs close to, and in some cases even more than, a pound.

If you want to use the PHA-2 as a DAC in a desktop system you’ll discover several minor ergonomic issues. First, with an analog source, such as the analog output from the Astell&Kern AK100, you will need to use the headphone

EQUIPMENT REVIEW - Sony PHA-2 DAC/Headphone Amp

rather than the analog-out to drive your preamp or powered speakers, since the analog output also doubles as the analog input. Also if you need two outputs, such as when you want to drive a set of speakers and a subwoofer, since the PHA-2 only gives you a single analog output you will have to split the signal in two via a jumper or Y connector, or get your amplifier/monitor-speaker feed via the pass-through from your subwoofer.

I used the PHA-2 with a variety of headphones from high-sensitivity models such as the Westone ES5 and Ultimate Ears IERM to more power-hungry cans such as the Audeze LCD-2, Mr. Speakers Alpha Dogs, and Beyer Dynamic DT-990 600-ohm version. With the Beyer Dynamic DT-990s headphones I did long for slightly more gain and volume when I listened to my own live concert recordings, even with the high-gain setting engaged. The Mr. Speakers Alpha Dogs and Audeze LCD-2 headphones had just enough gain to deliver satisfying volume levels with my own source material. With high-sensitivity in-ears, such as the Westone ES5, which exhibit hiss with many headphone amplifiers, the PHA-2 was dead silent with lots of gain, making it one of the most compatible portable headphone amplifiers I've used with the ES5s.

If you are looking for a headphone amplifier to drive especially inefficient headphones, the PHA-2 should be auditioned to see if it will deliver adequate power. Some prospective owners will undoubtedly be disappointed that the PHA-2 can't drive everything in their headphone arsenal, but in my experience finding one headphone amplifier that works equally well with all kinds of headphones is something of a fool's errand. A more reasonable goal is to find a headphone and

headphone amplifier that have synergy together. For my uses the PHA-2 proved to be ideal with highly efficient headphones such as the Westone ES-5 and Ultimate Ears IERM, and certainly adequate with most medium-sensitivity cans. The new Oppo PM-1 headphone was an especially good match for the Sony PHA-2.

Sound

Since the primary reason for choosing the PHA-2 over other DAC/headphone amplifiers such as the ADL X1 is the PHA-2's DSD capabilities, I spent a majority of my critical listening time playing my own live on-location DSD recordings through the PHA-2. One of my more recent recordings was done at a house concert in Boulder, CO, using a pair of Alesis/Groove Tube GT AM30 FET microphones with cardioid capsules to capture a performance by the mandolinist/clarinetist Andy Statman accompanied by Jim Whitney on acoustic bass. The microphones were set up approximately five feet away from Statman and Whitney in a coincident pattern. Statman's spirited playing provided material with an extremely wide dynamic range as well as a rich harmonic palette. Listening with the PHA-2 tethered to my Ultimate Ear IREMs, which were the in-ear monitors I used while originally making the recording, I was instantly transported back to the moment the recording was made. It was as if I were listening to the live microphone feed, hunched over my Korg MR-1000, making sure that my levels were spot on. Even during Statman's most frenetic and dynamic clarinet solos the PHA-2 never had the slightest feeling of stress or dynamic constriction.

On the audience's applause between numbers

the PHA-2 did a superb job of preserving all the subtle location cues as well as the not-so-subtle fast transients that clapping hands create. Frequency extension and tonal accuracy through the PHA-2 were especially good on Whitney's acoustic bass. I could hear not only the primary transient energy pulse of his plucked notes, but also the way the acoustic bass bloomed as the notes spread out through the room after the original attack.

When I switched to using the PHA-2 as a DAC/preamp connected directly to an April Music Eximus S-1 power amplifier driving a pair of Audience Clair Audient 1+1 speakers in a nearfield setup, I was once more impressed by the PHA-2's sonic abilities. All the dimensional and locational cues were preserved accurately by the PHA-2. I could even tell when Statman pointed his instrument in a slightly different direction, from the way the room's reverberation and bloom changed. It was also easy to differentiate the direct sound from sound reflecting from the back wall, which was only a foot or so behind the players. When Statman switched to mandolin all of his characteristic contrapuntal humming (similar to Glenn Gould's famous vocalizations) could be clearly heard and located in space, several inches above his mandolin. The PHA-2 also preserved the differences in room reverberance and bloom between Statman's voice and his mandolin.

Since many prospective owners will be using the PHA-2 with smartphones, I spent some time near the end of the review period with the PHA-2 tethered to my iPhone 5 via its digital lightning connector. Using several high-definition Internet radio stations as primary sources I was impressed by how involving and musical the results turned

out to be. Using the "HiDef Radio" app I listened to the 128KBPS Venice Classical Radio.eu from Italy, and heard a reasonable sense of depth and dimensionality from a recording of Brahms Piano Sonata No. 2, as well as an excellent feeling of weight and power from the piano's lower registers. Switching to Boston's WGBH at 160kbps feed on the Tune-Mark radio app I was greeted by a series of sonically spacious recordings that brought back fond memories of my time living in Boston and regularly attending the Thursday evening concert series.

Because I could, I also compared the sound quality of the WGBH 160kbps Internet radio feed of the Hyperion Trio playing Mendelsohn's Piano Trio Op. 49 routed from the iPhone 5 into the PHA-2 and then out to an analog input on a Wyred4Sound mPre with that same Internet radio feed also coming through my MacPro's iTunes into the Wyred4Sound mPre DAC via its USB 2.0 connection. After matching the output levels, I found it was virtually impossible to tell a difference between the two radio feeds. Both were equally spacious, dynamic, full-range, and detailed. When the program material changed to the BSO conducted by James Levine playing Mozart's Symphony No. 14, I was immediately aware on both sources of the slightly astringent sound of the string section and the overly reverberant recording technique.

Conclusion

Some prospective owners may find my main ergonomic issues with the PHA-2 are its greatest strength—its solidity and weight. The PHA-2 isn't even close to being in the running as the most "travel-friendly" portable DAC/headphone amplifier I've used, weight-wise. Compared to the Resonance Herus or AudioEngine A3, the PHA-

EQUIPMENT REVIEW - Sony PHA-2 DAC/Headphone Amp

2 is massive. When I recently attended AXPONA in Chicago I opted to carry the Astell&Kern AK100 as my primary portable audio device because of its much lighter weight and far smaller footprint. If faced with equal levels of travel-induced trauma, the PHA-2 would undoubtedly survive better than the AK100, but at the cost of its additional weight and bulk.

As consumers demand more “one-box” solutions for computer and portable-audio playback, we’re beginning to see a steady stream of new DAC/headphone-amplifier products designed for both home and travel use. The Sony PHA-2 offers a lot of capabilities and excellent sound for under \$600. But since no one device can do everything, prospective owners should look at the PHA-2’s feature set carefully to ensure that it does what you need it to do. If you plan to use it with especially difficult-to-drive headphones, you should definitely audition it with those headphones before making a final purchasing decision. While the PHA-2 does drive higher-impedance headphones such as the 600-ohm version of the Beyer Dynamic DT-990 with more authority than the Astell&Kern AK100, most users are unlikely to carry this type of headphone while traveling. For those audiophiles who strongly favor a difficult-to-drive headphone, the PHA-2 will be a better option than the headphone amplifiers built into most portable devices. Also for owners of highly sensitive, custom, in-ear monitors, who are tired of listening to the low-level background hiss that emanates from many headphone amplifiers, the PHA-2’s lack of noise and hiss could make it an ideal pairing for the Westone ES5 as well as many other custom high-sensitivity in-ears. **tas**

I auditioned the PHA-2 with the superb PSB M4U headphones and an Astell&Kern AK120. In this context, the PHA-2 was a remarkable performer, infusing the music with wider dynamics and a more open soundstage. But it was in the bass where the PHA-2 shone. This headphone amplifier extended the bottom end and restored a sense of weight and body to acoustic and electric bass, as well as providing greater solidity and impact on kick drum. Overall, the PHA-2 rendered a significant upgrade in my headphone listening experience. In addition, the ingenious strapping system that allows you to attach your portable player to the PHA-2 greatly increased this amplifier’s appeal. —Robert Harley

SPECS & PRICING

Digital inputs: USB Micro-B input (for charging & PC), USB Mini-B input (for Walkman), USB Standard type A (for iPod/iPhone/iPad)	10% distortion)
Recharging time: Approx. 7 hours	Battery type: Built-in lithium-ion rechargeable battery
Outputs: Phones (stereo mini-jack, only 3-pole supported), Audio In/Line Out (stereo mini-jack, only 3-pole supported)	Battery life: Analog connection, approx. 17 hours; digital connection, approx. 6.5 hours
Analog input: One	Battery charging: Approx. 7 hours from empty to full-charge
Output power: Approx. 165mW+165mW (8-ohm, 10% distortion); approx. 90mW+90mW (32-ohm, 1% distortion); approx. 25mW+25mW (300-ohm,	Input voltage: Maximum: 1V RMS
	Dimensions: 2.67" x 1.14" x 5.5"
	Weight: 4.2 oz. (rechargeable battery included)
	Price: \$595
	sony.com

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DSD



Resonance Labs
www.resonancelabs.com



Meridian Direct DAC

Take 2

Neil Gader



It's no secret that pocket-sized USB DACs have a lot going for them.

I know from experience that Meridian's Explorer is a superb little performer (Issue 234). But, miniaturization also has its limits. For example, what if your listening habits swing in two different directions—between the portability of playback-on-the-hoof and home-system integration? Seems the busy engineers at Meridian have been thinking the same thing. Meridian's answer is the Direct. Like a crossing guard at the digital/analog intersection the Direct brings to the table a larger resume of technology and connectivity—well beyond that of the plucky little headphone streamer.

The Direct is a USB DAC that bundles digital inputs and a set of analog outputs in a single compact package. It's designed to benefit systems that lack the USB input required to accommodate computer-based audio. And it can also bring an aging CD player (with a SPDIF out) back to relevance, or grab an optical signal from an Apple TV, or even hook up with a headphone preamp.

Not much bigger than a pack of cigarettes, the Direct carries the extruded-aluminum oval-capsule design of the Explorer into a larger

form factor. At one end, a button selects either USB or SPDIF input, with a trio of LEDs indicating the sample rate. (The unit can decode digital audio streams up to 24-bit/192kHz.) At its other end are a USB2 B socket and a 3.5mm optical/coax hybrid connector (adapters are included). However unlike the mini-jack output of the Explorer, the Direct uses a pair of unbalanced RCA output jacks, allowing audiophiles to use high-end interconnects. The Direct includes a wall-wart power supply that also operates in connection with the USB input in instances when a computer's USB interface is not being used. Proudly handmade in the U.K., the Direct is upper crust all the way, from packaging to craftsmanship.

Action!

Added size and cost have enabled Meridian's engineers to unleash some of their core technologies, many of them gleaned from the Reference 800 Series. These include Meridian technology enhancements such as upsampling and an apodising digital filter. The Direct also uses music-grade power-supply capacitors, while its four-layer PC board minimizes noise.

Ease of use is paramount in this segment. While full-size mega-DACs can bewilder the audiophile with a plethora of set-up choices, getting the Direct up and running is virtually hassle-free. For me it was as simple as taking the provided USB cable out from my MacBook and into the Direct, and selecting the Meridian DAC from the Sound submenu within my laptop's System Preferences.

Quiet on the Set

The sonic performance of the Direct is a clear notch above the fairly high bar set by Meridian's

jaunty little Explorer. Though similar to its smaller sibling in tonal balance, the Direct offers subtle improvements in the areas of low-level transparency and micro-dynamic resolution. When following a delicate orchestral harp line, the metallic sustain of a percussionist's triangle, or the high-pitched strings of a 12-string acoustic guitar, the Direct shines.

However, where the Direct really comes into its own is in spatiality—an arena in which, until recently, only premium digital players could compete. In defining the ambient boundaries around instrumentalists, the Direct captures much of the realism and dimensionality that less expensive players lack. For example, as I listened to the Chopin *Nocturnes* [Alba] performed by Janne Mertanen, the placement and contours of the piano began to eerily materialize in my room. At times I could nearly hear each individually struck note up and down the keyboard. And—such is the greatness of the latest generation of lower-cost DACs—the soundstage no longer sounded flattened, as if projected on a screen. Rather, the Direct reproduced dimensional space with greater ease and specificity. And, while its presentation wouldn't be mistaken for analog, the coolness that once characterized digital sound has largely thawed out.

Where the Direct falls a little short is in a subtraction of orchestral textures, an almost glassy smoothness that dulls the tingle of micro-dynamic peaks and the transient sparkle that I've observed in costlier DACs. I often cite excerpts from Stravinsky's ballet *Pulcinella* on the Argo label as one of my vinyl and digital favorites; this is because the recording offers a level of orchestral naturalness and a gentle authority that immediately captures a listener's attention. Compared with the top-notch on-board DAC in the mbl C31 player, the Direct

slightly blurs the individual voices within string sections—and the air among the players is less noticeable. The wave-like ripples from the skin of a firmly struck bass drum are also slightly blurred.

The Direct doesn't have a headphone preamp, but since I was given the chance to audition Meridian's new Prime headphone amp, I grabbed my trusty AKG and Cardas 'phones and listened to the Direct via the Prime's analog inputs. According to Meridian the digital architecture of these two components is very similar, and this played out sonically as I listened to a series of pop selections from Norah Jones and Mary Stallings, and high-res material courtesy of HDtracks and Reference Recordings. Tonally these units are a virtual mirror of each other with noise-free backgrounds, rock-stable imaging, authoritative and controlled bass, and lifelike timbres.

The Direct is a musically satisfying, cost-effective solution for inoculating a system against digital obsolescence. Without protest it fills many roles, makes for a willing travel companion, and is a sonic knockout in the bargain. Caught between two audio worlds? Meridian's Direct knows the path to both. **tas**

SPECS & PRICING

Inputs: USB, TosLink
Output: One pair RCA
Dimensions: 3.28" x 5.5" x 1.3"
Weight: 9 oz.
Price: \$699
 meridian-audio.com

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Rotel RDD-1580 Digital-to-Analog Converter

Great Digital Made Affordable

Spencer Holbert

It's an amazing time for computer-based audio. It wasn't too long ago that DACs connected to a PC or Mac were limited to CD-quality resolution and relied heavily on upsampling or multiple conversions to match the capabilities of transports. What's better than a computer that manages a seemingly unlimited number of high-res songs at 192kHz/24-bit (or higher)? Here's what: the fact that you can now own an entire computer-based system at a fraction of the cost of components from just a couple years ago, without sacrificing sound quality. As with all facets of life there will always be über-expensive gear that can do it better, but the new \$799 Rotel RDD-1580, with its myriad inputs and superb design, represents an affordable option that won't become obsolete in a few years. Plus the RDD-1580 is more than just a checklist of features; it's a true hi-fi component with gripping sonics that run with the best of 'em without running you into debt.

Back to Basics

First and foremost, a DAC should have the ability to handle any digital input you could ever hope to use. There's no point in purchasing one component for your transport, another for your computer, and then another for your iPod. The Rotel RDD-1580 has six inputs: two optical TosLink, two digital coax, one computer USB, and one iDevice USB on the front panel. It's easy to scoff at that last one, because the front-panel

USB input is limited to 48k/16, but it's a great option when friends come over and want to play "that new song you just have to hear" without the hassle of ripping the music from their iPhone or iPad onto your computer. The front-panel USB input also doubles as a charger, which was super-helpful when my iPad—aka my computer-audio command center—ran out of juice.

For high-res computer audio, I connected the RDD-1580 via USB and TosLink to my iMac with

an external 12TB RAID NAS drive, selected the Rotel under outputs, then fired up iTunes with Amarra Hi-Fi. It's nice that most Macs feature optical and multiple USB outputs, because that not only allows for easy A/B comparisons from the same source, it also allows for comparisons with multiple DACs. Like I said, it's an amazing time for computer-based audio.

Maybe I'm a bad reviewer for admitting this, but I no longer use a transport for SACDs—I rip all of my SACDs to my computer using a Playstation 3. Caveat: This requires an older firmware version that can read SACDs and convert them into an ISO file, then more software to convert the files into PCM that can be streamed to your DAC, all of which can be a little daunting for a newcomer to computer-based audio. If you have a large collection of SACDs, a transport is still the easiest option; but if you're up to the challenge it can be fun—yet very time-consuming—to finally transfer those SACDs to your computer and break free of the physical constraints of changing discs. This topic probably warrants an entire article, but let's get back to the DAC.

Rotel has long been known for high-quality components at an affordable price, and the RDD-1580 is no exception. Unlike most DACs in the same price range, the RDD-1580 features two Wolfson WM8740 converters—one for each channel—a Rotel-designed toroidal transformer, and slit-foil capacitors to supply the DAC with great power. If you've been following DAC technology for a while, you'll know that sound quality is not just about the quality of the converters, but also the digital filters, output stage, and power supply; in this regard the "dual-mono" design of the RDD-1580 really shines. Unless you are getting into DSD, this

DAC has everything you need to rule the digital world. Oh, and it has a remote! More on that in a bit (pun intended).

Bits, Bytes, and the RDD-1580's Sonic Capability

If the world of digital audio were simply eight bits in a byte, any ol' DAC would do. It's the aggregate design that counts, not just the mathematical sum of its parts. When I listened to the RDD-1580, it was obvious that Rotel always had high-quality analog sound as its goal. Sound quality seems to be an afterthought for many sub-\$1000 DACs that have the capability to handle 192/24 PCM signals; heck, there are \$30 DACs that can do this. For those of you who remember the early mindset when turntables were simply something that spins a record, this will be a little *déjà entendu*.

When testing DACs, my go-to music is always something from the Ultimae record label, purveyors of incredible ambient soundscapes from artists like Aes Dana, Solar Fields, Hol Baumann, and Carbon Based Lifeforms. This type of music is perfect because it's not only great to listen to, but also pushes the limits of a system in a controlled manner that orchestral movements just can't touch. Ambient music plays with soundstage width, depth, height, and extreme frequency response with lightning-fast speed. Such ambient music is like a modern-day version of classical music in that it paints a landscape and takes you on a journey, except that the sound is phasey left and right, front to back, and top to bottom.

What's amazing about the RDD-1580 is that it took the massive amount of sound from Solar Fields' *Movements* and translated it into a beautiful soundscape that was far wider and

EQUIPMENT REVIEW - Rotel RDD-1580 Digital-to-Analog Converter



deeper than that of my comparison DAC, which retails for about the same price. On “Sol,” the first track of the album, the bass seemed to rip from the ground and leap into my chair, while simultaneously the high-frequency zips-and-zaps flew from beyond the outer edges of the speakers to land centerstage, dance in mid-air, then retreat well to the rear. With the comparison DAC the effect was “similar,” but the soundstage was truncated, never extending beyond the edges of the speakers, and had about half the depth. This was using the same USB cable, the same computer—same everything. For the same price, the RDD-1580 put the comparison DAC to shame, and was far more engaging in its ability to elicit a visceral response to the music. Several times during the track “Discovering” I caught myself clenching my fists and sliding toward the edge of my seat, all because the RDD-1580 made the music that much more gripping.

I wanted to throw another variable into this aural showdown and choose an album that I have on vinyl and digital. If you haven’t heard Zero 7’s *When It Falls*, it’s an absolute must-own. This genre-bending album employs multiple “jazz” singers—both male and female—throws in violins, pianos, electric basses, and acoustic

guitars, then interlaces everything with down-tempo ambient music to create an intoxicating sound. If you’ve seen the movie *Garden State*, or TV shows like *Top Gear*, *CSI*, or *Smallville*, then you’ve heard Zero 7. So I pulled out the vinyl version of *When It Falls*, threw it on an analog setup that cost the same as the RDD-1580, and A/B compared the digital to the vinyl. I’m going to get hate mail for saying this, but on the track “Somersault,” underrated jazz singer Sia Furler sounded much better than with the vinyl setup of similar cost, not to mention that the instruments were more distinctly defined within the soundstage. Even though I liked the “vinyl sound” more than the digital, it couldn’t compete with the RDD-1580’s imaging, lack of smear, and superb dynamics. Before this, if someone would have asked me, “For \$800, should I go digital or vinyl?” I would have said vinyl all day long. Yet, the RDD-1580 made me reconsider that question, and then ultimately decide in favor of it over an analog front end for the same price. Yes, I’m going on record and saying that if you have \$800 and have to choose between vinyl and digital, buy the RDD-1580 first.

But maybe that was just a fluke, eh? Let’s try the same vinyl/digital comparison with James

Blake’s “Retrograde” from his second album, *Overgrown*. This track features Blake’s incredible vocal range as he hums R&B-style up and down the octaves, backed by a simple beat and piano. Yet again, the RDD-1580 easily beat out the other DAC and comparable analog front end. The RDD-1580’s soundstage was deeper, the piano was spatially separate from the vocals and the beat, and everything sounded tighter. I did the same test again with Portugal. The Man [sic], Neko Case, Wayne Shorter, Miles Davis, ZZ Top, and dozens more, and each time the RDD-1580 outperformed the “other DAC” and the analog setup.

I wanted to do this same “triple comparison” in another system located in an entirely different room, so I went over to a fellow audiophile’s house and began the process all over again. I didn’t necessarily expect the same conclusions, but I was curious whether I simply preferred the sound of the RDD-1580 through my amp/speaker combination. Maybe the RDD-1580 better complements my system, I thought. After three or four hours of A/B/C testing, it was abundantly clear that the RDD-1580 still sounded better than the alternatives in my friend’s system. A couple days later, I received an e-mail from this friend, who had gone out

and purchased the DAC for himself. If you are in the market for a DAC and have a max budget of \$1000, you would be foolish not to audition the RDD-1580.

Other Likes, and a Few Minor Dislikes

Like I said earlier, the RDD-1580 comes with a remote, which when connected via USB controlled Play, Skip Forward, and Skip Back; obviously this didn’t work with the other inputs. But these controls were a little finicky: The Pause button didn’t work via USB, but if you hit the Play button again it would pause the track. I could skip forward and back with the respective buttons, but I couldn’t fast forward, nor was there any volume-control capability. I used the RDD-1580’s remote mainly because it was faster than unlocking my iPad, letting the Remote app sync, and then trying to control the computer. But ultimately I preferred using the iPad to control the computer, rather than Rotel’s remote.

This next one might just be my personal preference, but the blue indicator light, which rings the circumference of the RDD-1580’s power button, stays illuminated whether the DAC is on or in standby mode. Several times I

EQUIPMENT REVIEW - Rotel RDD-1580 Digital-to-Analog Converter

thought the DAC was on when it was actually in standby, and vice versa. The only way to tell if the DAC is actually on is to look at the small input indicator light, or the sample-rate indicator. Again, this isn't a huge deal, though it is somewhat strange to not indicate on/standby individually.

Another thing that might throw a lot of people off is the fact that you need to manually switch between USB 1.0 and USB 2.0 modes by holding the PC-USB input button for five seconds (this is a one time thing). Windows users will need to install a supplied driver in order to utilize USB 2.0. For Mac users, this is already taken care of, but I couldn't determine whether the switch from USB 1.0 to 2.0 actually made a difference in my Mac setup, because the 192kHz indicator light was illuminated before I read the owner's manual (I might have been overeager).

I really like the RDD-1580's sleek, slim design; the review sample I received came with the silver faceplate, which just so happens to match a lot of my other gear. Plus, the RDD-1580 ran surprisingly cool, which means that you could place a preamp on top of it without worries; this is most likely due to the fact that it only draws 25W when on, and less than 0.5W when in standby.

Another really cool feature is that you can stream music via Bluetooth when the supplied Bluetooth adaptor is plugged in to the front-panel USB input. The Bluetooth dongle is tiny and unobtrusive, and was a lot of fun to use when I worked on my laptop and wanted to stream music from my favorite listening chair. You can also stream music from smartphones and tablets, but I didn't test out what would

happen if multiple devices tried to connect via Bluetooth simultaneously, à la during a party where multiple people want to play phone DJ.

Aside from these few minor things, the RDD-1580 was flawless, both in features and in sound quality. It is by far the best DAC that I've heard in this price range, and probably would beat out most DACs double or triple its price. Does it beat out a \$10,000 DAC? Sorry Rotel, but the big boys still win in overall sonics (not to mention DSD capability). But if you are looking for a DAC that costs even \$2500, don't overlook the RDD-1580. I definitely hope Rotel will let me hang on to this one a while longer. *tas*

SPECS & PRICING

Inputs: Two digital coax; two optical TosLink; one PC-USB; one front-panel USB

Output: RCA; XLR

DAC: Dual Wolfson WM8740s

Frequency response: 10Hz-95kHz

S/PDIF LPCM: up to 192kHz/24-bit

Rear-panel USB: Asynchronous, 192kHz/24-bit

Front-panel USB: Up to 48kHz/16-bit

Dimensions: 17" x 2 1/8" x 12 1/2"

Weight: 11.24 lbs.

Price: \$799

ROTEL OF AMERICA

54 Concord St.

North Reading, MA 01864

(978) 664-3820

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Three Miniature Portable USB DACs

Music on the Go

Steven Stone

For audiophiles who travel a portable DAC has become one of those “must-have” accessories, right up there with a toothbrush and an unexpired credit card. The first generation of portable USB DACs was big and had limited high-resolution capabilities in comparison to the current crop. But as technology marches forward, more capabilities and smaller footprints abound. I’ll look at three small USB DACs in this review—Cambridge Audio’s DacMagic XS, the Hegel Super, and the Resonance Labs Herus.

Cambridge Audio DacMagic XS

About the size of a box of wooden matches, the Cambridge DacMagic XS is one of the smallest and lightest portable DACs I’ve seen. It measures approximately 2 1/8" by 1 1/8" by 3/8" and weighs under 4 ounces. On one end you’ll find a micro-USB input and on the other end a 3.5mm stereo output. The top of the DacMagic XS has its own analog volume control, which “fully bypasses the soundcard and volume control of your computer.” The two large buttons, plus and minus, are easy to locate and use, even in dark or cramped spaces. Instead of plastic, the DacMagic XS is housed in a beveled brushed-aluminum case that should be capable of surviving a high level of abuse. The DacMagic XS has a small LED next to the headphone jack that glows purple or blue when the unit is operating properly and red when you try to boost the volume past its maximum level.

Inside the Cambridge Audio DacMagic XS you’ll find an ESS 9023 24-bit DAC chip that supports PCM bit-rates up to 192/24 from a USB 2.0 input. Straight out of the box the DacMagic XS is set up as a USB 1.0 device, which will only support a maximum bit rate of 96/24. Switching over to USB 2.0 requires holding down both the + and - buttons for at least five seconds until the small light in the DacMagic XS flashes three times. Once in Class 2.0 the DacMagic XS will remain a 2.0 device unless you switch it back.

The most difficult part of using the DacMagic XS with a Mac computer is finding the right kind of connector to attach it. The DacMagic comes with a six-inch cable, but if you need a longer one, which I suspect many prospective owners will, the DacMagic XS shares the same type of micro-USB connection as the Astell&Kern AK100, AK120, and AK240. A&K and others sell

micro-USB cables on their sites.

After attaching the DacMagic XS to one of my Macs (I tried it with a MacPro desktop, MacPro portable, and a Mac Mini), the AMSCP (Audio Midi Setup Control Panel) on each Mac recognized the DacMagic XS immediately. Once the DacMagic XS was set for USB 2.0 operation the AMSCP showed that it was capable of handling up to 192/24 files.

The only ergonomic quirk I experienced while using the DacMagic XS was that it was sensitive to static electrical shocks. All it took was a couple of strides across my office and back, then touching the DacMagic to generate enough of a static shock to disconnect the DacMagic from the USB buss—it would vanish from the list of DAC options in AMSCP. To correct the problem I needed to disconnect and reconnect the DacMagic XS from its USB connection, at which point it reappeared on the AMSCP DAC list and began playing as if nothing had happened.

DacMagic XS’s Sonic Sorcery

I’ve seen the question posed on multiple locations on the Web, “Are thumb-drive-sized DACs a real sonic upgrade or merely convenience devices for accessing higher-definition music files?” In the case of the DacMagic XS the answer is clearly, “Both.”

Since most prospective purchasers will want to use the DacMagic XS with headphones, I used a wide variety of different headphones and in-ear monitors with the DacMagic XS. With the most sensitive in-ears, such as the Westone ES-5 custom in-ear monitors (115dB sensitivity), the DacMagic XS did generate some low-level hiss and background noise. With somewhat less sensitive in-ears, such as the Ultimate Ears In-Ear Reference Monitors, the DacMagic XS

EQUIPMENT REVIEW - Three Miniature Portable USB DACs

was quiet enough that the music came from a virtually silent background.

The DacMagic XS's headphone amplifier section had adequate gain and power to drive the Audeze LCD-2 and Mr. Speakers Alpha Dog headphones to satisfying volume levels with good bass extension. I was especially impressed by the combination of the DacMagic XS and the Grado RS-1 headphones, which can be quirky with portable gear. The bass sounded especially potent in this combination. I also enjoyed the venerable AKG K701 headphones connected to the DacMagic XS. While more of a left-brained rendition of music than that of the Grados, the AKGs connected to the DacMagic offered well-controlled upper frequencies that still had air and extension.

When connected to my desktop computer-audio system the DacMagic XS did a fine job of creating a believable three-dimensional soundstage that had all the weight, size, and imaging specificity of a "full-sized" DAC. When set to maximum output the DacMagic XS had enough gain to allow it be used like a fixed-output DAC into an analog preamp. While not quite as transparent and revealing as my reference DACs, including the April Music Eximus DP-1 or the latest version of the Wyred4Sound DAC2 DSD SE, the DacMagic did pass enough musical information to be completely involving. I never felt during my time with the DacMagic that it was limiting fidelity to the point of "grayness," which is the way some "entry-level" portable DACs sound.

Although it doesn't handle every audio format, and isn't DSD-capable, the DacMagic XS delivers a lot of functionality and sonic

goodness for under \$200. For audiophiles looking for a road-warrior-worthy portable DAC that will be at home hooked up to any computer, portable or desktop, and successfully drive most headphones, the Cambridge Audio DacMagic XS DAC is a savvy and very affordable option.

Hegel Super DAC

Hegel gave audio journalists a sneak peak at the Super portable DAC during the 2013 Rocky Mountain Audio Fest. I was immediately impressed by the Super's solidity, both physically and sonically, and I looked forward to hearing the final consumer version. Flash forward six months and a Hegel Super DAC appeared at my doorstep. I'm happy to report the production version is just as solid as the pre-production version. Initially the Super was to be priced at \$399, but the current "street price" is \$299.

Hegel made some very specific design decisions for the Super DAC. First, it is a USB 1.0 device that needs no drivers with any computer. This makes it truly plug-and-play, but it also limits the Super DAC to a maximum sample/bit rate of 96/24. For some audiophiles the Super's lack of 192/24 and DSD support will make it a non-starter despite its sound quality.

Hegel doesn't supply much in the way of "under the hood" specifications, such as the DAC chip used, but according to its literature the Super does not have an asynchronous USB interface, which Hegel considers to be more marketing hype than actual technological advantage. Hegel's published design goals for the Super were "to be extremely silent, to be able to have flat frequency response regardless of the headphone's impedance, and to have

sufficient power supply to drive even difficult headphones." The Super does have some "trickle-down" technology derived from Hegel's full-sized DACs including Hegel's proprietary re-clocking techniques, and an output stage with an extremely low output impedance.

Physically the Super is simple, yet impressive. Its chassis is milled out of a single piece of aluminum that measures approximately 3 5/16" by 1 10/16" by 3/4" and features an engraved Hegel logotype on the top and a satin-brushed finish. One end of the Super has a micro-USB connection while the other has a mini-stereo/optical-digital mini-jack output. The Hegel Super is capable of serving as either a DAC or a USB-to-TosLink interface. "Legacy" DACs that lack a USB connection can be used in a computer audio system via the Super. But if you do use the Super as a USB converter, it will still only support a maximum sample bit rate of 96/24.

A Super Sound

If you favor a headphone that needs some juice to sound its best, the Super could be a perfect traveling companion. But if your go-to traveling earphone is a high-sensitivity in-ear, the Super isn't the right DAC for you.

I tried the Super with a variety of headphones, and even with the lowest sensitivity ones in my collection, The Audeze LCD-2s, I still needed over 15dB of attenuation (using iTunes/Amarra) to bring the volume down to a comfortable listening level. With the Westone ES-5 custom in-ear I used over 40dB of attenuation. That's a lot of excess gain in the system.

The headphone that I enjoyed the most coupled to the Hegel Super was the Audeze

LCD-2 (Bamboo version). The Hegel was able to propel the LCD-2s in an authoritative manner that I usually hear only from larger, AC-powered desktop headphone amplifiers. Bass was tight, controlled, but still powerful. Also the lack of electronic "grain," due in large part to the Super's 140dB S/N figure, contributed to the ease with which I could listen into any mix.

If your primary use for a portable DAC is with a desktop system or powered speakers, the high output of the Super will be a good thing. Hooked up to my desktop the Super sounded more like a "big boy" DAC than a portable USB device. If you listen for "pace" you'll appreciate the Super's ability to drive a system forward with alacrity.

In my desktop system the Super delivered a well-defined soundstage with precise lateral imaging. Depth was also clearly articulated, but with a hair less dimensionality than I've heard from my reference full-sized DACs such as the Wyred4Sound DAC-2 DSD SE. Bass extension and power through the Super, however, was equal to the best DACs I've heard in my desktop system including the Wyred4Sound DAX.

Although the Hegel Super does lack some features, such as DSD and 192/24 PCM capabilities, it makes up for it with its solid sound and ability to do double duty as a USB-to-TosLink converter. Given the number of other portable DACs available at a similar price, the Hegel faces some tough competition. But for some prospective users, the Super's powerful output and easy setup might be deciding factors in its favor.

Resonance Labs Herus

The Canadian-made Resonance Labs Herus

EQUIPMENT REVIEW - Three Miniature Portable USB DACs

is the most expensive portable DAC in this survey at \$350 street, but it is also the most flexible in sample- and bit-rate capabilities. This lipstick-sized DAC supports PCM up to 352.8/24 as well as DSD64x, DSD 128x, and DXD files. So, regardless of how you like your high-resolution files, the Herus will play them.

Machined out of a solid block of aluminum, the Herus measures 2.5" x 1.25" by .75" and weighs less than a pair of CD jewel cases. On one end you'll find a full-sized USB B connection and at the other a full-sized 1/4" stereo connection. For those audiophiles who already have a premium USB cable, Herus' use of a regular as opposed to mini- or micro-USB could be a major advantage over some other portable DACs. Also the full-sized instead of mini-stereo plug means that you can use headphones with a standard 1/4" plug without needing an adapter.

The Herus puts out 2.4 volts from its headphone output at maximum output, giving it a slightly higher level than DACs set for the usual standard of 2 volts. Inside you'll find an ESS 9010-2M DAC, configured using Resonance Labs' custom code and asynchronous algorithms that run in a generic Cypress USB interface chip. With its low 0.2 ohms output impedance the Herus should be able to handle any headphone from 32 ohms to 600 ohms with no issues.

Like the Cambridge Audio DacMagic XS, the Herus has its own volume control. But unlike the Cambridge Audio DAC, which has an analog control, the Herus adjusts its volume via the ESS 9010-2M DAC's internal 32-bit digital attenuation control. The Herus will also work as a DAC for your iPhone or iPad with the addition of an Apple Lightning-to-USB camera adapter to

connect the iPhone or iPad to the Herus. Some Android devices are also supported, such as the Samsung Tab3.

A DAC of All Trades

During my time with the Herus I've thrown every file format in my music library at it with 100% success and playability. The only ergonomic issue I've had with the Herus is that when I changed headphones the Herus reverted to full output level, which can be quite loud with high-sensitivity headphones.

Resonance includes the following warning on their main Herus info page, "IMPORTANT. Please note: some (if not all) software on the PC, MAC, and Linux will, the first time HERUS is connected, set the volume to 0dB. That is, to the highest volume level. This may be very loud in the headphones. On subsequent connections the music player application will recall the last volume setting, but we have seen instances where plugging into a different USB port again sets the volume back to 0dB. Consequently, we strongly recommend that you plug the HERUS into any new port on your computer with the headphones unplugged, and set the volume to a reasonable level prior to plugging the headphones into HERUS."

Occasionally when I switched headphones I didn't get music; instead all I heard was noise—loud digital-sounding noise. The solution was to close down iTunes with Amarra Symphony and then reopen them and the problem disappeared. I soon developed a standard procedure with the Herus when I switched headphones—never put on the headphones until I made sure that music, rather than noise, was coming through the drivers.

I used the Herus with a wide variety of headphones. Only with the 115dB sensitive Westone ES5 custom in-ears did the Herus produce some low-level hiss and background noise. With the 112dB sensitivity Ultimate Ears In-Ear Reference Monitors hiss was reduced to the point where it was almost inaudible. Combined with any headphones of less than 95dB sensitivity the Herus amplifier section was completely silent.

Because the Herus does produce an output that is slightly higher than the industry standard, I was concerned whether its volume could be adjusted and attenuated so that it would work successfully with a wide variety of headphones. To get an idea of how much volume variation was needed with different earphones I made note of the comfortable volume settings for a wide variety of cans. The Westone ES5 custom in-ears required the most attenuation, 40dB. In comparison, less sensitive earphones such as the Mr. Speakers Alpha Dog headphones needed only 15dB of attenuation. The most power-hungry headphones I had on hand, a Beyer-Dynamic DT990 600-ohm resistance earphone, required only 12dB of attenuation.

The first time I heard the Herus in my hotel room at the 2013 Rocky Mountain Audio Fest, driving my Audio-Technica ATH-W3000 ANV headphones, I was transported back to the moment the recordings were made. The Herus produced a level of sound quality that rivaled any DSD DAC I'd heard, regardless of price. During the many hours I've used the Herus since RMAF it has continued to impress me with its transparency and ability to impose little in the way of additive colorations onto the music.

I've been making DSD 128x recordings of live concerts since 2008, when I first started using the Korg MR-1000 DSD recorder, so I have plenty of DSD material in my music library. Whether

SPECS & PRICING

Cambridge Audio DacMagic XS	digital TosLink (mini-jack)
Inputs: USB 1.0 and 2.0 supported	USB interface: 24-bit/96kHz, plug & play via USB 1.0 protocol
Outputs: 3.5mm stereo headphone jack	Dimensions: 1.6cm x 0.6cm x 3.2cm
Sample/bit rates supported:	Price: \$299
USB 1.0 mode: 16/24-bit, 44.1kHz, 48kHz, 88.2kHz, 96kHz; USB 2.0 Mode: 16/24-bit, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz	hegel.com
Dimensions: 1.25" x 0.4375" x 2.125"	Resonance Labs Herus
Weight: 3.5 oz.	Inputs: USB 2.0 supported
Price: \$199	Outputs: TRS stereo headphone jack
cambridgeaudio.com	Sample/bit rates supported: USB 2.0 mode: 16/24-bit, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz, 352.8/24, DSD 64, DSD128
Hegel Music Systems Super DAC	Dimensions: 63.5mm x 31.7mm x 19mm
Inputs: Micro-USB 1.0 mode	Price: \$350
Outputs: Mini-jack headphone and optical	reseonessencelabs.com

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EQUIPMENT REVIEW - Three Miniature Portable USB DACs

the music is classical or acoustic folk, the Herus plays back my DSD files perfectly without a single odd noise, hesitation, or drop out.

The Herus proved to be as adept with high-resolution PCM files as it was with DSD. I usually make 192, 96, and 44.1 files from my DSD recordings using the Korg AudioGate application. Listening to the PCM files through the Herus I became aware of differences between the DSD and the PCM files. The DSD version sounded the best, followed closely by the 192/24 versions. Listening to the 96/24 versions compared to the DSD I was immediately noticed that the room sounds and trailing edges of the music were ever so slightly truncated compared to the 192/24 or DSD versions.

Switching the Herus over to desktop audio duties I was, again, impressed by its overall sound quality. Using the Herus as a source for my desktop system merely required attaching a 1/4"-stereo-to-RCA stereo pair adapter and then connecting it to a preamp via a 1-meter analog cable. Imaging was as precise as the Wyred4Sound DAC-2 DSD SE, as was depth recreation and low-level detail. When I set up a matched level A/B with both the Wyred4Sound DAC-2 DSD and Herus connected to the NuForce MCP-18 using my own DSD recordings I was hard-pressed to tell which DAC I was listening to; they sounded that similar to each other.

Three DACs, Three Good Choices

Of the three portable DACs I reviewed, all three offered good performance at entry-level prices. The \$350 Resonance Labs' Herus does seem to be the most "future-proof" of the three with its support for DSD, PCM, and DXD files, so in

the long run it could prove to be the best overall value. Audiophiles who prefer an analog volume control and the ability to adjust the volume from the DAC itself may gravitate toward the \$199 Cambridge Audio DacMagic XS, which also supports USB 2.0 so it can play up to 192/24 files. If you have an older DAC that you still wish to enjoy with computer-audio sources, the \$299 Hegel Super offers you the option of converting USB to TosLink so that you can use "legacy" DACs with your computer-audio system. And while the Super is limited by its USB 1.0 protocol allowing only a 96/24 maximum sample/bit-rate, its dual functionality is a bonus that makes it a much better value than if it were only a DAC.

Whichever of these three portable DACs you choose, you will be rewarded by better sound and greater flexibility in headphone options due to their ability to drive headphones with more power than your computer or smartphone. Any one of them will add only a few ounces to your traveling kit, yet make the time in your hotel room or in a plane far more pleasurable. **tss**

GoldenEar's Extraordinary Triton Two Makes Ultra-High-End Performance Affordable!

"Affordable Loudspeaker of the Year — real sonic magic...establishes what I consider new high-water marks in all-around performance per dollar"

— Chris Martens, *The Absolute Sound*, January 2012

"...I would not be surprised if they retailed at \$10,000 a pair"

— Robert Deutsch, *Stereophile*

GoldenEar's Triton Two has set the audio world on its proverbial ear with extraordinary sound quality, elegant styling and previously unimaginable value. It has earned an incredible series of honors and awards — including *What HiFi's* Speaker-of-the-Year, *Absolute Sound's* Affordable Speaker-of-the-Year, *Sound & Vision's* Audio Product-of-the-Year, *Home Theater's* Top Pick-of-the-Year, *Home Theater Review's* Best Affordable Floorstanding Speaker and *Stereophile's* highly coveted Recommended Product honors. In fact, Robert Deutsch fell in love and raved about their "...quite stunning sense of realism ...I found that with my eyes closed it was easy to imagine that I was at that concert." This is the holy grail of audio we all seek!

"Listening with them paralleled previous encounters with no-holds-barred speakers — ones priced upwards of \$50,000."

— Al Griffin, *Sound & Vision*

The Triton Two is the creation of industry legend Sandy Gross, whose Grand Prix Award winning loudspeakers have been impressing reviewers and listeners for over 40 years. The Triton Two incorporates cutting edge technologies like High Velocity Folded Ribbon tweeters, high-definition spiderleg cast-basket drivers and a linear-phase crossover network. The built-in powered subwoofer utilizes a 1200 watt DSP controlled digital power amp driving dual front-mounted long-throw 5"x9" quadratic subwoofer drivers which are coupled to two side-mounted inertially balanced 6.75"x8" quadratic planar infrasonic passive radiators.

"It's like getting a Tesla Roadster for the price of a Toyota Prius."

— Darryl Wilkinson, *Home Theater Magazine*

Sonically, the Triton Twos are simply extraordinary. They deliver boxless three-dimensional imaging that *What HiFi* called, "something really magical" and had *AudioVision* raving, "they had us believing the entire surface of the front wall was covered with speakers." Likewise, the built-in subwoofers' deep powerful bass blends perfectly with the utterly transparent mid-range and silky smooth high-frequencies. They simply put many dramatically more expensive speakers to shame. Hear them for yourself and discover what all the excitement is about!



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Sony HAP-Z1ES HDD Audio Player

Game Changer

Steven Stone

As the flagship model for its “High Resolution Audio Initiative,” the new Sony HAP-Z1ES defines what Sony sees as the future of two-channel audio. It attempts to be easy for a naïve user to operate, yet capable of the highest audio quality. And while it’s relatively simple to make an audio product that is easy to use, very few ergonomically elegant mass-market audio devices also produce state-of-the-art sonics. Conversely, there are quite a few state-of-the-art computer audio rigs that sound superb, but require at least a bachelor’s degree in electronics with a minor in computer sciences to set up and use. Bridging the gap between these two extremes is exactly what the Sony HAP-Z1ES is all about.

The Grand Tour

What is an HDD audio player? In the case of the HAP-Z1ES, it is a local network-aware device that plays digital music files. It hooks up via Ethernet or Wi-Fi to your local network and the Internet. The HAP-Z1ES contains a 1TB hard drive for storing music files; it also has the ability to use external USB drives for additional storage. And what can the HAP-Z1ES store and play? It supports virtually any format audio file, including: DSD (WSF and DSDIFF), WAV, AIFF, FLAC, ALAC, ATRAC, MP3, AAC, and WMA files.

Since it is a local-network-aware device, any music file on any computer hard-drive in your home network can be imported into the HAP-Z1ES via a proprietary application program called “HAP Music Transfer.” The HAP Music

Transfer app can run on almost every PC that supports 32-bit versions of Windows or Mac OS. Besides the initial transfer of music files, the HAP Music Transfer app can also automatically and periodically transfer any new music files on designated hard drives in your home network to your HAP-Z1ES player’s HD storage.

Don’t look for SPDIF, USB, or AES/EBU digital inputs on the HAP-Z1ES player, or any digital outputs. The only hard-wired input is the aforementioned Ethernet connection, and the only outputs from the HAP-Z1ES player are analog. Located on the rear panel you’ll find a pair of balanced XLR and a pair of single-ended RCA outputs. If you are in need of digital outputs to connect to your DAC or AV receiver, the HAP-Z1ES won’t help you.

The front panel of the HAP-Z1ES is almost as Spartan as its rear panel. It has an on/off button on the extreme right, a large 3 7/8" by 2 1/2" full-color display panel in the center, and four buttons and one large knob on the left side—the four buttons are menu, back, enter, and play. The HAP-Z1ES also comes with a small wand remote that supports basic functions including play, pause, jump forward, jump back, and select tracks for play. But most users will probably want to use Sony’s new dedicated app with the HAP-Z1ES. My review sample came with a Sony Xperia tablet that had the HAP app already installed. By the time you read this review Sony will have versions available for IOS and Android devices. I’ll tell you more about the app later in the review.

While the outside of the HAP-Z1ES may be simple, its inside is full of new, sophisticated circuitry. For compressed music files Sony has developed DSEE (Digital Sound Enhancement Engine) technology, which restores upper

EQUIPMENT REVIEW - Sony HAP-Z1ES HDD Audio Player

frequencies and the “tail” of waveforms that were truncated by lossy compression schemes. The HAP-Z1ES also includes Sony’s new “DSD Remastering Engine,” which according to Sony “combines a high-performance DSP (digital signal processing) and FPGA (field-programmable gate array) to convert any signal (my emphasis) into DSD128 signals. It was designed based on the know-how garnered from Sony’s 8-times oversampling and Extended SBM (Super Bit Mapping) technology for professional recorders.” Yes, you read that right: the remastering engine can convert any and all PCM music files into DSD128 format, regardless of their original sample- or bit-rate. You can, if you wish, turn off the DSD Remastering engine via the main settings menu so the HAP-Z1ES will not convert PCM to DSD.

Once a digital file has been converted into DSD128, the final step is to convert that DSD file into analog for playback. The HAP-Z1ES does this step with an analog FIR (finite impulse response) filter. Along with reducing the extreme high frequency noise inherent in DSD signals, the FIR filter system has independent right and left channels with four separate filters per channel.

A low-phase-noise liquid-crystal oscillator handles internal digital timing in the HAP-Z1ES, which acts as the master clock for all digital signals. According to Sony’s measurements, the low-noise liquid-crystal oscillator delivers 20-30dB lower noise than conventional clocks.

The HAP-Z1ES has two separate large-capacity transformers, one for the analog power supply and one for the digital supply. Both receive a special vacuum impregnation pretreatment so all the winding coils are uniformly coated with

varnish. By using separate transformers for analog and digital power supplies, the HAP-Z1ES achieves separation of analog and digital signals at the circuit board level. This reduces the adverse effects of digital noise to a minimum.

Unlike many digital products, where the chassis is merely a big metal box, the HPS-Z1ES uses “Frame Beam Chassis” construction, which Sony has used on all its ES-level products in the past. The HP-Z1ES’s base is composed of two metal plates of different thicknesses that support the main chassis. There are two additional base plates under each power transformer. Along with these metal plates, Sony employs structural beams that run crosswise to reinforce the overall rigidity and improve resonance control.

To further improve overall vibration control the HAP-Z1ES uses a new foot design that employs ribs combined with an offset connection that isolates sound pressure from external sources. Inside the HAP-Z1ES Sony uses special mounting methodologies—an example is the analog connection terminal, which is mounted separately on its own isolated board to minimize the effects of vibration. An internal cooling fan is mounted via a damping system to minimize any vibration it might generate. It is also specifically angled so that it can operate with maximum efficiency and minimum noise.

Sony’s attention to detail on the HAP-Z1ES extends even to the main dial on the front panel. It is attached to an iron plate to prevent twisting or lateral movement. Although priced at only \$1999, the HAP-Z1ES’ fit and finish certainly rivals preamps and network players costing a lot more.

The Setup

The original set-up plan was for a Sony technical expert to fly into Denver from San Diego and set up the HAP-Z1ES for me. An especially vigorous snowstorm curtailed his visit. He got as far as the outskirts of Boulder before he had to give up. Undaunted, I set up the HAP-Z1ES by myself without any outside technical assistance. I found that even an audiophile with limited computer savvy could install a HAP-Z1ES with little difficulty.

After unpacking the HAP-Z1ES, I placed it on an equipment rack shelf and attached its analog outputs to my preamp and connected its Ethernet input to my home network via a 100 feet of Cat 5 Ethernet cable. I could have used the HAP-Z1ES’ built-in Wi-Fi (I got a signal strength reading of 61 from the HAP-Z1ES’s built-in Wi-Fi signal strength meter), but I wanted to make sure the HAP-Z1ES was receiving the most robust signal I could supply.

After connecting the HAP-Z1ES I turned it on and went to the “Network Settings” section of the main menu. There I selected “wired set-up” and “Auto” from the IP address page. After that, the HAP-Z1ES linked to my network and I saved the configuration. For users who like reassurance, the HAP-Z1ES lets you check and confirm that the settings are “OK” before closing the network settings pages. The procedure is much the same for wireless Wi-Fi, except you have a page that lets you select your access points. If you live in a Wi-Fi-intensive environment you can pick the correct Wi-Fi network and enter your password. Near the end of the review period I switched over to Wi-Fi access and had no issues with changes to the installation or impaired Internet performance.

Once the HAP-Z1ES is connected to your home network, either via Ethernet cable or via Wi-Fi, you can transfer music files to its internal hard drive. Unlike many music servers that employ a closed system (see AHC’s review of the Olive player), the Sony HAP-Z1ES permits you to add, store, and backup your music files onto standard USB hard drives as well as its internal drive. Although created so those new to music servers can easily use it, the HAP-Z1ES can fit into a fairly complex computer music eco-system. Sony expects the average HAP-Z1ES owner already has a library or even multiple libraries of music. With the Sony HAP Music Transfer application owners can not only transfer current music files over to the HAP-Z1ES, but also periodically and automatically copy over any new music to their HAP-Z1ES.

Initially I had some problems using the HAP Music Transfer application on my ancient Dell D620 laptop, which runs Windows XP. Even though I was running the last version of XP, the D620 did not recognize the HAP-Z1ES. After a couple of e-mails, Sony determined that the D620 was not running XP in the 32-bit mode that is needed for the program to run successfully. Any PC running a more current version of XP, Windows 7, or Windows 8 won’t have this issue. Since my ancient laptop proved to be better suited for doing firmware upgrades than running current software, I asked to see the Mac version of the HAP Music Transfer application. Sony then sent me a copy of the Mac version which had just become available. It worked flawlessly.

When first used the HAP Music Transfer application has a default location for your Mac’s music library that may or may not be correct

EQUIPMENT REVIEW - Sony HAP-Z1ES HDD Audio Player



for your system. If you don't keep your music on your primary drive you will have to change the app's default location for your music folders. You must change the music library default or nothing will be transferred because the app won't be able to find your music files.

The HAP Music Transfer app supports multiple music folder locations. This means that if you and your family have separate music libraries on different computers in your home, as long as they are attached to your home network via Ethernet or Wi-Fi, the HAP Music Transfer app can move them over to the HAP-Z1ES after you've selected and added them to the HAP Music Transfer's music library folder list.

Once your music folder locations have been entered into the HAP Music Transfer app, you can specify what kind of files you would like to transfer. The HAP-Z1ES supports 3GP, AA3, AIF, AIFF, DFF, DSF, FLA, FLAC, M4A, MP3, MP4, OMA, WAV, and WMA file types. And while you can transfer any and all of these formats over to the HAP-Z1ES, you might want to restrict its library to higher-quality lossless file formats. For users who've generated MP3 versions of their full-resolution files for their portable devices,

being able to exclude MP3 files is a useful feature. By checking or unchecking the format boxes on the "Contents Settings" page of the HAP Music Transfer app, you can specify exactly which formats will be transferred. Once you've specified file types, pushing the "Start" button will initiate file transfers. My initial transfer involved 5697 music files and required almost 20 hours to complete. You can expect the first transfer to take a while, which is why a wired Ethernet connection with its faster transfer rates is the best option.

After all your music files are transferred to the HAP-Z1ES by the HAP Music Transfer app, the HAP-Z1ES connects to Gracenote's database to acquire artwork for any files that may not have artwork. A majority of my music files already had artwork, but for some of my own recorded tracks the HAP-Z1ES found some interesting, if not entirely correct, art and attributions. On one particular track, which was a recording by my acoustic band, Knapweed, of the Bill Monroe/Peter Rowan song, "Walls of Time," the song was incorrectly attributed to Emmylou Harris and the Nash Ramblers from their *Live at the Ryman* album. I was quite surprised when I selected it;



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EQUIPMENT REVIEW - Sony HAP-Z1ES HDD Audio Player

instead of Emmylou's superb vocals I heard my own pitiful croaking.

If you select "auto update" from the HAP Music Transfer program's options, during each launch it will immediately look for any new tracks in your designated music library locations and automatically transfer any new files onto the HAP-Z1ES.

In addition to playing music from your music library, the HAP-Z1ES also has a built-in Internet radio tuner. Called the "V-Tuner," this feature includes the ability to search for Internet radio stations by genre or location. It also lists the bit rate of each station so you can see exactly what quality level a station can deliver. I quickly found the local stations that I listen to regularly and designated them as "favorites" via a heart symbol icon, which added them to a special list that I could access more easily.

Sony also added a special AI feature to the HAP-Z1ES called SenseMe channels. According to Sony, SenseMe channels is a function that analyzes and automatically categorizes music tracks according to their mood and tempo using the 12-tone analysis technology developed by Sony. SenseMe has twelve categories of music—morning, daytime, evening, midnight, energetic, relax, upbeat, mellow, lounge, emotional, dance, and extreme. These could be handy, especially if you'd like something a bit more selective than good old-fashioned shuffle mode. In my music library of almost 6000 songs, selecting "extreme" brought up 34 tracks. I guess I'm just not an extreme kinda guy.

The HAP App and HAP-Z1ES Remote

The HAP-Z1ES comes with a silver wand-shaped

remote control. It also has its own dedicated free downloadable app. The remote control duplicates all the buttons on the HAP-Z1ES front panel. It also adds jump forward, jump reverse, as well as mute and volume controls. Although the HAP-Z1ES has a fixed output level, both the volume and muting can be controlled by compatible Sony receivers and integrated amplifiers, or even assigned to products from other manufacturers, using the HAP-Z1ES's "Amp Control Setting."

The HAP control application will be available for Android phones, iPhones, iPads, and Sony Xperia, and other Android tablets. At the time of the review, only the Android app had been finalized, so Sony included an Xperia tablet with the app installed on it. Once the app located the HAP-Z1ES on my network it worked flawlessly with no crashes or delayed responses. The app lets you choose music, make playlists, and find particular tracks in your music library. Among its extra features is a "new music" list that shows you the latest additions to your HAP-Z1ES's music library and the most popular tracks called "favorites" (in case you really enjoy playing the same tracks over and over.) One nice, yet completely superfluous feature is that the background colors of the app change in response to the primary colors in the cover art of any currently playing track.

Day-to-Day Use

While I'm pretty sure there's a computer in there somewhere, its lack of computer-based issues has made living with and using the HAP-Z1ES on a day-to-day basis a joy. I just turn it on and it works. Whether controlled from the front panel,



the remote control, or the app, the HAP-Z1ES responded to commands quickly, and except in the case of hooking up with Internet radio stations via its V-Tuner, where it sometimes took as much as ten seconds for some stations to start to play, any music on the internal HD began playing almost instantly after being selected.

While I didn't find Sony's SenseMe feature of particular value, I'm sure most users will find some use for it, if only to annoy significant others by selecting "lounge." One feature I did enjoy was the "Favorites" selection feature in the V-Tuner. I was able to assemble a very nice list of higher-bit-rate Internet radio stations in a short time by using V-Tuner's search features.

The Sound

As someone who has felt that the best digital reproduction comes from files that have not had their native rate changed, reading that PCM files can be converted into DSD by the HAP-Z1ES raised some red flags. But after comparing the HAP-Z1ES's DSD Remastering Engine's rendition of PCM recordings with those same files played back at their native rate through the HAP-Z1ES, I can only conclude that whatever Sony is doing

in the conversion process doesn't appear to have any signature negative sonic effects. And while I wouldn't go so far as to write that the Sony HAP-Z1ES does a better job of reproducing PCM than PCM-centric DACs or HD players, it certainly is on sonic par with the best I've heard.

After an initial break-in period I did a number of A/B comparisons between the HAP-Z1ES and two streaming audio/computer based sources. The first source was a Sonos ZP100 feeding a Mytek Stereo192 DAC via a coaxial digital connection. The second source was a Mac Mini running Pure Music into the Mytek Stereo192 via its USB 2.0 connection. It took me several sessions of comparing these three systems before I could consistently recognize the HAP-Z1ES from the other sources in a blind A/B. The primary and telling difference was that the Mytek had slightly more energy in the upper midrange into the lower treble. In my system I felt the HAP-Z1ES was slightly more natural sounding with less edge. On Ella Fitzgerald and Oscar Peterson, Ella's voice had more air through the MyTek, but it had a more natural and organic tonality through the HAP-Z1ES.

In many respects the HAP-Z1ES and the

EQUIPMENT REVIEW - Sony HAP-Z1ES HDD Audio Player

Mytek DAC were very similar in their sonic presentations. Both recreated a soundstage with convincing three-dimensionality. Both also had the same level of dynamic contrast on the micro- and macro-levels. Bass extension was also a virtual dead heat with both quite capable of full low-frequency extension and subtle inner detail.

Which sound is more neutral or preferable will very likely depend on the rest of your system. If your system is on the darker side of neutral, the Mytek's extra bit of forwardness would match quite well, while the HAP-Z1ES could sound a bit subdued and perhaps even hooded. But if your system has any tendency toward brightness, the HAP-Z1Es will probably be better received than the Mytek. There's also something quite seductive in the HAP-Z1ES' midrange presentation that is hard to resist.

The most difficult and least conclusive A/B test I performed during the review was comparing the DSD Remastering Engine's DSD conversion of PCM files with those same files played back without the DSD Remastering Engine engaged. When switched back and forth there was a pause followed by about a two seconds of playback of the last snippet of music before the switchover. During that two seconds the sound was slightly different, seemingly warmer and rounder, but after that initial two seconds the sound reverted, and in blind A/Bs I could not tell whether I was listening to Remastering Engine or native output. I used both 16/44.1 and 24/96 PCM files for this test and didn't hear any differences when I switched between DSD and PCM on standard Red Book or higher-definition digital files.

During the A/B listening sessions I had ample opportunity to compare the HAP-Z1ES app with

the "Remote" app for iTunes. I much preferred Sony's App to Apple's. The HAP app was easier to use and navigate. It also provided more information about tracks including the original sample and bit rates.

One final aspect of the HAP-Z1ES' performance that deserves attention is its prowess as an Internet radio tuner. It was easily the best-sounding Internet radio I've heard to-date from any device. And while I didn't hear any changes when I switched in Sony's DSEE (Digital Sound Enhancement Engine) on my uncompressed music files, when it was activated for Internet radio the overall sound quality improved dramatically. For some prospective owners the HAP-Z1ES' stellar Internet radio performance could be a primary reason for ownership.

The High Value HAP-Z1ES

In overall sonics and build-value for the dollar, the Sony HAP-Z1ES sets new standards. A Mac Mini with monitor, keyboard, mouse, and external drives attached to the MyTek Stereo192 DAC runs over \$2500, and if you use better quality cables the price could go substantially higher. Even the Sonos ZP100/Mytek Stereo192 front end costs around \$2300 when you include a NAS drive. For \$1999 the Sony HAP-Z1ES supplies the computer, hard drive, DAC, and app to run it all. While this is a bit of a stretch, the HAP-Z1ES could be considered the iMac of HD music players—everything you need to acquire, store, and reproduce HD music files, regardless of format, in one carefully thought out and powerful box.

For audiophiles and music lovers who want to listen to high-quality digital music

files without the hassles of keeping another computer working optimally, the HAP-Z1ES is an attractively priced, yet fully featured option. It also doesn't hurt that its control interfaces are easy to use and unintimidating even for non-techy users.

Sonically, it's difficult to fault the HAP-Z1ES. Its sound quality was such that it rivals comparably priced standalone DACs, yet delivers more functionality and won't be made obsolete by the latest USB, FireWire, or Thunderbolt interfaces since it uses Ethernet and Wi-Fi as input connections.

Throughout the review period as I put the HAP-Z1ES through its paces, I looked for reasons the player might be not be considered a true high-performance component and found none. If you plan to spend more than \$2000 on any digital front end, whether it be an audio-computer, CD player, DAC, network player, or any other front end that uses digital files as a source, and you don't audition a HAP-Z1ES, you are failing to consider what may well be the benchmark digital product of 2014. *tas*



SPECS & PRICING

- Frequency response: 2Hz-80kHz +/-3dB
- Dynamic range: 105dB or higher
- THD: 0.0015% or less
- HDD capacity: 1TB
- Supported playback formats: DSD (DSF, DSDIFF), LPCM (WAV, AIFF), FLAC, ALAC, ATRAC Advanced Lossless, ATRAC, MP3, AAC, WMA (2 channels)
- Outputs: Unbalanced 2.0V RMS (50k ohms); balanced 2.0V RMS (50k ohms), 600 ohms
- External ports: Type A USB for hard drive, IR Remote-Out jack for IR blaster
- Power consumption: 35W (on), 0.3W (off), 2.8W (standby)
- Dimensions: 17" x 5 1/8" x 15 3/8"
- Weight: 32 lbs.
- Price: \$1999

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Oppo BDP-105
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Few disc player/DACs can compete with Oppo's BDP-105 at its price point (or even near its price point), because the Oppo offers a seemingly unbeatable combination of versatility, flexibility and serious high-end sound quality. Clean, clear, and detail-oriented, it hews somewhat toward sonic leanness, but is far more revealing than it has any right to be for the money. With the BDP-105 what you hear is what's on the record, with no comforting infusions of softness, warmth, or bass enrichment. In sum, the do-all Oppo is a multi-format disc player and multi-input DAC with which your system can grow (and it is also the vehicle of choice for many firms offering ultra-high-performance upgrade mods). Finally, did we mention the Oppo sounds terrific when heard through its top-tier headphones?

oppodigital.com (232)



Sony HAP-Z1ES
\$1999

As the flagship model for its "High Resolution Audio Initiative," the new Sony HAP-Z1ES defines what Sony see as the future of two-channel audio. It's easy for the nascent user to operate, yet capable of the highest audio quality. If you plan to spend more than \$2000 on any digital front end, whether it be an audio-computer, CD player, DAC, network player, or any other front end that sues digital files as a source, and you don't audition the HAP-Z1ES, you might miss what may well be the benchmark digital product of 2014.

sony.com (241)



AudioQuest DragonFly V1.2
\$149

AudioQuest has lead the industry with many innovations, but it's their latest version of the DragonFly, version 1.2, that pushes things to a whole new level. Not only do you get better performance from this little 96/24 USB DAC, you get it for a whole lot less: \$149 never improved sound so much. This is a must-own for anyone with a laptop, and even functions extremely well as a digital front end in a very high-end system, as Robert Harley explains in his review.

audioquest.com (241)



Micromega MyDAC
\$369

Micromega's MyDAC is entry-level in price only; its sound is far more refined and sophisticated than its modest cost would indicate. 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 attribute usually found in much more expensive DACs—qualities like air around instruments, a sense of three-dimensional space, and a laid-back ease. Through the Micromega instruments don't sound like flat cardboard cutouts; they are fully fleshed out three-dimensional images surrounded with a wonderful bloom. Timbres are remarkably smooth and free from grain. The bass is solid and tight, although the very lowest bass lacks ultimate authority.

audioplusservices.com (228)



Rotel RDD-1580
\$799

Rotel's latest DAC, the RDD-1580, is one of those products that can radically transform your system without turning your bank account into the red. For \$799, you get a dual-mono DAC capable of 192/24, six inputs that include optical, coax, USB, and even Bluetooth connectivity. The beauty of this DAC is that it makes you actually want to listen to digital sources, and sounds far better than an equally priced analog front end, according to Spencer Holbert.

rotel.com (243)



Resonance Herus
\$350

For \$350, the Resonance Lab's Herus is one of the most future-proof bargain DACs available, with the capability to run DSD, PCM, and DXD files. Machined out of a solid block of aluminum and made in Canada, the Herus can handle headphones 32–600 ohms without issue, and it's portable. With a full-sized USB B input, those with premium USB cables at home will be able to take their high-res music on the road and enjoy all the capabilities of an at-home DAC without the at-home hassle.

resonancelabs.com



EQUIPMENT REVIEWS

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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-

EQUIPMENT REVIEW - Pioneer SP-BS22 LR



end values to such a small and (let's face it) cheap 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.

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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 synced 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?

EQUIPMENT REVIEW - Paradigm Shift A2 Powered Loudspeaker

I evaluated the A2 in a variety of settings, determined 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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KEF X300A Digital Hi-Fi Speaker System

Plug-in!

Neil Gader



KEF's versatile coincident driver, the Uni-Q, has been cast in a new role—a part, in my humble opinion, it has always been destined to play. It's the X300A Digital Hi-Fi Speaker System. I've admired this unique transducer for some time but most recently when I evaluated the KEF LS50 (awarded a Golden Ear in Issue 235). I continue to feel it's one of the most satisfying compact two-way speakers I've encountered in the last couple years. The speaker is not only visually arresting; it also boasts superb midrange sonics, full-bodied presence, and potent midbass punch. I always thought it could be the basis for an outstanding nearfield or portable monitor. And whaddya know—with the X300A KEF engineers have taken that next logical step and reimagined the LS50/Uni-Q for desktop duty and the world of computer media.

The speaker may only be eleven inches tall, but pint-sized or not, the X300A is no toy. The cabinet has been reduced in volume and trimmed in a more utilitarian finish. Visually immaculate it's as clean as a whistle—with a front baffle with no visible hex-head mounting bolts or other distractions, just the anodized, aluminum Uni-Q (5" midbass and 1" tweeter) with its "tangerine" waveguide and uniquely ribbed surround and stylish trim ring. However, now it's powered by two built-in Class D amps that generate 50W for the mid/bass driver and 20W for the tweeter. The whole shebang is currently \$599, less than half the price of the LS50. (A wireless version of the X300A is available for \$999.)

So far so good. But what makes the X300A a "Digital Hi-Fi System" relevant for the new breed of desktop recording engineers, music downloaders, and computer-media enthusiasts is the inclusion of a full-time, 24-bit/96kHz USB DAC. The takeaway is that all incoming signals are digitized, effectively making the X300A a self-contained stand-alone system that only requires a computer source to be complete. Tweakers may quibble, but users who want to get up and running with a minimum of hassle will celebrate.

Koincident and Klever

Setup is easy thanks in part to the supplied cables, which include a pair of two-meter USB-to-mini-USBs and the twin power cords required to power the internal amplifiers. All connections are secured from the back panel of the X300As. The left and right speakers serve specific functions. The left channel acts as the "parent," the right channel as the "child." One USB cable connects the computer source to the left channel; the other connects left and right channels together. A rear-panel knob on the left speaker controls volume, while another knob on the right channel handles balance. Just why the connections are buried on the back panel beats me. I would have been happier if the volume/balance adjustments were on the front.

In addition to the USB connection there is a 3.5mm auxiliary input on the back of the left channel for a personal player like an iPod/iPad. All incoming signals are then digitized via the X300A's internal ADC, and later reconverted to analog.

A slider switch on the back of the left channel allows the user to optimize the X300A for two listening environments. In the "desk" position the X300a is set for nearfield desktop listening

EQUIPMENT REVIEW - KEF X300A Digital Hi-Fi Speaker System

by rolling off the bass to alleviate potential boominess. When in the “stand” position the X300a is optimized for open-field listening and bass response is flattened out. Foam port plugs or “bungs” are also supplied for smoothing bass response to accord with wall/shelf placement. An optional five-meter USB-to-mini-USB cable is manufactured by Wireworld, and offered for conventional in-room positioning. I evaluated the X300A in two configurations—as desktop monitors and on floorstands in a traditional in-room configuration.

The Power of One

In desktop mode, the X300A L/Rs were poised about thirty inches from my seat, angled inward a few degrees, and tilted up slightly. From the moment I cued up Stravinsky’s *Pulcinella* [Argo] with its vivid palette of short themes and quirky rhythms it was clear that nearfield listening is an ideal mission for the Uni-Q design. The immediate effect was a speaker system that was well balanced and dynamically adept, with a strong midband balance and a firm presence range. The X300A is nicely graduated across the macro/micro-dynamic landscape with an image stability and pinpoint focus that are only approached by true single-driver designs.

Timbrally, the X300A reproduces music with a slightly cooler, forward tilt. It’s not a laid-back, cool-your-heels kind of speaker. It’s pacy, with a jump factor that should get your trackball and paperweights dancing. A cut like Steely Dan’s “Hey Nineteen” is all about the groove it establishes, and the X300A sets it beautifully. The track is reproduced with terrific dynamic snap, crackling transient action off the snare,

and a sensation of weight and impact unusual in a desktop speaker. The background vocals featuring the soulful Michael MacDonald are stunningly articulate.

As a result of the system’s proximity in a nearfield setup its sonic personality has a more upfront character—and a drier one. Because of its intimacy, I perceived more of the inner workings of a recording like Norah Jones’ *Not Too Late* [Blue Note] and less of the reverberant layering from the ambient environment of the listening space. The tiniest instrumental details take on greater immediacy, as transient attack and other low-level dynamic information tend to step forward. The presentation is not always strictly natural in my view, but it is addictive and allows music to attain a clarity and specificity that are more akin to headphone listening but without the bullet-to-the-brain oddities of most cans.

Much of this impression owes to the fact that bass response is punchier and better defined than truly extended; in a desktop setup, low-end response never descends appreciably below the upper midbass regions. As a result a cello, for example, sounds a bit more sinewy than warmly reverberant and reveals more bite off the bow than resonances from the instrument’s body. Similarly on vocals, choral groupings, and massed strings, a hint more of the tweeter is unmasked by the lighter tonal balance. More so, for example than it is with KEF’s own LS50.

In terms of scale, no one is going to be fooled into thinking that the London Symphony Orchestra is actually playing on the desktop. But even at this reduced size, the soundstage and image proportion are so complete, layered, and stable,

that it’s like observing an impeccably detailed, highly resolved miniaturized performance. If you’re unaccustomed to high-end desktop listening, it’s actually an amazing experience to enter the world that the X300A creates.

When the X300As are lifted onto floor stands and set out into the room, their sonic character shifts dramatically. Bass response deepens. Ambience retrieval and reverberant cues from acoustic recordings are heightened. A greater degree of warmth is introduced and some of the desktop dryness is reduced. The key is wall/corner positioning. The farther the distance from those boundaries the greater the reduction in low-frequency reinforcement. On the other hand, close proximity can thicken bass output and create soupy incoherence. In my setup, “just right” happened to be about eighteen to twenty-four inches (measured at the front baffle) from the back wall. Here, the X300A created a more lifelike impression of orchestral scale and an immersive surrounding acoustic that was both riveting and realistic. In SPLs there’s little need to coddle the X300, but keep in mind that a five-inch transducer does have its limits. On a punishing track like the Copland *Fanfare for the Common Man* [Reference Recordings] I could get reliable output into the lower-to-mid-90dB range at roughly six feet or so (higher in the nearfield), but I backed off above that when a flurry of tympani concussions caused an occasional *bbuuurrrp* from the Uni-Q.

I cannot avoid a quick comparison to its passive/analog cousin, the LS50. In tonal balance they are clearly cut from the same cloth. But in output and dynamic gradients the LS50 offers a larger, warmer canvas. It also creates

a more convincing illusion of soundstage scale and dimension, as it should for roughly twice the price—DAC and amp not included.

How good is the internal DAC? Hard to say since the X300A allows “no substitutions.” But it is certainly more than up to the task and further grousing would be missing the point concerning the lengths KEF has gone to make listening to the X300A a seamless experience. The versatile X300A creates two distinct listening options and both are loads of fun. Whether you’re a computer enthusiast or an old guard high-ender, I can’t imagine you not falling in love with KEF’s perky little plug-in. **tl;dr**

SPECS & PRICING

Type: Two-way, powered loudspeaker in bass-reflex enclosure

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

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

Internal amplification: 50W, mid/bass; 20W, tweeter

Dimensions: 11.1" x 7.1" x 9.6"

Weight: 16.5 lbs.

Price: \$599

KEF (GP ACOUSTICS INC.)
10 Timber Lane
Marlboro, New Jersey 07746
(732) 683-2356
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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 Element 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 high-level turbulence—sources of compression and distortion. The ribbing associated with the Z-Flex



EQUIPMENT REVIEW - KEF LS50

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 mid-range. 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 se-

lections 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?" **tbs**

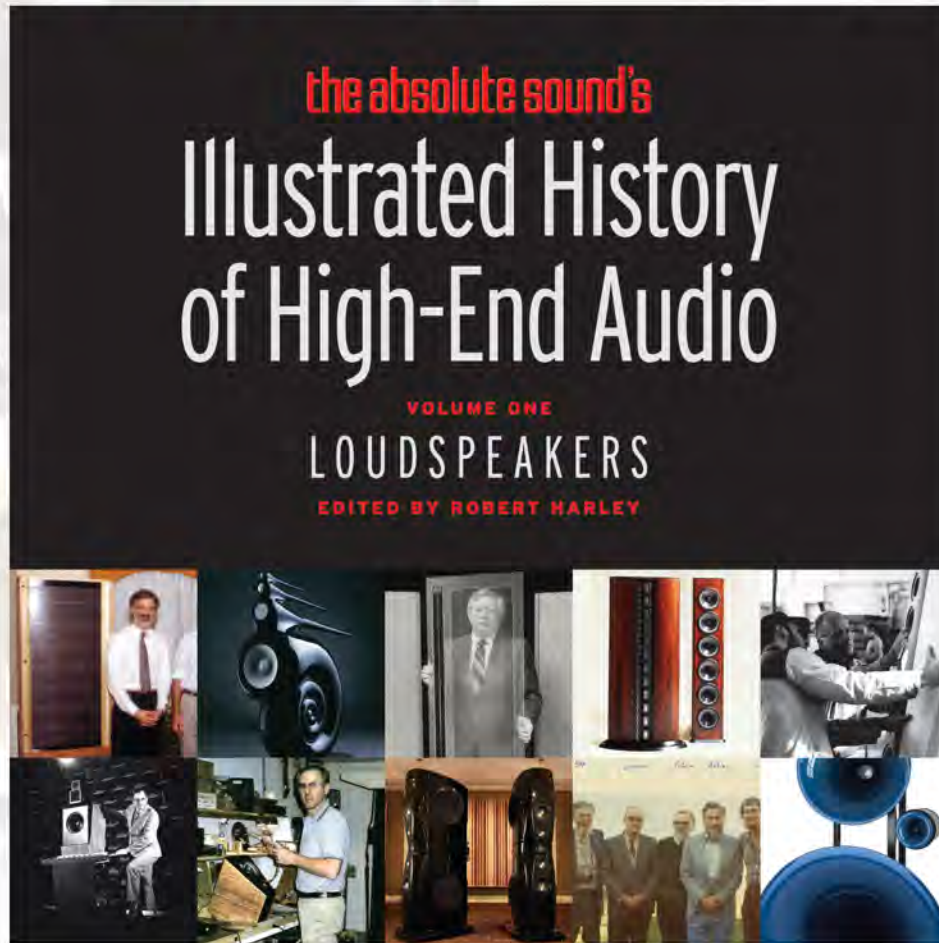
SPECS & PRICING

Type: Two-way bass-reflex mini-monitor	GP ACOUSTICS INC. (U.S. Distributor)
Drivers: Uni-Q array, 1" tweeter, 5.25" mid/bass	10 Timber Lane Marlboro, New Jersey 07746
Frequency response: 79Hz-28kHz (47Hz-45kHz, -6dB)	(732) 683-2356
Nominal Impedance: 8 ohms	kef.com/us
Sensitivity: 85dB	
Dimensions: 11.9" x 7.9" x 10.9"	
Weight: 15.8 lbs.	
Price: \$1500	

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GoldenEar Technology Triton Seven Loudspeaker

Overachiever!

Chris Martens



I enjoy über-high-end audio equipment as much as the next fellow; nevertheless, I have an abiding fondness for overachieving products that deliver high levels of performance for reasonable sums of money. I suppose this has to do with my conviction that the enjoyment of music is (or in an ideal world should be) something for all to enjoy—not just for an elite, well-heeled few. My wish is that high-end audio could be less a “rich man’s game” and more a sport for the common man. Happily, at least a few worthy high-end audio manufacturers share this wish and have developed products that are affordable yet offer compelling and, in the best cases, downright brilliant sound quality. One such product is the GoldenEar Technology Triton Seven floorstanding loudspeaker (\$1399/pair) that is the subject of this review.

Let me begin by supplying a bit of background. As most of you know, GoldenEar Technology is a loudspeaker manufacturer co-founded several years ago by Sandy Gross, who was also the co-founder of Definitive Technology and a co-founder of Polk Audio. Mr. Gross enjoys a well-deserved reputation as a serious, dyed-in-the-wool, high-end audiophile, but what has made him a legend is his unflagging commitment to producing speakers that offer audiophile-worthy sound at down-to-earth prices (actually, a hallmark of each of the speaker companies Gross helped create). Thus far, GoldenEar has offered several ranges of products, many of which have gone on to win critical acclaim and numerous industry awards.

In view of Sandy Gross’ enviable track record over the years, you might expect the Triton Sevens would simply be “chips off the old block,” and in some senses they are. The Triton Sevens stand, at present, as the smallest and least expensive of GoldenEar’s Triton Series floorstanders, and a casual stroll through the technical specifications pages at GoldenEar’s Web site conveys the impression that, while Triton Sevens share some design features with the large Triton Twos and Threes, they are in essence “Triton Lites.” This impression, however, is misleading because somewhere between the preparation of the specifications page and the creation of the actual product a wonderful thing happened: Namely, the Triton Sevens wound up sounding different from and better than their bigger siblings in many of the ways likely to matter most to audiophiles. Let’s get this straight: The Triton Sevens are smaller, less complex, and less expensive than their stablemates, yet actually sound all the better for it. How can this be?

In trying to assess what makes the Triton Sevens superior performers, I reflected on a line attributed to the late, great British sports car designer Colin Chapman (of Lotus fame). When asked how to make racing cars go faster on a consistent basis, Chapman is said to have quipped, “Simplify, and add lightness.” Well, if asked what makes his new Triton Sevens sound so very good, Sandy Gross might smile and say that they “simplify and add (sonic) transparency”—and we are speaking, here, of transparency delivered by the bucket full. As a result, the Triton Seven sounds remarkably open, articulate, and revealing—ridiculously so for its modest price.

At first glance, the Triton Seven seems disarmingly simple. It is a compact tower-

EQUIPMENT REVIEW - GoldenEar Technology Triton Seven Loudspeaker

type speaker that stands only 39.75" tall and that sports just three active drive elements: a small Heil-type HVFR (High Velocity Folded Ribbon) tweeter flanked by two wide-bandwidth, high-excursion 5.25" mid/bass drivers (for more on which, see below). For the necessary low-frequency reinforcement the Triton Seven also provides a pair of side-firing 8" "planar sub-bass radiators" (i.e., passive radiators). The speaker is housed in a svelte, gently swept-back, black-fabric-clad enclosure with a gloss black trim cap on top and a matching black floor-plinth embossed with a soft gold-colored GoldenEar logo. If this capsule description seems a little underwhelming, it helps to bear in mind that with the Triton Seven, as with so many other great loudspeakers, the genius is in the details.

As I suggested above, the Triton Seven combines several difficult-to-meld sonic virtues. It offers plenty of resolution and high degrees of transparency, and demonstrates impressive transient quickness, yet also sounds smooth. GoldenEar achieved this result by carefully doing its homework in blending the output of its lightning fast Heil-type HVFR tweeters with the output of its also very fast, wide-bandwidth piston-type mid/bass drivers. The result may well be the most accomplished hybrid mix of Heil-type and piston-type drivers that I have yet heard in any loudspeaker, regardless of price. GoldenEar has succeeded where many others have tried and failed, partly

by banishing apparent speed and textural discontinuities between the disparate driver types, but also—more importantly—by getting them to sing with one coherent voice.

What is more, GoldenEar has fitted the production-version Triton Sevens with all-new, long-throw mid/bass drivers—ones that dramatically up the performance vis-à-vis the firm's previous mid/basses. Audio journalists and dealers who heard the prototype Triton Sevens at CES 2013 are in for a real surprise, because the difference these new mid/bass drivers make is a large one. They offer audibly higher resolution and quicker transient response than GoldenEar's previous mid/basses did, which is saying a mouthful given that the original drivers were already quite good.

Second, the mid/bass drivers also offer superior dynamic performance across the board, not just in the sense of being able to play more loudly (although they certainly can do that), but also in the sense of revealing far subtler shadings of dynamic expression.

Third, the new drivers have significantly higher excursion limits than their precursors did, which means they not only play gracefully at higher output levels but also offer much more extended bass response than before. Unbelievable though this may seem, when augmented by the Triton Seven's passive radiators, those little mid/bass drivers produce authoritative (and I mean really authoritative) low-end

response that extends well down into the 30Hz range.

Finally, the Triton Seven enclosure is special. The slender towers are designed to provide the desirable damping characteristics of a transmission-line enclosure with the low-end weight, power, and efficiency of a sophisticated passive radiator-equipped system. To this end, GoldenEar strategically positions what are said to be very effective though costly damping materials directly behind the twin mid/basses in the upper part of the tower. The damping materials give the speaker excellent driver control through the midrange, upper bass, and midbass regions. But, as frequencies descend, the damping materials allow the towers to "open up," permitting back-wave energy from the mid/bass drivers to couple with their associated passive radiators in an extremely efficient way. The result is bass that is taut, tuneful, and rhythmically correct, yet offers the kind of low-frequency weight and slam typically associated with much bigger speakers. Not a bad day's work for a pair of 5.25" drivers, eh? (Hint: You can probably win wagers among audiophile friends by daring them to guess the size of the Triton Sevens' "woofers.")

Put all of these factors together and you get what I think is—dollar for dollar—the finest affordable high-end loudspeaker I've yet heard (and I say this from the perspective of being an enthusiastic user of Magnepan 1.7 planar-magnetic loudspeakers, which many of my

SPECS & PRICING

Type: Two-way, three-driver floorstanding speaker with passive radiators
Driver complement: One Heil-type HVFR (high velocity folded ribbon) tweeter, two 5.25" cast-basket mid/bass drivers, two 8" passive radiators
Frequency response: 29Hz-35kHz
Sensitivity: 89dB
Dimensions: 7.25" x 39.75" x 11"
Weight: 42 lbs. (shipping), 32 lbs. (unpacked)
Price: \$1399/pair

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

ASSOCIATED EQUIPMENT

Analog Sources: Nottingham Analogue Systems Space 294 turntable/Ace-Space 294 tonearm; Benz Micro ACE L moving coil cartridge, Fosgate Signature phonostage
 Digital Sources: Rega Isis CD player/DAC; Oppo BDP-105 universal/Blu-ray player/DAC; AURALiC VEGA digital processor (DAC/preamp)

Media Server: Lenovo ThinkPad PC with Intel i5 processor, 8GB DDR, 128 GB SSD, and outboard 2TB Western Digital music library drive; dBPoweramp ripping/format conversion software, jRiver Media Center 19 media management software, JPLAY digital audio output software
 Amplifier: Rega Osiris integrated amplifier
 Speakers: Magnepan 1.7
 Cables: Furutech Flux-series Evolution-series interconnects, speaker, and power cables; Kimber B Bus Ag USB cable
 Power Conditioning: Furutech Daytona 303, PS Audio Soloist in-wall line conditioner
 Racks and Isolation: Solid Tech Reference Racks of Silence with associated isolation accessories
 Room Treatments: Auralex StudioFoam panels, RPG Binary Abfuser Difforsorber (BAD) panels

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EQUIPMENT REVIEW - GoldenEar Technology Triton Seven Loudspeaker



colleagues and I consider the greatest single bargain in all of high-end audio). Let me offer some observations based on real-world listening experiences to help support that statement.

One of best qualities of the Triton Seven is its almost eerie sense of focus. This became clear for me as I listened to a series of tracks from Anne Bisson's *Portraits & Perfumes* [Camilio Records]. Ms. Bisson has a distinctive voice that is light and breathy yet full of underlying richness and hints of wry humor just waiting to be released. If you have ever heard Ms. Bisson speak or sing, you might agree that her voice is unforgettable. When I played *Portraits & Perfumes* through the Triton Sevens there was that voice—sounding palpable, present, richly textured, and real—looming between the loudspeakers and positioned just a few feet behind them. One might expect (or at least hope for) such moments of realism from

loudspeakers carrying steep price tags, but it is a real rarity to hear them served up by speakers selling for just \$1399/pair. But with the Triton Sevens, moments of realism like these seem to occur early and often.

Next, the Triton Sevens offered remarkably good imaging and three-dimensionality thanks, in large part, to their ability to retrieve very low-level textural and transient details and thus to capture subtle spatial cues in the music. To hear these qualities in action, try Jamey Haddad, Lenny White, and Mark Sherman's *Explorations in Time and Space* [Chesky], which was recorded without compression or equalization in the Hirsch Center for the Performing Arts (formerly St. Elias' Catholic Church) in Brooklyn, NY. The album features a series of highly inventive interchanges between three master percussionists, who perform on an impressive

array of instruments. On *Explorations*, the GoldenEars generated exceptionally wide, deep, and precise soundstages, revealing the exact locations of each of the percussionists (and their various instruments) on stage. Even sounds emanating from the far rear corners of the soundstage remained beautifully focused, stable in their positions, and dynamically alive.

Finally, the Triton Sevens proved to be remarkably dynamically expressive—much more so than their size or configuration would lead you to expect. A good example would be the Gerard Schwarz/Royal Liverpool Philharmonic performance of Alan Hovhaness's *Mount St. Helens* Symphony [Alan Hovhaness, *Mysterious Mountains*, Telarc, SACD]—a piece that paints a vivid symphonic picture of the events leading up to the violent eruption of the Mount St. Helens volcano. When heard under ideal circumstances, this recording offers up moments of delicate beauty juxtaposed with majestic but at times quite explosive mood swings. Frankly, many speakers turn the composition into a compressed dynamic muddle, but the Triton Sevens did not. Instead, they effortlessly captured the depth and breadth of the orchestral sections arrayed upon the stage, rendering quieter passages with deft dynamic shadings. Yet when the eruption passage came along, the Sevens shifted dynamic gears instantly, reproducing the full, fierce, percussion and brass blasts that represent the sheer power of the volcano's eruption. If I hadn't experienced this with my own two ears, I would never have thought speakers fitted with just two 5.25" mid/bass drivers and a Heil-type tweeter could ever convey so much weight and grandeur. Maybe less really is more.

Are there downsides here? Well, for those who want speakers that can serve double-duty in music and home-theatre systems, or that can play rock or other forms of "power" music at high volume levels, GoldenEar's larger Triton Two and Three towers might be better choices than the Sevens—largely because they feature built-in powered subwoofers that extend bass depth and clout while making the speakers easier to drive. I would also say that for those who prize uncanny top-to-bottom coherency and realistic image height and scale, the Magnepan 1.7s (or the new Magnepan Super MMG system) might be a better choice. But on the whole, the Triton Sevens can easily go toe-to-toe with any like-priced competitors and can also handily outperform any number of higher-priced speakers. One last thought I will offer is that a "downside" of the Triton Seven is that it will make you want to acquire the best associated electronics and source components you can afford (but then, that's always been the way of things with truly great loudspeakers).

Here's the bottom line: If you want to find out just how much high-end goodness \$1399 can buy in a pair of loudspeakers, then you absolutely must audition the Triton Sevens. I consider this speaker a masterpiece of value-oriented audio engineering—one that sets a performance standard that will not easily be matched or surpassed. **tas**

Focal Aria 906 Compact Loudspeaker

The F-Word

Neil Gader



It's often said that less is more in the pursuit of high performance. Take race cars, for example: Weight is the enemy and anything that slows the car down is immediately tossed back into the parts bin (except for the seatbelts). Engineers know that lightness equates to speed, and speed spells victory on the track. This same philosophy finds application in the world of loudspeaker drivers. Case in point, Focal's latest cones that recently debuted aboard its newest Aria loudspeaker series.

Focal of France is already well known for the sophisticated and virtually hand-built "sandwich" composite cones that bedeck its premium line of Utopia III speakers. These "W" diaphragms combine high internal damping and rigidity with the speed and lightness that Focal engineers demand. How to duplicate this level of performance on a broader scale and spread these qualities among a wider range of models was the challenge for Focal R&D. After five years or so, Focal found the Holy Grail in its own backyard. As if reflecting the intensity of the effort, it's a four-letter f-word: flax. (You were thinking something else?) Before delving into the facts about flax and the resultant F-cone, an introduction to the Aria Series is in order.

Just the Flax, Ma'am

The Aria line comprises five models—three floorstanders, the 906 stand-mount reviewed here, plus a center channel. A side/rear surround and a subwoofer will join the team this spring. The Aria Series replaces Focal's popular Chorus 800V and 800W.

The \$1499 906 reviewed here is the lone two-way compact in the Aria line. It uses a bass-reflex enclosure with a front-firing port. Its tweeter is an aluminum/magnesium dome that uses a Poron suspension (a cellular urethane foam) derived from the Utopia's beryllium tweeter. It's touted as a material with great damping qualities and shape memory, in that it maintains its original contours

over time. Additionally the tweeter is set in a shallow ovular waveguide meant to promote even off-axis response. The mid/bass driver is a 6.5" F-cone (this is where the flax comes in). The crossover frequency is 2.8kHz. The 89.5dB sensitivity and 8-ohm impedance make it an easy-to-drive loudspeaker for any competent amplifier.

Focal has also applied the less-is-more philosophy to the visual design of the Aria. Compared with the busy, neo-Deco profile of the Chorus range, the Aria appears elegantly understated with a gloss-black glass top plate, a leather-like covering on the front baffle, and brushed gunmetal trim rings accenting the drivers. Surfaces are clean with no visible screws, plus the grilles attach magnetically. The Aria enclosure is a combination of high-density fiberboard of varying thicknesses (between 18mm and 25mm). Sidewalls are non-parallel although not radically so. The standard finish is walnut, but the 906 is also available in a dramatic gloss-black at no additional cost.

So why flax? For one, this natural fiber is all French—never a bad place to start for a Lyon-based company. France is actually the main cultivator in Europe of flax fiber—principally in Flanders, Picardy, Normandy, and the Pas-de-Calais regions—and its flax is considered the best in the world. As cone material goes, flax fibers are advantageous in that they are hollow and weigh in at roughly half the mass of a comparable amount of fiberglass. Focal's researchers also liked its

EQUIPMENT REVIEW - Focal Aria 906 Compact Loudspeaker

rigidity and high internal damping characteristics. The finished F-cones are composed of a flax-fiber core enclosed in two thin layers of glass fiber, a sandwich construction not unlike that of Focal's exclusive W and K2 cones. Focal also points out that playing a role in the F-cone development were certain global realities—some economic and some environmental—including the fact that the costs of synthetic fibers or foams which originate from petrochemical resources are impacted by escalating crude oil prices, making an organic or ecological textile like flax more price competitive.

The Flax of the Matter

Obviously loudspeakers are much more than just cone material, so I won't pretend that I could isolate the F-cone's unique attributes from everything else happening within the 906. But one thing is certain: There is a whole lot of music going on here. The speaker's sonic character is vivid, fast, vibrant, and dynamically engaging. Befitting its size and bones, its output reflects a slightly lighter overall cast, but thanks to an impressive and pacy midbass the speaker always feels grounded. Bass response is excellent for this class—defined and controlled, reliably extending into the fifty-cycle range, as advertised, with a quick roll-off from there.

But central to its performance is its irresistible midrange body, which lends the 15" tall 906 a nicely weighted tonal balance and dynamic composure. At moderate levels its imaging is well focused, and the spread of a soundstage is broad and unbroken. Even when called upon to reproduce full-range orchestral music like the double-string orchestra of Vaughan Williams' *Fantasia on a Theme by Thomas Tallis*, the 906

has enough heft and energy in the lower mids and below to impart genuine timbral authority and soundstage scale. Outside of string sections, other instruments that routinely stir things up in the lower middle octaves are piano, woodwinds like bassoon, and heavy brass along the lines of tuba and trombone. The 906 captures the tonal and resonant densities of these instruments like few speakers in this class have before.

Not that the 906 doesn't have limits, for as composed as the 906 is, a full representation of the resonant, venue-enveloping body of these instruments is a little beyond this compact's abilities, but the Aria 906 gets you comfortably in the ballpark. Impressive too is the relative quiet, though not entirely invisible, way in which the enclosure/port goes about its business. Focal has done its homework keeping port noise low and low-frequency rhythmic action and pace high.

As for vocals, I'll make no bones about it—they are the crucible upon which I judge a compact loudspeaker. A veritable deal-breaker. To reproduce a voice naturally, the tweeter and midbass need to cohere as one—anything that implies a bias of one driver over another or any disparities due to material colorations completely break the spell. Thus, I expect the speaker to reproduce music with a single continuous voice. As I listened to a variety of vocalists, a pure coloratura soprano like Anne Netrebko, the deeper golden luster of mezzo Renée Fleming, or the smoldering jazz-inflected artistry of Holly Cole, there was a lively and harmonious of-a-piece quality to the output of the 906 drivers. Even as singers moved between vocal registers the character, speed, and color of the sound didn't shift as it often does with cones and

metal tweeters. I think this trait in and of itself was validation of Focal's faith in flax. Judged on an absolute basis, I felt that a smidge of chest resonance was often missing with a bass-baritone like Bryn Terfel and that a soprano's top register sometimes indicated a hint of dryness in the Aria tweeter. However, in the grand scheme of things these were minor and unobtrusive issues.

While its relative tonal neutrality is important, the key virtues that set the 906 apart are its wide micro- and macro-dynamic envelope and quick transient attack. This is the engine of its performance, the spark that separates the authentic from the canned. It gives the 906 a commanding presence as well as a tender intimacy on tracks like "The Moon is a Harsh Mistress," where Charlie Haden's acoustic bass was rich and extended and Pat Metheny's guitar playing had an ideal combination of warmth, articulation, and harmonic bloom. As I listened to Peter Gabriel's remake of "Mercy Street" from *New Blood*, I found the bass viols to be nicely weighted and appropriately moody. The transient energy from the percussion section all the way down to a distant triangle was smooth and swift. I've heard these same cues sound a bit tighter or more transparent on costlier compacts like the ATC SCM19 (review to come)—a little sonic wool lightly attaches around some bass resonances on the 906—but the speaker never loses sight of the fact that an acoustic bass is a resonant wooden instrument. On another pop example, I can't say enough about the rush of excitement I felt listening to Jerry Marotta's inventive percussion expositions during Marc Cohn's playful "29 Ways." The explosive textures and tonal colors the 906 extracted from this recording were exhilarating.

My quibbles are minor. The upper mids/lower treble range loses some intensity, which can be heard as a softening of orchestral presence, with violin sections receding into the greater body of the orchestra, and interior images and inner detail growing a bit more ephemeral. And though the 906 can't quite physically manifest the full sub-harmonic body of bass instruments, there is still a notable amount of air and dimension.

With the debut of Aria, Focal has unleashed a powerful and persuasive range ready to go head-to-head with the likes of Sonus faber, Revel, KEF, and other notables. As compacts go, the 906 touches all the right sonic bases for me. But more than that, these factors all dovetail into a single conclusion—that time and again, the Aria 906 just gets music right and at fifteen-hundred bucks, does so for a song. And true to its name, that's a lot to sing about. **tss**

SPECS & PRICING

Type: Two-way bass-reflex compact

Weight: 19 lbs.
Price: \$1499

Drivers: 1" Al/Mg inverted dome, 6.5" mid/bass

AUDIO PLUS SERVICES

Frequency response: 55Hz-28kHz +/-3dB

156 Lawrence Paquette Industrial Drive Champlain, NY 12919 (800) 663-9352 audioplusservices.com

Sensitivity: 89.5dB ohms

Dimensions: 15.3" x 8.9" x 9.8"

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JL Audio E-Sub e110 Subwoofer

Old Dog, New Trick

Jonathan Valin



It is no secret that I'm not a fan of subwoofers. In my experience they take away more in transparency and coherence than they pay back in low-end extension and power-handling, especially when they are mated to bass-shy two-ways or any kind of planar, 'stat, ribbon, or quasi-ribbon. (Ironically, subwoofers work best—or at least better—with speakers that don't really need them, i.e., with dynamic speakers that already have good bass extension.) Thus, it may come as a surprise to learn that I really like JLAudio's e110 sub, even when it is paired with a two-way. It certainly came as a surprise to me.

The e110's price tag may also come as a surprise—\$1500 in what JL calls its “black ash” finish, and \$1700 in the gloss-black version sent to me. This isn't exactly cheap for a single ten-inch driver in a small (13.5" x 14.25" x 16.5"), hefty (53-pound) box, but it isn't Thor's Hammer or JL Audio Gotham (or even REL Series R) territory, either.

What you get for that grand-and-a-half is a highly engineered loudspeaker that incorporates many of the patented Finite Element Analysis-based technologies that JL Audio has been introducing since 1997—such as its Dynamic Motor Analysis program for computer-optimizing driver design, its Vented Reinforcement Collar driver-mount system, its Floating Cone Attachment method of driver construction, and its Engineered Lead-Wire System for internal wiring. You also get a built-in, proprietary Class D amplifier (powered by a proprietary switch-mode power supply) said to be capable of 1200W RMS; a genuine two-way (high-pass and low-pass), built-in, active crossover using a fourth-order (24dB/octave, 80dB/decade) Linkwitz-Riley filter, equipped with variable gain, variable crossover-frequency, and variable phase controls, as well as a polarity (absolute-phase) switch; a ten-inch JL Audio woofer with dual spiders and a linear motor system engineered to provide equal force over the driver's entire excursion range (with both positive and negative current flowing through the coils) at any applied power level up to the built-in amp's peak; and a sealed box whose entire front panel is actually the steel mounting flange of the E-Sub's driver assembly (the back plate of the driver is threaded and bolted to the thick rear wall of the enclosure). In sum, the e110 represents a lot of technology for the money.

As anyone who's fiddled with subs knows, setup is at least half the battle when it comes to getting

the most out of a subwoofered system, and I can honestly say that JL Audio (for whom subwoofers are a long-time labor of love) provides some of the sanest instructions and most useful tools for optimizing its subs I've seen—provided that you first acquire the right software. That software, which was sent to me separately by JL Audio (it doesn't come with the sub—and I think it should), is the Soundoctor Test CD V 2.6.1, available (for \$18) on-line at <http://www.soundoctor.com/testcd/index.htm>.

Without this CD (or something similar) you will just be making educated guesses when it comes to certain key adjustments, which means, of course, that you will be haunted by second and third guesses since you'll never be quite sure whether your first guess was “right.” With the Soundoctor CD (and the Radio Shack SPL meter for which it is optimized) you can dial certain parameters in with confidence, giving you a “textbook accurate” baseline, from which you can depart or to which you can return as you season the sound—and you will season the sound—by ear.

The first step in the set-up process is finding the spots where the subs are happiest in your listening room. What JL and Soundoctor suggest is to place one sub at your listening position, facing forward, then plug a CD player directly into the sub's RCA inputs (using the CD player's analog outputs), and play back Tracks 22, 23, and 24 of the Soundoctor CD, which contain music with very deep bass. As these tracks are playing, you crawl around the perimeter of your room listening for those areas where the bass sounds weak and thin or those where it sounds boomy and ill-defined (usually in the corners). According to JL, you should also find certain spots where the porridge is just right, and these are where the subs go.

To be honest, this “crawl-around” method is rather hit-and-miss. It also assumes that the

EQUIPMENT REVIEW - JL Audio E-Sub e110 Subwoofer

subs will sound better somewhere along the perimeters of the room, which hasn't always been the case in my experience. Typically, I've found that for the transparency and coherence I prefer (as opposed to ultimate slam and extension) subs fare better close by the main speakers, immediately to the outside or the inside (or both, as explained in the sidebar) of the speakers' enclosure and roughly parallel to their drivers, although the subs' exact location vis-à-vis the mains and the sidewalls needs to be adjusted by ear.

Far more hit than miss are JL's suggestions for getting the subs and the mains in phase. A subwoofer's phase control is intended to adjust the "arrival time" of the sub's output so that its driver and the main speaker's woofer or mid/woofer or bass panel are pushing and pulling together throughout the frequency range covered by both units. The question is how can you tell when the drivers of both speakers are in maximum sync? With the appropriate tracks on the Sounddoctor CD and the e110's continuously adjustable phase control, finding the answer to this often-perplexing question is a snap.

For the record, JL Audio recommends the same method that Robert Harley recommends in *The Complete Guide to High-End Audio*: Reversing polarity on the main speakers, playing a test tone at the crossover frequency (Tracks 2 through 17 on the Sounddoctor CD give you one-minute test tones ranging from 20Hz to 120Hz at 5Hz and 10Hz intervals), and adjusting the continuously variable phase control for the least amount of bass. As Robert explains it: "The technique works because it's easier to hear the maximum null than it is to hear the maximum peak. When the phase control is set perfectly, the main speaker's woofers will move out when the subwoofer cone is moving in, cancelling each other. When the main speaker's correct polarity is restored, the main speakers and the subwoofer are maximally in-phase."

Similarly the sub's volume level can be optimally set by playing back Tracks 18 and 19 on the Sounddoctor CD. Track 18 contains "contoured" high-frequency noise (i.e., a test signal with no low-frequency information that has been contoured for the

Radio Shack SPL meter). What you do is adjust the volume of your preamp so that your Radio Shack meter reads 85dB (slow, C-weighted) while Track 18 is playing. Track 19 contains "contoured" low-frequency noise (i.e., a test signal with only low-frequency information that has also been contoured for the Radio Shack SPL meter). Playing this track back, you adjust the level control on the e110 subwoofer so that your meter once again reads 85dB SPL (slow, C-weighted). In theory, your e110 subs are now matched in level with your main speakers.

Of course, this doesn't mean that your system will sound as coherent or as transparent as it does without subwoofers—or that the sub's level will not need further tweaking by ear. Getting a relatively seamless blend and tight, powerful, high-resolution, high-definition bass depends on several other equally important factors: the crossover frequency that you choose between subs and mains, the quality of the subwoofer itself (including its amp, controls, and crossover), and above all else your own listening preferences.

The question of crossover frequency is hotly debated. JL Audio recommends that crossover be set at 80Hz or higher, regardless of main speaker. And it is true that setting the sub at a higher crossover frequency can make for a more seamless sound. Alas, it can also make for a substantially *different* sound than what you're used to from your main speakers alone.

Let's face it: You've spent a lot of time and a lot of money on your loudspeakers. Presumably, you picked them from a myriad of others because you prefer the way they sound on the music you typically listen to. This doesn't mean, of course, that you think they are perfect. (Or why opt for subwoofers?) What it does mean, I think, is that their essential qualities satisfy you—that you are pleased with what we used to call, in The HP Era, their "character."

There is no surer-fire way of changing a loudspeaker's character than crossing it over to a powered subwoofer at too high a frequency. With first- or second-order crossovers the problem is generally that the subs continue to play (albeit

SPECS & PRICING

Enclosure type: Sealed

Driver: 10"

Effective piston area: 58.78 square inches

Effective displacement: 131 cubic inches

Frequency response (anechoic): 25–116Hz
+/-1.5dB, -3dB at 23Hz, -10dB at 18Hz

Amplifier power: 1200 W RMS (short-term)

Dimensions: 13.5" x 14.24" x 16.51"

Weight: 52.7 lbs.

Price: \$1500 in ash, \$1700 in gloss

JL AUDIO, INC.

10369 North Commerce Pkwy
Miramar, FL 33025-3962
(954) 443-1100
jlaudio.com

JV's Reference System

Loudspeakers: Raidho D-5, Raidho D-1, Estelon X Diamond, MartinLogan CLX, Magnepan 1.7, Magnepan 3.7, Magnepan 20.7

Linestage preamps: Soullution 520, Constellation Virgo, Audio Research Reference 10, Siltech SAGA System C1, Zanden 3100

Phonostage preamps: Audio Research Corporation Reference Phono 10, Innovative Cohesion Engineering Raptor, Soullution 520, Zanden 120, Constellation Perseus

Power amplifiers: Soullution 501 and

701, Siltech SAGA System V1/P1, Audio Research Reference 250, Lamm ML2.2, Zanden 8120

Analog source: Walker Audio Proscenium Black Diamond Mk V record player, AMG Viella 12

Phono cartridges: Clearaudio Goldfinger Statement, Ortofon MC A90, Ortofon MC Anna

Digital source: Berkeley Alpha DAC 2

Cable and interconnect: Synergistic Research Galileo and Galileo LE, Crystal Cable Absolute Dream

Power Cords: Synergistic Research Galileo LE, Crystal Cable Absolute Dream
Power Conditioner: Synergistics Research Power Cell 10 SE Mk III, Synergistic Research Transporter Ultra SE, Technical Brain

Accessories: Synergistic ART system, Shakti Hallographs (6), A/V Room Services Metu panels and traps, ASC Tube Traps, Critical Mass MAXXUM equipment and amp stands, Symposium Isis and Ultra equipment platforms, Symposium Rollerblocks and Fat Padz, Walker Prologue Reference equipment and amp stands, Walker Valid Points and Resonance Control discs, Clearaudio Double Matrix SE record cleaner, HiFi-Tuning silver/gold fuses

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EQUIPMENT REVIEW - JL Audio E-Sub e110 Subwoofer

at reduced levels) into the power range and the midrange, audibly masking the very qualities of timbre, resolution, speed, and dynamic nuance that led you to buy your main speakers in the first place. With steeper crossover slopes, such as the 24dB/octave Linkwitz-Riley filters in the e110's crossover, this should be less of a problem. (The theoretical advantage of fourth-order Linkwitz-Riley filters is that because of their steep roll-off at the high and low cutoff frequencies their gain at crossover is closer to 0dB.) And yet...crossing the e110s over at 80Hz or higher isn't less of a problem. Here it's not so much that the sub is still playing beyond the crossover point, masking the main speaker's virtues; rather it's that the sub's own character (including the character of its amplifier and crossover) becomes more audible and predominant the higher up you cross it over, since the sub is literally playing more of the music.

Many people don't seem to be as sensitive to this "change of sonic character" as I am, and can live happily with the added bass-range power and extension (and concomitant added breadth and width of soundstage) at what they presumably consider a reasonable cost in tonality and transparency. Speaking for myself, I would far rather live without the deepest bass than audibly sacrifice the characteristic sound of my main speakers.

For me, then, the secret to subwoofer satisfaction is to find a way to cross the subs over that doesn't markedly change the character of the main speakers—or that

changes it only in the sense of extending its virtues into the bottom octaves. With the e110s this means a lower crossover point (lower than 80Hz).

Although the speaker that I am using with the e110—Raidho's superb stand-mounted D-1 (review forthcoming, recommendation already the highest)—is a two-way, it has remarkably satisfying mid-to-upper bass. Flattish down to the 50Hz-55Hz range its ported 4.5" mid/bass driver (which uses a diamond diaphragm) manages to give the psychoacoustic impression of going lower than it does because of its naturally full and high-resolution reproduction of the power range, where first and second harmonics live (as do a whole lot of fundamentals).

Because the D-1 doesn't really cry out for a subwoofer and because I simply love the beautiful and lifelike way it sounds (which, reduced image size and dynamic power notwithstanding, comes very close to—and in certain respects exceeds—the sound of my reference Raidho C-4.1s), I picked it for this experiment, knowing full well that I would easily hear any changes in its character, and knowing, as well, that in the past I have not been able to mate super-high-resolution two-ways to subwoofers without substantial sonic penalties. And at a crossover point of 80Hz—with all other parameters (placement, phase, level) set to theoretical correctness (and then tweaked by ear to my own preference)—the changes in the Raidho's character were marked. Despite the much deeper, more generous bass, the D-1 simply no longer sounded like

the speaker I'd fallen in love with.

However...moving the e110's crossover point down to 70Hz and subsequently to just below 60Hz, where the D-1 is still playing strongly, made for a blend that was so unexpectedly magical—and so much in character—that it was almost as if the D-1 had developed several more octaves of bass on its own.

At a crossover point of around 57-58Hz (this is an educated guess as the scale on the e110's crossover-frequency control, though graduated, isn't graduated finely enough to say for sure), the bottom bass—and this little sub goes deep, down only 3dB at 23Hz—acquired the same tonal and dynamic character, the same dark, rich, lifelike timbre, sensational transient speed, and ultra-fine resolution of texture and articulation in the low bass that the D-1 has on its own in the mid-to-upper bass, power range, midrange, and treble. At the same time bottom-end pitch-definition, impact, and extension were dramatically improved.

It was as if (and I scarcely exaggerate) a blanket that had been thrown over the deepest bass octaves had suddenly been lifted, revealing an astonishing wealth of previously unheard information—and revealing it with a clarity and definition that I don't quite hear even with my reference Raidho C-4.1s (though, as you will see, there are other aspects of the bass that the C-4.1s are far better at reproducing).

I could give you musical example after example of the e110/D-1's virtues, but it is simpler to sum them up like this: In the

How Many Subs: One, Two, or...Four?

Unless you're restricted by budget or space, two woofers are the way to go. Though in the old days low bass was summed to mono on LPs, that isn't always the case with today's high-res sources (or with reissued stereo recordings from the so-called Golden Age). A single centrally located sub tends to "pull" bass-range instruments toward it, constricting soundstage breadth and changing the perceived location of instruments at the sides of the stage. For the widest and deepest soundfield and the most faithful-to-source imaging, two subs are definitely better than one.

However, there is a new wrinkle in low-bass management called "swarm" or "distributed bass" subwoofering. The logic behind the "swarm" is simple and elegant. With one or two subwoofers you are inevitably prisoner to the room-induced dips and peaks in response that (no matter how thoroughly you've "crawled around" the periphery of your listening space) accompany the locations you've finally settled on. But what if you were to add two or four more subwoofers (i.e., a swarm) to the original pair, asymmetrically positioning each sub throughout the room? Proponents of swarm subwoofering argue that the combined average of the different peaks and dips at the different locations of each sub will smooth out overall bass response. *Voilà*: no giant mid-to-upper-bass humps, no need for digital signal correction.

Now I don't know whether this idea always works in practice as it should in theory, but I do know this: When I added a second pair of e110s to my setup (one on the outside of each D-1 and one on the inside at slightly different locations vis-à-vis the mains) I got even more fabulous sound. I'm not saying that you have to buy a second pair of e110s to get the exemplary sonics I talk about in this review. One pair will do quite nicely, thank you. But...if you want to carry this sub/satellite system even closer to the sound of those ultra-expensive Big Boys, a second pair of e110s will do the trick. JV

EQUIPMENT REVIEW - JL Audio E-Sub e110 Subwoofer

bottom bass this combination reveals low-level details about pitch, timbre, intensity, and duration more clearly and more often than any loudspeaker I've heard, no matter how expensive or sophisticated. This is an ear- and mind-bogglingly high-resolution system. (It kind of makes me wonder what JL Audio's top-line sub—the \$12k Gotham, with dual 13.5" woofs—is capable of, although, when it comes to matching the speed and resolution of a great two-way, there is something to be said for a "quick" ten-inch driver.)

While hearing a fresh bonanza of low-level information about an instrument and the way it is being played is enormously satisfying (and contributes greatly to the sense of being in the presence of that instrument), let me quickly point out that bass-range instruments in particular aren't just about texture and articulation. They are also about power and impact, and here the e110/D-1 combo is *not* the most revealing speaker system I've heard. To be fair, this isn't the e110's fault. A two-way—even a great one like the Raidho D-1—and a ten-inch sub simply can't move air in the bass and power range the way a big multiway can; nor can such a combo image with the more-lifelike size (particularly image height) of a big multiway.

There is this, as well. My decision to place the subs nearby the mains and to cross over at a lower-than-recommended frequency in order to more fully preserve the character of the D-1s comes with a slight additional price in imaging and power. With the reinforcement provided by a nearer-to-the-wall placement and a higher crossover point, the e110/D-1 seems to size bass instruments—indeed all instruments—more

consistently from their top octaves to their bottom ones. With the closer-to-the-speaker positioning and lower crossover point, some instruments seem to shrink a bit in size as they descend in pitch, so that a four-string contrabass, for example, isn't as big and expansive sounding on its lowest notes (E1 and C1, 41Hz or circa 33Hz) as it is higher up in its frequency range.

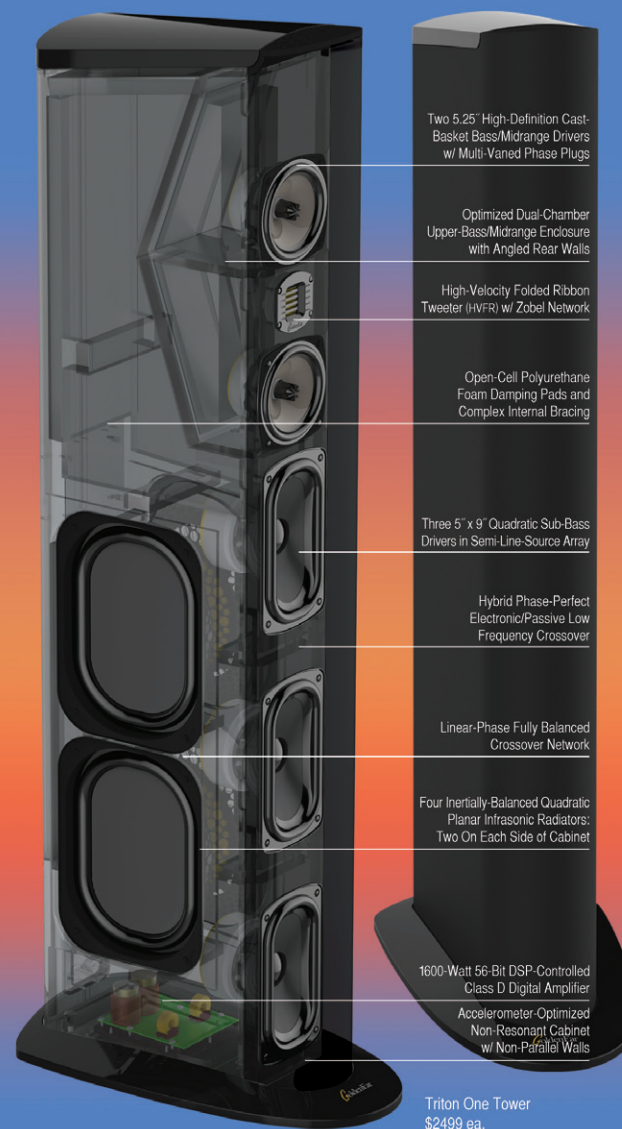
This slight "funnel-like" effect in imaging is accompanied by a small loss of impact on big, powerful instruments and orchestral tuttis. I don't want to oversell this point. The e110/D-1 is plenty powerful, capable of genuine room-shaking temblors on really deep synth or bass drum, and punch-in-the-chest sock on toms or kickdrum. As two-way-based systems go, this one is a veritable dynamo. But...when it comes to pure wallop it ain't a Wilson XLF or a Magico Q7 or a Raidho D-5.

But then the Raidho D-1 and e110 subs don't cost what these giants cost, and don't take up the real estate that these giants do, and (if configured optimally—for which see the sidebar) don't give anything away in color, speed, definition, or resolution to the biggest of these Big Boys. For one-sixth (or less) of the system cost, you can live like a Robert Harley (or, yeah, like a Jonathan Valin)—with a loudspeaker that comes so close to the very best that you'll scarcely notice the difference. I scarcely do...and I do live like a Jonathan Valin.

The E-Sub e110 is a no-brainer highest recommendation if ever I heard one. And remember this is coming from someone who hates subwoofers (or used to). **tas**

GoldenEar has Engineered Our New Triton One to Perform Like a \$20,000+ Super Speaker!

"Triton One shames some speakers costing ten times as much ... it is an absolute marvel" – Caleb Denison, *Digital Trends*



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– Neil Gader, *The Absolute Sound*

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When three of The Absolute Sound's top reviewers all choose the same product for their own "Best Sound for the Money" honors, you know it is something truly very special, epic and iconic. Introducing the Triton One, an evolutionary speaker that builds upon all the advanced technologies that have made the Tritons mega-hits around the world. This new top-of-the-line flagship was engineered to deliver even better dynamics and bass than the extraordinary Triton Two, along with further refinement of all aspects of sonic performance. How well have we succeeded? In the words of HD Living's Dennis Burger, the Triton One delivers, "... the sort of upper-echelon performance that normally only comes from speakers whose price tags rival a good luxury automobile".

Triton One "creates visceral, tangible waves of pure audio bliss"

– Dennis Burger, *HD Living*

Great sound is what it is all about and the Triton Ones deliver, as The Absolute Sound's Chris Martens raved, "*The Triton One offers excellent clarity, highly three-dimensional imaging, subwoofer-grade bass depth and clout plus fine levels of low-end pitch, definition and control*". The Ones were specifically engineered to excel with all types of music as well as movies. Best of all, they offer previously unheard of value, as Brent Butterworth wrote in *Sound & Vision*, "*I heard a few people saying the Triton One sounded like some \$20,000-and-up high-end towers, but I disagree: I think they sounded better than most of them*". Darryl Wilkinson summed them up best, "*A Masterpiece ... GoldenEar has fully ushered in the Golden Age of the Loudspeaker*". Hear them for yourself and discover what all the excitement is about.

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OUR TOP PICKS LOUDSPEAKERS



JL Audio e110
\$1500

Can a \$1500 sub turn Jonathan Valin, a self-professed sub-hater, into a fan of subwoofers? The JL Audio e110 did. Though they don't have all the large-scale impact of a big multway, they don't give anything away in low-level color, speed, definition, or resolution, even to the big Wilson XLF or Magico Q7. The e110 is a no-brainer highest recommendation if ever there was one, and is the perfect sub for anyone looking to add a little (or a lot) of low-end to his system.

jlaudio.com



KEF LS50
\$1500

The LS50 monitor spins pure coincident-driver magic thanks to its blushing pink-gold Uni-Q coaxial midrange/tweeter mounted in bulls-eye fashion on a uniquely arched baffle. Visually arresting and sonically satisfying, it delivers tonal neutrality at just the right pitch, with superb midrange sonics, full-bodied presence, and potent midbass punch. Thanks to its beautiful crafted high-density enclosure—an ideal platform for the space-saving Uni-Q—there's little in the way of cabinet resonances or port colorations. Imaging is clean and pinpoint-precise as you'd expect from KEF. Positioned in a small- or medium-sized room, the LS50 makes a statement like few small speakers. You'll want to hold on to these no matter how many upgrade you make to rest of your system.

kef.com (231)



GoldenEar Triton Seven
\$1399

As Chris Martens proudly proclaimed in his review of the Triton Sevens, “I have an abiding fondness for overachieving products,” and the GoldenEar Triton Sevens are speakers that can definitely be called overachievers. These tall, slender, quasi-transmission-line floorstanders can go toe-to-toe with any similarly priced competitor, and handily outperform many higher-priced speakers, as well. For \$1399, the Triton Sevens are masterpieces of value-oriented audio engineering.

goldenear.com (233)



Focal Aria 906
\$1499

With the debut of the Aria, Focal has unleashed a powerful and persuasive range, ready to go head-to-head with the likes of Sonus faber, Revel, KEF, and other notables. As compacts go, the 906 touches all the right sonic bases for Neil Gader. But more than that, these factors all dovetail into a single conclusion—that time and again, the Aria 906 just gets music right and at \$1500. One heck of a compact speaker.

audioplusservices.com (243)

OUR TOP PICKS LOUDSPEAKERS



Magnepan Super MMG

\$1199

The Super MMG system is a slightly different take on the tried-and-true for Magnepan. The bundle includes a pair of MMGs specifically hot-rodged for use with an included Diplanar Woofer Module or DWM (dual DWMs are optional). The results are remarkable. The Super System's low distortion and "faster than a speeding bullet" transient attack reveals the tiniest intricacies, delivering fragile percussion cues with startling immediacy. It also throws open wide windows on ambient and reverberant details, and it unquestionably rules the roost over micro-dynamics gradations. The addition of DWM lends the system a stronger sense of grounding, and with the added bass comes greater focus and clarity than that of the solo MMGs. Leap tall buildings in a single bound? Darn close. And in every other way, superb indeed.

magnepan.com (235)



Pioneer SP BS-22

\$129

\$129. And it's designed by Andrew Jones with all the brio that he imparts to his state-of-the-art TAD efforts. At little more than a foot tall, this two-way makes few obvious sonic concessions to the budget market. Like they say, the devil is in the details, and the BS-22's honest un-hyped tonal balance puts just enough heft and weight behind vocal and instrumental images to provide reasonable impact without over-stressing its lightly built enclosure. Don't expect especially deep extension beyond the upper midbass or compression-less peaks at very loud levels, but do expect the BS-22 to maintain effective low-frequency response and remain relatively composed at higher outputs. Despite hints of sibilance, this is simply one of the most smile-inducing best buys out there.

pioneerelectronics.com (228)



GoldenEar Technology Aon 3

\$999

An "augmented" two-way design, GoldenEar's Aon 3 combines a 7" wide-bandwidth mid/bass driver with a Heil-type tweeter, using two side-mounted passive radiators to extend bass depth and punch. The result is a monitor that provides agile, detailed, and nuanced mids and highs while serving up bass that is unexpectedly full-bodied and that matches the quality of the speaker's midrange and treble. CM, 232

goldenear.com (232)



Paradigm Reference Signature S1

\$1499

This stand-mounted, sealed-box, two-way speaker doesn't understand how small it is, delivering big, robust, dynamic sound. An exceptionally neutral tonal balance coupled with pinpoint imaging make the S1 one of the best sub-\$2000 mini-monitors currently available. Paradigm designs and builds all its drivers in-house, including the pure beryllium dome tweeter. Because the S1s are so small, some prospective buyers might pass on them in favor of a larger bookshelf or floorstanding model. That would be a mistake. For its size and price the S1 delivers more pure performance than any speaker SS has heard.

paradigm.com (184)



EQUIPMENT REVIEWS

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HYDRA DIGITAL POWER CENTER

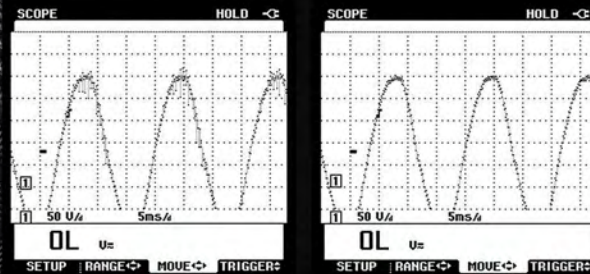
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— Clayton Wood,
Senior Engineer: SkyWalker Sound

HYDRA

DPC-6



Shunyata Venom PS8 Power Distributor, Venom Defender, and Venom HC Power Cords

How Dedicated Are You?

Neil Gader

My history with AC power-distribution and line-conditioning products is a fairly spotty one. Sonically, they give and they take away, and I generally put them aside after a few weeks. Nowadays I just grab a power cord and head for the nearest available outlet, avoiding power-surge-protection strips for critical components. I've come to view such "convenience" strips as a hangover from the days of tower computers, forty-meg hard drives, and 14" monochrome displays, when the fear of a brownout sent shivers down the spine. My listening room isn't blessed with a dedicated circuit, either. I've considered remedying this but just haven't gotten around to hiring an electrical contractor. The truth is that I'm a little skeptical of monkeying with power and conditioning products. My room is quiet with a seemingly low noise floor. Basically what I'm admitting is that my listening space is probably a lot like yours. Sensible but nothing fancy.

Shunyata must've seen me coming. It has designed a system that takes the existing AC power entering a listening room to the next step without engaging the services of an electrical contractor. There are three basic components to its entry-level Venom Series of power products, starting with a Venom PS8 power strip. Nicely constructed of heavy, brushed steel, the PS8 is

20-amp rated to cover even the most demanding high-current components, provides eight Hubbell outlets that are cryogenically treated using Shunyata's Alpha process, and a tough Carling Hydraulic Electromagnetic breaker. It sits on thick rubber feet, but steel spiked-footers with floor protectors are also offered as a \$195 option.

The second component is the Venom Defender—a tidy little plug-and-play power conditioner. Chassis-free, it's a plug-in module that incorporates the MPDA (multi-phase-differential-array), thirty-element parallel filters found in Shunyata's flagship Hydra models. Ruggedly built, Defender is equipped with 20,000 amps of surge protection and its own LED fault-detector. It can be plugged directly into the PS8 or, ideally, into the same wall outlet.

The final link in Shunyata's power chain are the Venom HC power cords. Big brothers to the original Venom cords (still a steal), they use heavier 10-gauge conductors, and employ hand-soldered contacts that are crimped to improve the metal-to-metal contact integrity.

All Shunyata components are cryogenically treated. Each can be purchased individually, but these three have been designed and priced to perform in trio. With *three* Venom HC cords, the complete Venom system Shunyata set me up with retails for under \$1800.

Shunyata's Grant Samuelson filled me in on Venom system particulars. He reiterated that "all home electronics are extremely peak-current-sensitive. Their power supplies draw current dynamically off the peak and trough of the sinewave. Any break or open contact in the electrical chain represents a *loss* that can affect system performance."

Shunyata, he says, "views current delivery as a high-frequency event, not a low-frequency event because systems draw current at a high-frequency and they output high-frequency noise. It all starts and ends with junction integrity, material quality, material manipulation—all aimed to lower the insertion-loss of the device. The overriding design goal of this system is to minimize peak-current loss at every junction.

"The Defender builds upon the foundation the PS8 establishes. Its filters are computer-modeled to capture and filter the high-frequency noise that exists on any line and prevent it from re-circulating within the system. All of this is accomplished without any added connections and with no loss of peak current integrity—which is our baseline for performance."

All Amped Up

My approach to evaluating power strips, power cords, and line conditioners pretty much comes down to the same tried-and-true methodology. After concluding a period of extended listening with the current reference system, I unplug the entire rig, substitute the electricals under

EQUIPMENT REVIEW - Shunyata Venom PS8, Defender, and HC power cord



colors were being applied to the performance. But in truth this was more about system or line noise being reduced to the extent that significantly more ambient information and harmonic minutiae from venue and orchestra were freely emerging.

Celli and bass viols exhibited more pitch precision and less bloat. The individual voices of a chorus were unwavering in space and could be more easily pinpointed, almost visualized. String section layering was better defined in depth. The

evaluation, and let 'er rip. Electronics in this instance were the Parasound JC 3 phono stage, the mbl Corona C11 preamp, and the mbl C21 stereo amplifier in rotation with the Aragon 8008 amp (review to come)—a system requiring three power cords. A Meridian Director USB DAC decoded computer-sourced files.

My first impression of the Venom system flat-out caught me off-guard, largely because my expectations were built on previous encounters with power distribution products, some good, some not so good. I began by cueing up *The Wasps Overture* [RCA] followed by the third and fourth movements of the Beethoven Ninth Symphony [Decca]. In each instance I heard the same thing, which arrived in the form of newly discovered orchestral weight and a more rigidly grounded soundstage. The system revealed a density change in the way I perceived ambient information. At first I thought I was hearing a tonal shift downward, as if a darker palette of

Venom system was not just quieting the system down; it was also allowing resolution within those silences of the acoustic/reverberant life that exists between notes or during musical pauses, but which is so often obscured. It was like the air was fueled with a different mixture of energy and harmonics. I listened closely to

SPECS & PRICING

Venom PS8

Number of outlets: 8

Price: \$695

Defender

Price: \$195

Venom HC Power Cord

Price: \$295/1.75m

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EQUIPMENT REVIEW - Shunyata Venom PS8, Defender, and HC power cord

Copland's *Fanfare For The Common Man* and its near overpowering dynamic swings. Thankfully, what I *didn't* hear was a softening or smoothing over of transient detail and contrasts. The textures of music, from the reedy and bristly to the buttery, were fully represented. Compression of dynamics—the bane of many conditioning products—was non-existent on either the micro or macro scale.

Weirder still was that when I took out the Venom system the individual artists of St Martin's in the Fields, performing excerpts from Stravinsky's *Pulcinella*, seemed somewhat abandoned, as if they were separated by acoustic dead zones rather than joined as a contiguous ensemble. With the PS8 out of the system, the air and dimensionality, the swirl of ambient activity became spotty. The impression of a single soundspace unbroken from one end of the proscenium to the other, upstage and down, sounded more thread-bare, like an unframed musical canvas. Reinserting the Shunyata into the system, the fully framed picture rematerialized.

When I turned to pop vocals like Shelby Lynne's "Just A Little Lovin'," I encountered the same enriched ambient quality that I had with symphonic recordings. In this instance it was the distinctive, heavily damped, reverb-washed character of the recording studio. Imaging on this disc was truly stunning. Drums, bass, acoustic guitar cues were so clean, quick, and stable that it was as if someone had applied a squeegee to a grimy window. Even the title track's metronomic hi-hat had more drive and a thicker, less tinny quality. The Shunyata found more sustain in the instrument, while the slight

smearing that collected in the wake of certain of its transients all but vanished. Bass response was further defined in character and timbre. For example, the bass vamp that kicks off the intro to Holly Cole's "I Can See Clearly" didn't come off as more deeply extended *per se* but as considerably tightened up, with more rhythmic bounce and melodic character.

In as little time as it takes to plug in a couple power cords, I've gone from skeptic to believer. The Shunyata Venom system refined the voicing of my system to an extent I never would have predicted at the outset. And I never felt the music was being compromised. To be clear, Shunyata doesn't promise a seismic shift in system performance, but a subtle clarification of previously hidden musicality. Don't look at me to pull the plug anytime soon. For the dedicated among us (without a dedicated line) the Venom system represents a cost-effective, plug-and-play, real-world solution to power issues. Another way of saying that I guess I better tell my electrical contractor not to wait up for my call. tas

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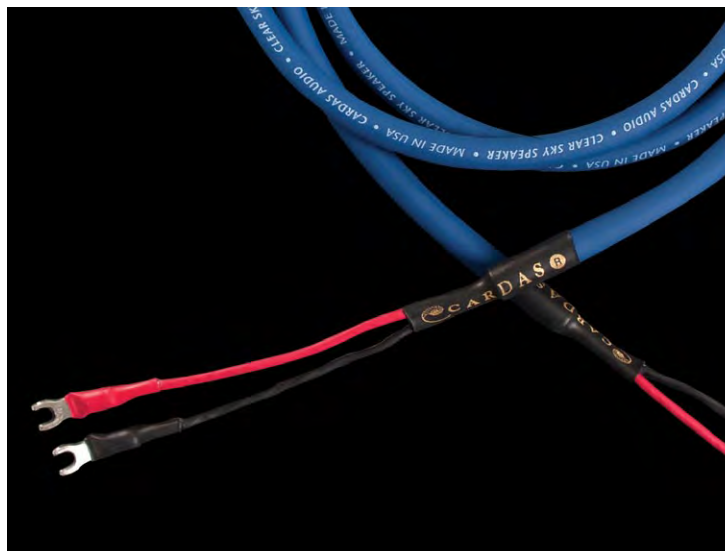
OUR TOP PICKS CABLES, POWER PRODUCTS, & OTHER ESSENTIALS



Moon Audio Silver Dragon V2 interconnect \$500/1m

The successor to the critically lauded Silver Dragon, the V2 counts among its strengths a noise-free, settled environment that establishes a dark, dead-silent launching pad for music to freely emerge. Its tonal signature is a model of smooth, rich midrange response—elegant in its neutrality and color saturation and fluidity. Structurally V2 employs an eight-wire braided geometry made of solid core 99.999% pure silver 26 AWG with Teflon insulation. However, its braiding has been upgraded and an external shield added to the mix for further noise rejection and durability—handy for lengthy runs across a studio floor. There’s a satisfying mellowness to its character, one that doesn’t exactly soften transients (there’s plenty of snap and speed to go around), but it does add a welcome measure of overall warmth to the presentation. A cable that defies every expectation for a modestly priced interconnect.

moon-audio.com (244)



Cardas Clear Light Interconnect and Clear Sky Speaker Cables Interconnect, \$692 1m/pr.; Speaker, \$900/3m

Designed *and* superbly made in the U.S.A., the fat *Blue Man Group*-blue cables are the first rungs of Cardas’ top-of-their-line Clear series and use concentric Matched Propagation copper conductors in a PFA dielectric. Impressive both sonically *and* physically (think garden hose-thick), yet their soft rubber jackets make them surprisingly flexible and easy to dress in tight spaces. Musicality abounds with the Clear Light/Sky wires with finely wrought inner detail along with a slight fullness to upright and electric basses. The touch of added warmth will likely prove most welcome in smaller scale setups. Critically, hum and noise rejection was also quite good. Seek an audition since spacing between the massive RCA connectors might prove tight when connected to some components.

cardas.com (236)



Voodoo Evolution interconnect \$600 RCA/\$650 XLR

Voodoo Cable’s power cords have long been appreciated in TAS and the greater high end, but its new Evolution Interconnects represent a truly significant breakthrough in speed and balanced response. The conductor geometry is a helical winding of 5N pure silver and single crystal copper conductors that have been given the Voodoo treatment with a proprietary cold fusion cryogenic process. Each conductor is encapsulated in oil-filled Teflon dielectric and wound to proprietary specification for balanced capacitance and inductance. Translation: a visceral performance with fast dynamic response, accurate dynamic control, plus a sumptuous low end.

voodoocable.net

OUR TOP PICKS CABLES, POWER PRODUCTS, & OTHER ESSENTIALS



Kimber Kable Hero Interconnect/12VS, 8TC, and 12TC Speaker Cable
 Interconnect: \$210/1m; Speaker: 12VS, \$345/8' pr.; 8TC, \$416/8' pr.; 12TC, \$630/8' pr.
 Kimber's now classic Hero interconnect and braided 8TC/12TC speaker wires have become true staples of the industry. They are dead neutral, with dynamics at once powerful yet finely resolved in an essentially grain-free presentation. The 8TC speaker cable has that elusive ability to remain musical and ideally mediate detail, liveliness, tonal neutrality, and dynamic contrasts within a very realistic, holographic soundstage. Yielding only a tiny bit in control and top-end transparency, Hero's bass lives up to its name—prodigious in amplitude and definition. Newly available and sacrificing little is Kimber 12VS speaker wire which consists of twelve gray and twelve black conductors, arranged in a large format braid. The conductors feature VariStrand conductor geometry and are drawn from ultra pure copper. The aggregate wire size comprises two hefty 8 AWG conductors. A great match for full-range speakers, subwoofers, and the low frequency section of the bi-wired loudspeakers.
kimber.com (138 & 146)



MIT StyleLine SL 8 Interconnect and SL 9 Speaker Cables
 Interconnect: \$499/1m pr.; Speaker: \$799/8' pr.
 For many MIT (Music Interface Technologies) audio cables are primarily associated with state-of-the-art efforts that are accompanied with commensurately lofty prices. But then there's MIT's entry-level StyleLine series. A sleek, more ergonomic design, StyleLine provides an alternative to MIT's classic "box" design. Designed with 6N copper, robust dual shielding for noise rejection, and featuring the same Multipole technology found in its top-of-the-line interfaces, these wires have a very neutral top-to-bottom balance that allow one to "relish in the detail-fest that makes the sport of the high end so much fun." Mouth sounds—the sonic signatures of the microphones, the "sound" of the recording studio—all came through clear as day. These cables exuded audio trickle-down theory at its best!
mitcables.com (236)



Nordost Purple Flare
 Interconnect: \$260/1m, \$365/2m; Speaker: \$518/2m, \$596/3m pr.
 Featuring Nordost's classic flatline configuration, the Purple Flare might be a rung below the current incarnation of Blue Heaven, yet it's a little trip to heaven all on its own. It's a cable that shines in the midband with a driving, slightly forward energy that imparts dynamic liveliness to all genres of music. There's significant macro-dynamic punch resulting in orchestral crescendos, full-blown percussion, and brass-section blasts of impressive authority. It evinced the transient speed of a sprinter, yet never suggested any serious tonal balance discontinuities. Its treble range was wonderfully free from major constrictions. Bass is not quite as fully exploited in terms of extension or bloom, and its personality is cooler in the middle treble, yet—on balance—it was as open and as transparent as any cable in this accessible class.
nordost.com (236)

OUR TOP PICKS CABLES, POWER PRODUCTS, & OTHER ESSENTIALS



Shunyata Anaconda Interconnects/Loudspeaker Cables

Interconnects: \$2250/1m pr.; Speaker: \$4800/2.5m pr.

Don't be fooled by the less-than-stratospheric price of these new interconnects and loudspeaker cables from Shunyata; they compete with, and in many ways exceed, the performance of the world's best cables—regardless of price. They have a startling vividness and immediacy without being forward or analytical, tremendous soundstage dimensionality, great timbral liquidity, and the ability to convey very fine recorded details. A reference-quality interconnect and cable at a real-world price.

shunyata.com
(220)



WyWires Blue Series

Interconnects: \$469/4' pr. (RCA); \$499/4' pr. (XLR); Speaker \$599/8' pr.

The first WyWires cable reviewed in TAS, it's also one of the most pliable, easy-to-handle cables available; yet, its sound is anything but humble. Its sonic signature is energetic, with a potent midrange, plenty of drive, and a slightly cooler, forward tilt. The Blue's sonics aren't juiced-up or overheated, but if the goal is high transparency and black-satin background silences it will prove a real achiever. It exhibits good rhythmic pace and a wonderful facility with inner detail. An unpretentious component that lets the quality of the recorded performance speak for itself, the WyWires puts the music upfront and center stage. A truly auspicious debut that has since been followed up by even grander designs.

wywires.com (236)



Wireworld Oasis Series 7

Interconnect: \$110/1m RCA, \$135/1m XLR; Speaker: \$350/2.5m (\$400/2.5m meter bi-wired)

Wireworld's new Oasis Series 7 interconnects feature the company's patented DNA Quad Helix configuration with patented Silver Tube RCA (silver clad OFC) plugs, proprietary Composilex 2 insulation, and 21 AWG (per polarity) OFC conductors. The speaker cables employ Wireworld's patented DNA Quad Helix configuration and its proprietary Uni-Term silver clad OFC contacts (customer's choice of field-replaceable spades or bananas), Composilex 2 insulation, and 12 AWG (per polarity) OFC conductors. The geometry uses flat conductors that are as thin as a single strand, with many strands to provide very low resistance. All of the strands are completely parallel, providing the most direct signal path possible. Fine tuned by ear to match the pure sound of a direct connection, the effect is like focusing a lens, says Wireworld, with the beautiful textures, quieter backgrounds, tighter image focus, and wider dynamics of live music.

wireworldcable.com