



# the absolute sound

BUYER'S GUIDE TO  
**AFFORDABLE  
HIGH-END AUDIO**

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Wyred 4 Sound

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A Sound Decision



# THE LEGACY CONTINUES

The all-new Son of Ampzilla II amplifier and Thoebe II preamplifier from the all-new Spread Spectrum Technologies. > [www.sst.audio](http://www.sst.audio)

**SST**  
Spread Spectrum Technologies

# Contents



## Features

- [From the Editor](#)
- [On the Horizon](#)
- [Sneak Preview](#)
- [Book Excerpt: How to Allocate Your Audio Budget](#)

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## Electronics

- [Wyred 4 Sound mINT](#)
- [Micromega MyAmp DAC](#)
- [Denon PMA-50](#)
- [Rotel RC-1570 P7 preamplifier and RB-1552 Mk II power amplifier](#)
- [Arcam FMJ A19](#)
- [NuPrime preamp/DAC and amp](#)
- [Hegel H80](#)
- [Audio by Van Alstine FET Valve](#)
- [Odyssey Stratos monoblocks](#)
- [Our Top Picks](#)

## Analog

- [Pro-Ject Debut Carbon](#)
- [Rega RP3](#)
- [Clearaudio Concept](#)
- [Acoustic Signature Wow XL](#)
- [Ortofon Quintet of cartridges](#)
- [Funk Firm Flaminca](#)
- [Our Top Picks](#)

## DACs, Music Servers, & Disc Players

- [Oppo BDP-105](#)
- [LH Labs Geek Out 450 DAC/amp](#)
- [Sony PHA-2](#)
- [Cambridge DACMagic XS](#)
- [Hegel Super DAC](#)
- [Resonance Herus](#)
- [Meridian Direct DAC](#)
- [Rotel RDD-1580](#)
- [Sony HAP-Z1ES](#)
- [Our Top Picks](#)

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## Loudspeakers

- [Pioneer SP-BS22](#)
- [KEF LS50](#)
- [Infinity Primus](#)
- [Epos K1](#)
- [MartinLogan X35T](#)
- [PSB Imagine X2T](#)
- [Magnepan .7](#)
- [B&W CM6 S2](#)
- [Audience ClairAudient 1+1](#)
- [GoldenEar Triton Five](#)
- [Monitor Audio Silver RS10](#)
- [Our Top Picks](#)



## Subwoofers

- [JL Audio e112](#)
- [JL Audio e110](#)
- [REL S/5](#)
- [Our Top Picks](#)



## Cables, Power Products, & Other Essentials

- [Shunyata Venom PS8, Defender, and HC Power Cords](#)
- [Oppo PM-1 headphones](#)
- [Dynamic Design PC-1 power cord](#)
- [Our Top Picks](#)

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Morrow Audio hand crafted, custom made, high-end cables are priced to fit any budget from \$49.95 and up! Our sound is so big everything else just seems small. Morrow's lowest-cost products have replaced the biggest competitors' largest offers. Regardless of your upgrade at an affordable cost - with Morrow, you know you've made *A Sound Decision*. Lifetime warranty and 60-Day returns!

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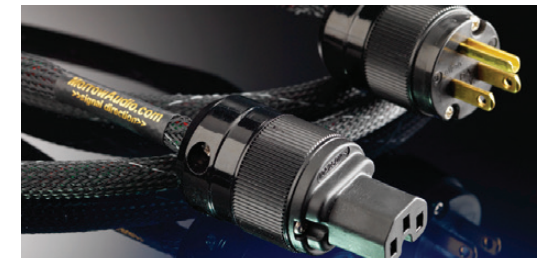
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# the absolute sound

## BUYER'S GUIDE TO

# AFFORDABLE HIGH-END AUDIO



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# From the Editor

Welcome to the 2015 Buyer's Guide to Affordable High-End Audio!

Who doesn't love a bargain?

Hi-fi isn't known for being a low-cost hobby, but high-end sound can actually, occasionally be had for a reasonable price—if you know where to look. (Call it the Hi-fi Holy Grail.)

The editors here at *The Absolute Sound* have done the work for you. We've sorted through the broad category fields and have culled some of the best values for the money out there, so you don't have to. In fact, nearly every product in here costs \$2500 or less!

Herein the TAS editors offer you our most comprehensive online guide to affordable audio yet.

You'll find:

- Sneak previews of brand-new, "On the Horizon" products that will soon be reviewed in TAS.
- 42 full-length reviews of the best-sound-for-value products.
- Top Picks, in which our reviewers select their top category finds.
- Robert Harley's essay, "Allocating Your Budget to Specific Components," where he offers tips that can help you maximize value for your money (excerpted from the latest edition of his classic *Complete Guide to High-End Audio*).

Whatever your "stereo spend" or budget might be, we hope you'll find this guide an invaluable—and entertaining—resource to help with your purchasing decisions.

Happy listening!

Julie Mullins, Editor



HA-2 Portable Headphone Amplifier & DAC



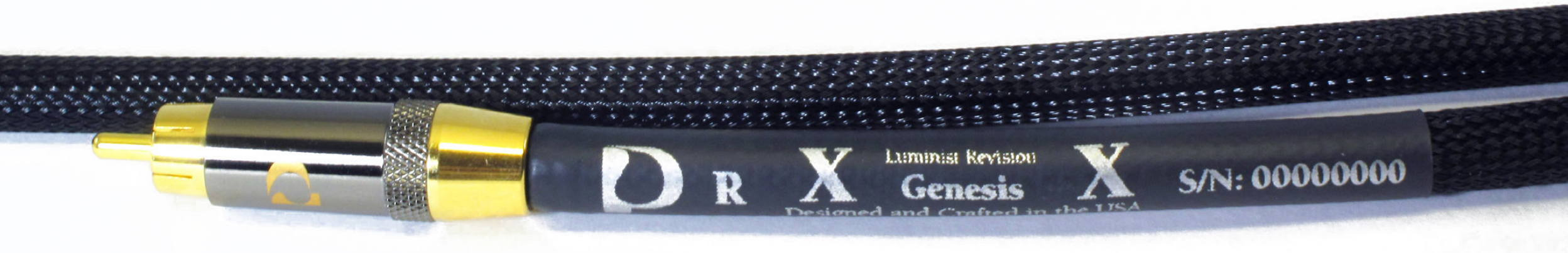
**Universal Blu-ray Player**  
Hi-Fi Audio & Video  
BDP-105D: \$1299  
BDP-103D: \$599



**Planar Magnetic Headphones**  
PM-1: \$1099  
PM-2: \$699  
PM-3: \$399



**Headphone Amplifier**  
USB DAC & Pre-Amp  
HA-1: \$1199  
HA-2: \$299



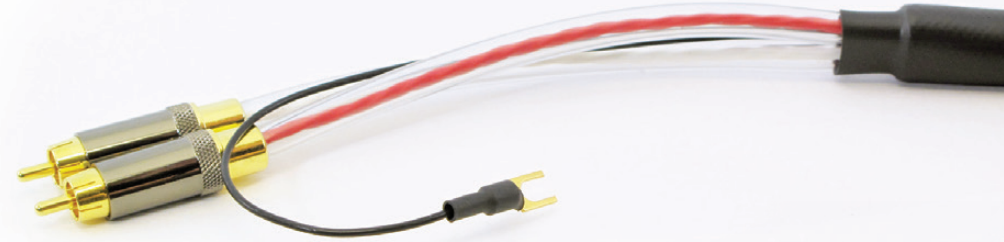
# On the Horizon

Hot New Products Coming Your Way

Neil Gader

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Design

# Purist Audio Design



## Genesis

We believe that “Genesis” is the beginning of something great.

Purist Audio Design crafts each Genesis cable by hand, with two important criteria: exquisitely detailed musical sound and a phenomenal price. With improved EMI and vibration reduction, and a sleeker, more flexible design, our Genesis line is re-engineered from the ground up for our Luminist Revision.

Sonically, Genesis conveys a warm sound, and is rich in detail. From the inside out, we construct each Genesis using a combination of technologies that comes only from our 30 years’ experience in the high-end industry.

We craft our cables right here in the USA. By combining engineering with an artisanal, hand-made quality we unify the two worlds of art and engineering. Our Luminist Revision Genesis embodies natural beauty, expression of light and fine detail. Let us connect you to the music.



**Hand-made in the USA**

**One-on-one Service**

**Over 30 Years’ Experience in  
High-End Audio**

**Custom-built for Your System**





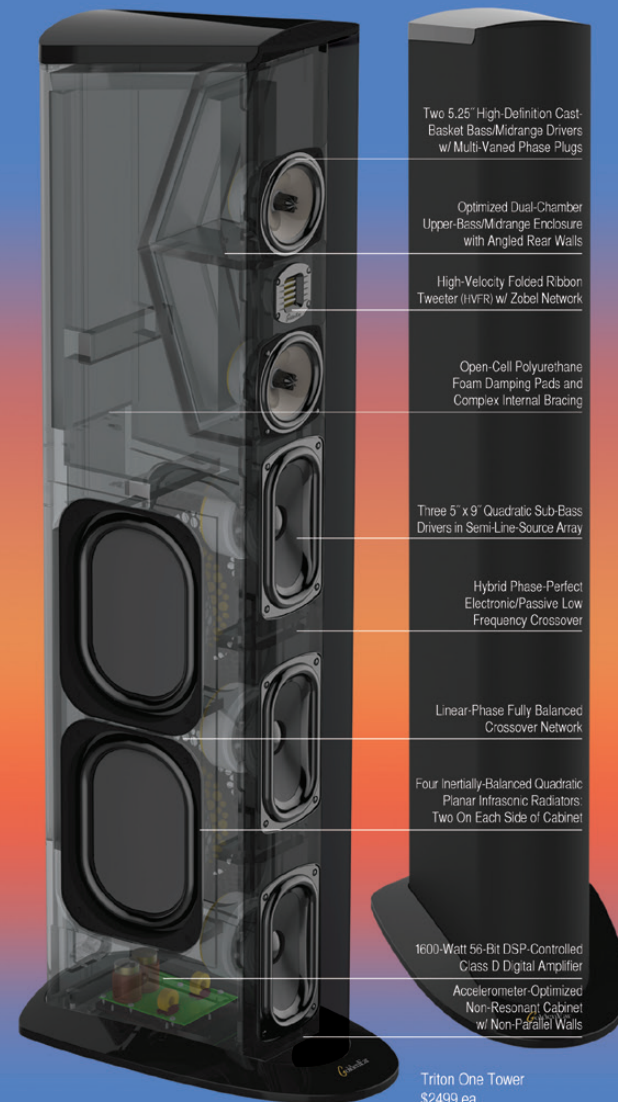
### JL Audio d110 Subwoofer

The Dominion powered subwoofers leverage JL Audio's expertise in driver and amplifier design to achieve a unique solution for applications requiring a compact, more affordable sub. The Dominion employs a purpose-engineered, long-excursion 10" driver, built using JL Audio's exclusive DMA motor-optimization technology. This leads to reduced distortion at higher output levels, as well as improved dynamic tracking and resolution. The Dominion amplifier is also purpose-engineered, featuring an advanced Class D design (750W RMS short term), with a tightly regulated switching power supply. The Dominion is ideal for full home-theater systems, media-room systems, dedicated two-channel music systems, desktop-audio workstations, and small recording studios. High-level inputs even make it possible to add a subwoofer to systems lacking line outputs. Made in the U.S.A. at JL Audio's headquarters in Miramar, Florida.

**Price: \$1099. [jlaudio.com](http://jlaudio.com)**

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

## "Product of the Year 2014 – The Absolute Sound"



*"Best Sound for the Money at CES 2014"*

– Jonathan Valin, Kirk Midskog and Neil Gader, *The Absolute Sound*

When three of The Absolute Sound's top reviewers all choose the same product for their "Best Sound for the Money at CES" honors, you know it is something very special. And when The Absolute Sound's senior writer, Anthony Cordesman, writes a rave review, calling them, "intensely musical", says that, "You can get lost in the lifelike reproduction" and praises their, "exceptional bass performance" as well as their, "exceptional soundstage and imaging performance." you know we are speaking about a truly epic and iconic loudspeaker.

*"An absolute marvel ... shames some speakers costing ten times as much."*

– Caleb Denison, *Digital Trends*

Introducing the Triton One, an evolutionary loudspeaker that builds upon all the advanced technologies that have made the Tritons mega-hits around the world. This new top-of-the-line flagship has been engineered to deliver even better dynamics and bass than the extraordinary Triton Two, along with further refinement of all aspects of sonic performance. In the words of HD Living's Dennis Burger, the Triton One, "creates visceral, tangible waves of pure audio bliss" and deliver, "the sort of upper-echelon performance that normally only comes from speakers whose price tags rival a good luxury automobile".

*"Extraordinary sound quality and value ... one of the best buys in speakers ... they provide sustained musical pleasure and exceptional realism. Highly recommended."*

– Anthony Cordesman, *The Absolute Sound*

Yes, great sound is what it is all about. HiFi+’s Chris Martens raved the One is, "Jaw-droppingly good" and delivers, "a dazzling array of sonic characteristics that are likely to please (if not stun)", calling it, "one of the greatest high-end audio bargains of all time". And Stereophile called them, "A Giant-Killer Speaker", with Robert Deutsch writing, "And yet, the mere fact that it's not unreasonable to compare the sound of the \$4999 Triton One with the sounds of speakers costing tens of thousands of dollars more per pair says a lot about the GoldenEar's level of performance." Hear them for yourself and discover what all the excitement is about!

**GoldenEar Technology**  
We Make High-End Affordable!™

[www.goldenear.com](http://www.goldenear.com)

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### Shunyata Venom Digital Power Cord

Shunyata Research developed the Venom Digital power cord to address the specific noise challenges that digital electronics present in digital recording, video, and sound systems. Unlike other power cords that claim to address noise, the Venom Digital power cord measurably lowers the power line noise emissions from digital components. This measurable difference delivers obvious, consistent improvements in clarity, dynamics, and resolution in any entertainment or recording system. The reason for the measurable performance improvement relates to Shunyata's own in-line filter system that removes the specific frequencies of noise that are detrimental to playback, without interfering with component power supplies.

**Price:** \$395. [shunyata.com](http://shunyata.com)



### Atma-sphere UV-1 Preamp

The UV-1 (UltraViolet) preamplifier is an off-shoot of a circuit Ralph Karsten developed for friends with high-end aspirations but limited budgets. Over the years, the circuit has seen a lot of refinement and is based on the capable and refined 6SN7-based line section with a simple phono section based on 12AT7s. The preamp is available in three forms: a basic linestage, a full-function preamp with high-output moving-magnet capability, or with the addition of a set of Jensen step-up transformers for use with any low-output moving-coil cartridge. The preamp features a zero-feedback line section, Cardas RCA connectors, standard dual-output connections, an optionally reconfigurable shunt-style balance control, and a heavy-duty seamless aluminum chassis. Precision components are used throughout. Includes a three-year general coverage warranty with a one-year warranty on tubes.

**Price:** \$1900 linestage; \$2300 with mm phono; \$2800 low-output mc phono. [atma-sphere.com](http://atma-sphere.com)



### GEM Dandy PolyTable

The design criteria for the GEM Dandy PolyTable was deceptively simple—provide a quality product for vinyl fans on a tight budget looking to purchase their first true high-performance turntable. The open-platform looks are striking and forward-thinking. The plinth is designed to minimize energy movement. It employs a two-piece damped-platter system with RCC Mat, adjustable leveling feet, 33/45rpm operation, and a built-in bubble level. The supplied Jelco SA250 tonearm is no slouch either, providing premium features such as VTF, VTA, and azimuth adjustment. This allows an upgrade to any cartridge. Additionally, a high-quality 1.5m AudioQuest cable is provided. Designed and manufactured in the U.S.A. by George Merrill, the “G.E.M.” of Merrill-Williams R.E.A.L. 101.2 turntable fame.

**Price:** \$1495; (\$1695, with the Jelco SA-750D; \$1895, with Jelco SA-750E 10-inch version.) [hifigem.com](http://hifigem.com)



### Wireworld Nano Series

The Nano Series includes ultra-light and flexible audio cables for use with headphones and other portable audio devices. It has four levels: Pulse, (molded plugs and oxygen-free copper conductors); Nano-Eclipse (Ohno Continuous Cast copper conductors); Nano-Silver Eclipse (OCC silver-clad copper conductors); and Nano-Platinum Eclipse (carbon-fiber plugs and OCC solid-silver conductors). The Nanos are also the smallest cables to utilize Wireworld's patented DNA Helix design to channel the energy of the electromagnetic signal more efficiently, providing greater detail and dynamics. Additionally they utilize Wireworld's proprietary Composilex 2 insulation, which minimizes triboelectric noise for surprisingly lifelike tone quality. Nano cables are available with mini-jacks and the most popular headphone terminals in a variety of standard and custom lengths.

**Price:** Pulse, \$40; Eclipse, \$175; Silver Eclipse, \$250; Platinum Eclipse, \$575 (all 1.5m lengths). [wireworldcable.com](http://wireworldcable.com)



#### AudioQuest JitterBug USB Filter

AudioQuest's new dual-function JitterBug is a USB line (VBUS) and signal (data) filter—the next step forward in high-performance computer-audio playback. JitterBug's dual-circuitry measurably reduces unwanted noise currents and parasitic resonances, and, in doing so, restores dynamic contrast and resolution, reduces jitter and packet errors (in some cases these are eliminated altogether), and improves the overall musical experience. Slightly smaller than AQ's DragonFly USB DAC, and with a handsome, unassuming appearance, JitterBug has a USB (male) plug on one end and a USB (female) port on the other. For those who already own DragonFly, JitterBug will be a fun and affordable upgrade: Simply plug JitterBug into any one of a computer's available USB ports, then plug DragonFly into JitterBug's USB port. Also, JitterBug can be successfully used with external USB DACs ranging from the very modest to the absolute state of the art.

**Price: \$49.** [audioquest.com](http://audioquest.com)



#### NuPrime IDA-8 Integrated Amplifier

The IDA-8 is a single-chassis integrated stereo amplifier with a DAC capable of decoding USB PCM 384 and DSD256, in addition to a 100Wpc power amplifier in a 8.5"-wide chassis. The IDA-8 combines the substance and warmth of an Ultra-Linear Class A Module (ULCAM) in the preamp stage with the extraordinary speed of NuPrime's proprietary Class D power stage for a spacious, transparent, dynamic, and textured soundstage. The amplifier switches at a frequency of 600kHz while achieving a system efficiency of up to 93 percent. The IDA-8's frequency response extends to 50kHz.

**Price: \$995.** [newprimaudio.com](http://newprimaudio.com)



#### REL Acoustics Ti Series

REL Acoustics' latest range of accessibly priced models, the new three-model Ti range, boasts impressive upgrades including drivers that feature a composite aluminum/lightweight-paper structure, thick-wall cabinets, uprated bracing, and class-leading design. Industry watchers have been buzzing about Longbow—an ultra-high-quality wireless format—and now, REL delivers optional Arrow wireless that maintains similar speed and dynamics at a lower price. REL is bringing lessons learned from its highly acclaimed Serie S to customers who may not have the need for all the capabilities of S. Increased speed, slam, and power mate up with delicate decay patterns that render music and film that much more lifelike, and now wirelessly.

**Price: \$749-\$1299.** [rel.net](http://rel.net)



#### Thoebe II Preamplifier from Spread Spectrum Technologies

SST proudly presents the all-new Thoebe II preamplifier. Fitted with the refinements and features one expects of a modern-day preamp, the Thoebe II delivers music with style and beauty at an attractive price. Impressive standard features include a highly transparent volume control, bass and treble controls, high/low gain settings, and a built-in world-class headphone amplifier. Additionally, the Thoebe II can be configured with available add-on options like a reference-level DAC and/or phonostage. The Thoebe II is about ultimate control and flexibility—ideal for any music source.

**Price: \$3000 (options extra).** [sst.audio](http://sst.audio)



### Son of Ampzilla II Amplifier from Spread Spectrum Technologies

SST's companion to the Thoebe II preamp is the all-new Son of Ampzilla II amplifier. The redesigned "Son of" boasts significant advancements over previous versions. Noteworthy features include completely balanced circuitry, on-the-fly switching between an unbalanced or balanced input, turn-on surge relay, heavy-duty enclosure, a compact shape, and an attractive price. The power supply capacity is the same as in SST's flagship amplifier, the Ampzilla 2000 Second Edition. In addition, a unique grounding procedure ensures absolutely no ground loops. The nominal power output of the new Son of Ampzilla II measures a potent 200Wpc into 8 ohms.

**Price: \$3000.** [sst.audio](http://sst.audio)



### Wyred 4 Sound Íntimo Headphone Amplifier/DAC

The Íntimo was designed for the discriminating headphone aficionado. Beginning with a clean slate, Wyred's engineering team understood certain things had to be included in the design: a pure Class A amplifier with enough muscle and finesse to drive difficult loads with authority, a gain switch to allow for ultimate compatibility, a reference-grade DAC capable of processing hi-res PCM and DSD files, a truly-balanced circuit design, multiple digital inputs, and—in the tradition of Wyred 4 Sound—an affordable price. The upcoming Íntimo has all of these, wrapped in a custom case machined in-house.

**Estimated price: \$999 (options extra, prototype shown).** [wyred4sound.com](http://wyred4sound.com)



### Oppo HA-2 Headphone Amp/DAC

The new HA-2 has been engineered to enhance music playback from computers, mobile phones, and portable music players. Elegantly designed, the HA-2 offers high performance digital-to-analog conversion for PCM up to 384kHz and DSD up to DSD256. It's compatible with Apple's iPhone/iPod products, a wide range of Android devices, and PC and Mac computers. The HA-2's Sabre32 Reference DAC and hybrid Class AB headphone amplifier provide a significant improvement in sound quality over the amplification and DACs available in typical mobile devices or computers. Aesthetically, the HA-2 features a genuine leather wrapped aluminum body with contrast stitching and beveled edges.

**Price: \$299.** [oppodigital.com/ha-2](http://oppodigital.com/ha-2).



### KEF LS50 50<sup>th</sup> Anniversary Edition

The KEF LS50 was originally launched in 2011. However, to commemorate KEF's 50th Anniversary, the compact concentric is now available in a new finish: High Gloss White with Electric Blue KEF Uni-Q Driver. The highly lauded LS50 is an innovative engineering concept inspired by the legendary LS3/5a, and is designed to bring the professional studio monitor concept into the home. The LS50 is one of KEF's most award-winning speaker designs, known to deliver a rich, multi-dimensional soundstage out of all proportion to its size. Patent-pending acoustic designs coupled with state-of-the-art technologies from KEF's latest flagship Blade loudspeaker provide the ultimate studio experience—even in the smallest of spaces.

**Price: \$1500.** [kef.com](http://kef.com)



### Purist Audio Design Genesis Luminist Revision Series

The latest from Purist Audio, Genesis Luminist cables are crafted with two important criteria in mind: exquisitely detailed musical sound and a phenomenal price. The Genesis Luminist Revision cables utilize alloy conductors of copper and gold. The interconnects use a finely stranded design with santoprene dielectric. The digital cables are available in both SPDIF (RCA or BNC) and AES/EBU (XLR). The speaker cable utilizes a PVC dielectric. The Genesis Luminist delivers a level of performance for its price that is unheard of in the audiophile community.

**Pricing:** \$395/1m RCA; \$405/1m balanced; \$725/1.5m speaker; \$240/1m digital SPDIF. [puristaudiodesign.com](http://puristaudiodesign.com)



### Tannoy Revolution XT Series

Revolution XT is the latest development of Tannoy's most affordable loudspeaker to feature the world-renowned Dual Concentric driver, featuring some of the most significant and fundamental design changes in the driver's near 60-year history. With 100mm (4"), 150mm (6"), and flagship 200mm (8") Dual Concentric drivers, Revolution XT is offered in a five-model range and is available in medium oak or dark walnut real-wood veneers. Tannoy's quality of finish is further enhanced with magnetic grille mounts and subtle trim detailing. From the compact Revolution XT Mini stand-mount loudspeaker to the imposing Revolution XT 8F floorstanding model, the series delivers superior musical articulation and outstanding dynamics.

**Price:** \$550-\$2600. [tannoy.com](http://tannoy.com)



### Sonus faber Chameleon Collection

With the Chameleon speaker collection, Sonus faber brings all the iconic elements that the Vicenza-based company is known for to a wider, contemporary audience. Chameleon is offered in three models: the T, a three-way floorstander; the B, a two-way stand-mount; and the C, a two-way center channel with passive radiator. They all use Sf's well-regarded 29mm coated-fabric dome tweeter and 6" mid/bass (the T adds dual 7" woofers). Care was taken in the design of the crossover network to maintain Sonus faber's standards of excellence. Chameleon also offers a level of customization previously unattainable in this market segment: The entire cabinet is covered in leather; drivers flanges are embellished with aluminum trims; the sidewalls house exchangeable side panels via a system of pins that allows for their simple removal and replacement. Chameleon side panels are available in six different finishes.

**Price:** Chameleon T, \$1999/pr.; B, \$899/pr.; C, \$549 each. [sumikoaudio.net](http://sumikoaudio.net)



### Revel Concerta2 Series loudspeakers

Revel's entry-level lineup of home cinema and music loudspeakers incorporates numerous design and engineering upgrades to deliver exceptional sound—and it sets a new benchmark in high-end loudspeaker value. Along with improved audio performance, the Concerta2 Series (F36 pictured) has a refined appearance with new contoured enclosures, high-gloss finishes, and elegant design accents. The Concentra2s employ a one-inch aluminum tweeter with an integral phase ring, derived from Revel's Performa3, to deliver detailed and transparent high-frequency response. The tweeters are mated to a new, patented, fourth-generation Acoustic Lens Waveguide that optimizes the blend between the tweeter and woofers and improves off-axis performance for smoother, more consistent performance over a wide listening area. The newly designed woofers feature aluminum cones that minimize distortion by improving rigidity without increasing mass. The result is transducers that behave like ideal pistons throughout their operating range, which is fundamental to Revel's DNA.

**Price:** TBD. [revelspeakers.com](http://revelspeakers.com)



### Morrow Audio Headphone Cables

Unlike other high-end cable-makers, Morrow Audio products don't use stranded wire, a cause of signal distortion. Morrow's own SSI Technology is the game-changer. SSI Technology uses solid-core, small-gauge, individually insulated wiring to deliver the perfect listening experience beyond expectations. Silver-coated copper wiring in a proprietary gauge is then silver-soldered to the termination of choice for excellent balance of sound and musicality. This provides phenomenal resolution, realism, and soundstaging, in addition to exceptional RFI and noise rejection. This quality and innovative technology is employed throughout Morrow Audio's lineup of headphone cables. Available in three series, each cable is specially handcrafted and custom-made to each customer's desires. All sport a striking appearance with choices of white or black nylon mesh jackets, which will soon expand to varied jacket colors. All Morrow Audio cables come with a lifetime guarantee, an Easy Pay Program option, break-in service options, and a 60-day return policy.

**Price:** \$149 to \$329. [morrowaudio.com](http://morrowaudio.com)



### Paradigm Prestige Series

The new Prestige Series builds on Paradigm's 30-year history by combining new technologies with smart engineering—all completely designed, engineered, and crafted in the company's Canadian facility. Prestige embodies a new, unobstructed look: clean, sharp lines, with close attention paid to the smallest details. Harnessing cutting-edge new technologies, such as its Perforated Phase-Aligning (PPA) Tweeter Lens that protects the delicate X-PAL tweeter dome and acts as the Phase Plug, blocking out-of-phase frequencies for smoother, extended high frequencies with incredible detail and higher output. From the precise workmanship of the non-resonant cabinets to their beautiful premium-grade finishes, Prestige is truly hand-built for performance.

**Price:** Models range from \$799/each (Prestige 15B bookshelf); \$1499/each (Prestige 75F) up to \$2499/each (Prestige 95F floorstanding). [paradigm.com](http://paradigm.com)

## Cardas 101: An Introduction to Cardas Audio

- Available terminated or in bulk
- Easy for dealers or DIYers to prepare
- Our most affordable speaker cable



[cardas.com](http://cardas.com)

# Allocating Your Budget to Specific Components

Robert Harley

*Excerpted and adapted from The Complete Guide to High-End Audio (fifth edition).  
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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 DACs?

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 phono cartridge 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 low-resolution 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

# The Complete Guide to High-End Audio

Fifth Edition

Robert Harley

www.theabsolutesound.com  
Editor-in-Chief  
The Absolute Sound  
NEX PAUL

## Book Excerpt: Allocating Your Budget to Specific Components

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.

In the course of my reviewing career, I've listened to \$400 loudspeakers driven by \$30,000 worth of electronics, and \$150,000 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 DAC), good electronics (preamplifier and power amplifier), and excellent cables are essential to realizing a musical high-end system.

Since the first four editions of this book, however, I've had experiences with very good-sounding and affordable integrated amplifiers driving moderately expensive loudspeakers, and the results have been excellent. As explained in Chapters 5 and 6, loudspeaker sensitivity (how loudly the speaker will play for a given amount of amplifier power) greatly affects how powerful an amplifier you need to achieve a satisfying volume.

High-sensitivity speakers need very little amplifier power. And because amplifier power is costly, it follows that a system with high-sensitivity speakers can be driven by lower-cost

amplification—*provided that the amplification is of high quality*. Fortunately, manufacturers have responded to the need for relatively inexpensive high-performance amplification by designing integrated amplifiers with outstanding sound quality, but with lower output powers. By putting the preamplifier and power amplifier in one housing and cutting back on power output, manufacturers can put their high-end circuits in lower-priced products. The trick is to find those bargain integrated amplifiers that deliver truly high-end sound, and mate them with loudspeakers that not only have the appropriate sensitivity, but are also a good musical match. This approach will get you the best sound for the least money. If, however, cost is secondary to sound quality—that is, you're willing to spend more for an improvement in sound—then buy the best separate preamplifier and power amplifier you can find.

For the following exercise, I assembled an imaginary system of the components I'd choose if my audio budget totaled \$11,000. 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
Power conditioner and AC cords.....	\$1000
<b>Total .....</b>	<b>\$11,000</b>

As you can see, loudspeakers consumed about 36 percent of the budget, the digital source

took up another 12 percent, and the preamp and power amplifier each received 18 percent. About 9 percent was allocated to an AC power conditioner and AC cords, and the remaining 6 percent was spent on interconnects and cables. You may be surprised to see nearly 10 percent of the system budget devoted to an AC power conditioner and specialty AC cords, but AC conditioning is essential to good sound and offers a high sonic return on investment. 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.

Another approach with this budget would be to buy an inexpensive DAC (\$500) and put the \$800 saved into better loudspeakers or electronics. Then, as finances permitted, you could upgrade the DAC, a component category that gets better and less expensive over time (see Chapter 7). You'll have music in the meantime, and end up with a better-sounding system in the long run. You could also choose a preamplifier with an integral DAC, a feature included in most entry-level and mid-priced models. This approach, however, precludes upgrading just the DAC at a later date.

The 36 percent figure for loudspeakers is very flexible. Keep in mind that there's an important threshold in loudspeaker performance at about \$2500: Loudspeakers costing a little more than \$2500 are often disproportionately better than those costing a little less than \$2500, so you may want to adjust your budget allocations to cross this threshold. As described in Chapter 6, many

moderately priced loudspeakers outperform much more expensive models. Use Chapter 6's guidelines on choosing loudspeakers to get the most performance for your loudspeaker dollar.

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 an \$11,000 budget:

Integrated amplifier with DAC.....	\$4000
Loudspeakers .....	\$5500
Interconnects and cables .....	\$500
Power conditioner and AC cords.....	\$1000
<b>Total .....</b>	<b>\$11,000</b>

Again, the key to putting so much of the budget into loudspeakers is extremely careful matching of the amplifier's power output 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 works only 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



## Book Excerpt: Allocating Your Budget to Specific Components

based on a maximum expenditure of \$2000:

Integrated amplifier with DAC.....	\$1000
Loudspeakers .....	\$750
Interconnects and cables .....	\$250
<b>Total .....</b>	<b>\$2000</b>

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 percent on loudspeakers and about 10 percent on interconnects and cables.

I've heard systems at this price level that are absolutely wonderful musically. When carefully chosen and set up, a \$2000 high-end system can achieve the essence of what high-quality music reproduction is

all about—communicating the musical message. I've even heard a system with a total list price of only \$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.

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 unless you have confidence in the conditioner from reading credible reviews. A good approach is to take the audio system home, get it set up and optimized, *then* add a power conditioner and start experimenting with accessories. Here's why: not all AC conditioners make an improvement. In fact, some can 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—perhaps a few hundred dollars—for accessories. If they don't make a difference, you've now got a few hundred dollars to spend on records.

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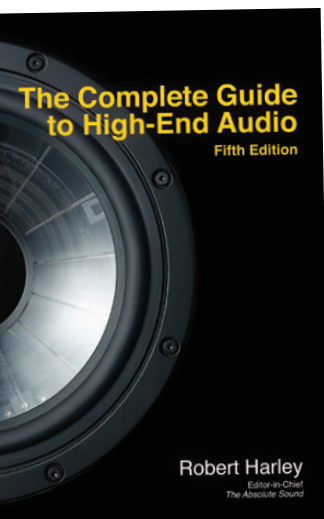


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# Sneak Preview

## Tannoy Revolution XT 8F Loudspeaker

Virtuoso Performer

Dick Olsher

It's no secret that Tannoy is one of the oldest and most prestigious audio brands in the world. The Revolution XT line represents a significant overhaul of its Revolution series. The trapezoidal cabinet shape has been retained, but the internals feature sweeping changes. The top-of-the-line 8F (\$2600), as well as the smaller 6F, are both floorstanders with integrated spiked bases (aka plinths). The numerical designation refers to the driver diameter, and in both cases the design can be best characterized as a two-and-a-half-way. In the 8F, the coaxial woofer is allowed to work into the bass while being augmented below 250Hz by an 8-inch woofer.

The star attraction is of course the new coaxial driver, said to be a fresh interpretation of Tannoy's point-source drive-unit philosophy—and a major milestone in more than 65 years of the company's audio research and development. The end result of Tannoy's engineering innovation is a superb midrange. I certainly could not

detect any obvious midband coloration. In fact, the vocal range was reproduced with exceptional timbral fidelity. My own personal reference, David Manley's *Lesley* album, never sounded any closer to the original mastertape.

A coincident driver's primary reason for being is coherence—the music's fundamentals and their harmonics originate from essentially the same spatial location. Thus it should come as no surprise when I tell you that the 8F generated a colossal soundstage populated by tightly focused image outlines. The listening sweet spot was enormous, making it effortless for me to virtually embed myself in a recording's acoustic space.

The Tannoy Revolution XT 8F was Robert Harley's top discovery at the 2015 Consumer Electronics Show. I'm in total agreement with his assessment: The Tannoy packs a virtuoso midrange that is competitive with speakers approaching \$10k retail. **tas**

[Full review in the next issue of TAS.](#)





# Electronics


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# Wyred 4 Sound mINT (Mini-Integrated Amplifier)

## Mighty Mite

Wayne Garcia

**T**hese 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.

## WYRED 4 SOUND 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 Wyred 4 Sound 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 Wyred 4 Sound 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 Wyred 4 Sound's DAC-2 in Issue 210, you'll recall his praise for designer EJ Sarmiento's work in the digital domain. Other mINT-y features include the option of using the Auxiliary 2 inputs in the home-theater-bypass mode (from a rear-panel switch) to loop in a multichannel processor. A preamp output can feed a powered subwoofer, while fixed outputs can drive signals to either a second system



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

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 Wyred 4 Sound 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

#### WYRED 4 SOUND

4235 Traffic Way  
 Atascadero, California 93422  
 (805) 466-9973  
 wyred4sound.com

#### ASSOCIATED EQUIPMENT

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

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## WYRED 4 SOUND 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 Wyred 4 Sound'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. (Wyred 4 Sound 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 Fend-

er Telecaster/Twin Reverb combo, with a nice sense of sustain and "bloom" as he played with different sonic voicings and dynamic shadings. Buckley's famous multi-octave voice, too, came through with an excellent sense of his distinctive phrasing—from a tender croon to raw passion—and sometimes goofy humor. The mINT was also good at defining the reverberant acoustic space of this recording, though imaging wasn't as exact as it might be, and the reproduction of the venue's air was not quite as billowy as I've heard.

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

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





# Micromega MyAmp DAC/Integrated Amplifier

Small Footprint, Big Performance

Neil Gader

**S**ome clichés in the high-end die hard. One of the oldest chestnuts says that size matters. It's the notion that one's status as an audiophile is somehow tied to the weight and girth of your components, your sagging equipment racks, and the thick ropes of cabling that feed each product. There was a time when I was guilty of falling for this nonsense, as well. After all, as an audio writer I've gotten pretty used to receiving some pretty intimidating components. We all know them, and in some sense are still seduced by their presence—those big amps and preamps, glowering, un-liftable hunks of metal laden with aggressive displays of exposed heat sinks sharp enough to shave truffles.

However, a funny thing has happened. Two funny things actually. First, computer-audio playback has revolutionized high-resolution listening, from the living room to the desktop. This has coincided with a renaissance in “personal” listening—that is, *headphones*, in-ear, over-the-ear, closed-back, or open-back, take your pick. The upshot is that the “bigger-is-better” cliché has been unceremoniously turned on its, well... ear. Today it's hip to be small. It's relevant and credible and high-res. In fact a tiny footprint has almost become a mantra, particularly among younger audiophiles.

Micromega has been in on this trend for some time now. The French company has been a purveyor of full-scale electronics and streamers as well as the “My Range” of modest mighty-mites like the MyGroov and MyZic and TAS' 2012 Product Of The Year, the MyDac. Inevitably, an amp would appear to fill the void, so please welcome MyAmp. More than an integrated amplifier, MyAmp is a complete digital hub with wireless streaming, analog and digital source switching, and a headphone amplifier. Impossibly little, it's the teacup poodle of DAC/integrated amps. At a mere 5.5-inch square it also leaves plenty of room on the desk for a nice pair of speakers. I can literally palm it and fit it in our Volvo's glovebox. Try that with your Soulution 701. MyAmp is enclosed in an all-business, textured ABS casing—translation, plastic. What? You were expecting the CNC-machined aluminum of a Rowland? Calm down. Micromega chose ABS for its non-conductive properties and lack of eddy currents.

More important are features like the healthy output—30Wpc into 8 ohms, which commendably doubles into 4 ohms. The unit's small size

suggests that the amplifier is based on Class D switching modules, but the amp is actually a Class AB design. The efficiency comes from a newly devised and highly unusual “LLC” power supply that reportedly delivers more power, tighter regulation, and a lower impedance than a conventional supply. Another factor in the unit's small size is the unusual forced-convection cooling system in which the power supply and amplifier output stage are cooled with a magnetic-levitation fan (no bearings) moving air through a tunnel. A thermal protection system shuts down the unit if it overheats, and also continually adjusts the fan speed.

The back-to-basics front panel houses a bevy of teeny buttons for source selection, plus a headphone mini-plug socket. Volume is indicated by a red-lit ladder display. Micromega states that the control is good to 256 steps in 0.5dB increments, but the indicator is so vague that it's virtually impossible to make precision, repeatable adjustments. Numerals would have been better. The DAC is the ESS Sabre Hyperstream DAC, the same chip found in many expensive units. Source switching is via FET-buffered relays—impressive in a \$649 product. The coaxial digital input is transformer coupled, and the USB input employs an isolation circuit to keep the computer's noise out of MyAmp.

Jam-packed is the only way to describe the back panel. It hosts three analog inputs plus three digital, a 96kHz/24-bit USB, and 192kHz/24-bit optical and coaxial/SPDIF inputs. There's also a direct analog output, a sub output, and full-sized multiway speaker posts. The three-pin 10-amp cord is removable. The MyAmp streams conventional audio via the hugely popular Bluetooth aptX module, an efficient and more user-friendly (I've found) alternative to WiFi.



## EQUIPMENT REVIEW - Micromega MyAmp DAC/Integrated Amplifier

This particular codec is also popular because it minimizes latency while improving bandwidth. Throw distance is always a consideration with Bluetooth, and depending on your home you can't really figure much more than twenty to thirty feet from the transmitting smart device. Pairing Bluetooth devices with the MyAmp was a breeze, and up to eight devices could join up. However, remember that when streaming from a device like an iPad/iPhone you'll need to disable any audio e-mail and push notifications as these bleeps, burps, and buzzes will temporarily mute the volume of the music. Of course, you can also connect a USB cable between your computer and MyAmp. Overall, MyAmp is designed to be an affordable, single-box solution for music lovers on a budget.

The MyAmp exemplifies what high-end audio should be about—solid sonics blended with

flexibility and adaptation. It can spend the day in the desktop environment, and then just as easily be reassigned for small system duties in a den or cozy family room. In fact, in my small room, the MyAmp handily drove the expressive Epos K1 loudspeakers, the foot-tall two-way reflex compacts I reviewed in Issue 148. Although the Epos is nominally a 4-ohm speaker that's rated at 88dB sensitivity, the Micromega seems to have plenty of power to drive it, even when subjected to the kind of evil hijinks that I put every review sample through. It impressively preserved the key strengths of the K1 including its open full-throated midrange, general poise under dynamic pressure, and solid imaging. Sonically I couldn't extract anything bad from the MyAmp, save that it was a bit subtractive in the most benign sense. For example, the airiness riding atop Norah Jones' cover of

"Cold, Cold Heart" was nicely preserved, if slightly shaded. Only the deeper bass pulses or power of orchestral percussion seemed slightly diminished in output and transient impact. For larger room applications, however, you'll likely want a solid 8-ohm speaker with higher sensitivity in the 90dB+ range. And there are plenty of them out there.

The MyAmp assumes an even greater comfort level with headphones. Of the models I had on hand it especially favored the higher-sensitivity models like the Cardas EM5813 (32-ohm/104dB), Audio-Technica ANC7b (300-ohm/109dB), and the B&W P3 (34-ohm/111dB). A few short minutes with one of these and MyAmp led me to understand why they call it personal listening. As I took in the opening verse of Bruce Springsteen's "Jungleland" from the 1975 concert at Hammersmith Odeon in London I could plainly hear Bruce leaning into the mike during some softly sung moments, and cupping it intimately between his hands for added effect. To gauge low-level resolving power I often turn to the backing harmonies of Fleetwood Mac's Lindsey Buckingham and Christie McVie from "Gold Dust Woman," a wonderful transfer from the 96/24 file. Behind Stevie Nicks' lead, these two distinctive voices emerged in stunning detail. And during Muddy Waters' "My Home Is On The Delta," a recording known for its terrific ambience and envelopment, everything was there, filling your ears with air and ambient cues. Waters' vocal was as lively and tonally accurate as I've experienced, although there was still that slight veiling on top and just a little speed-bumping of transients. Mind you, there are limits to the Micromega's transparency and dynamic slam. Sound-

staging is not epic, and imaging lacks the sort of pinpoint focus that locks each instrument down within an acoustic space. Quick aside: My personal pair of AKG K501s are cans of notoriously low sensitivity (120-ohm and 94dB) and they couldn't be driven effectively by the MyAmp—a reminder that headphone/amp matchups matter. Remember that Micromega makes a matching dedicated headphone amplifier (MyZic) for difficult-to-drive headphones.

The whole point of entry level is to pare away the extraneous and cut to the chase—performance. In this sense, the MyAmp flat out gets down to business. It's not alone, however, in this tough segment—it goes right up against the NAD D 3020 (Issue 239), an equally excellent competitor with comparable sonics, better looks, and the edge on price. But the Micromega offers more inputs and overall flexibility. The MyAmp is confirmation that *serious* comes in all sizes. It's a desktop dynamo to be reckoned with. TAS



### SPECS & PRICING

**Power Output:** 30Wpc into 8 ohms  
**Inputs:** Three analog, three digital  
**Dimensions:** 5.5" x 5.5" x 3"  
**Price:** \$649

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# Denon PMA-50 Integrated Amplifier

The First Rung on the Ladder

Vade Forrester

**M**emo to audiophiles: Most people don't appreciate your hobby. They think you're weird for using a stack of large, ugly, and (to them) insanely expensive equipment to listen to music. They are happier than (fill in your own favorite phrase) listening to music streamed over the Internet or stored on their smartphones and played through the earbuds that came with those phones. Perhaps, if they feel a need for better sound, they'll buy some better earbuds, or if they wanted to make an even larger improvement, some headphones or earphones to replace the earbuds. One thing we shouldn't lose sight of is that regardless of how they listen, they are passionate about music—just as we audiophiles are.

Occasionally, however, even these non-audiophile music lovers want better sound. Perhaps they'd like to use other sources, or switch from earbuds to loudspeakers. What should their first purchase of audio equipment be? My take: It should be small and attractive, packaged in a single box, have features that will actually be used, and not cost a lot. It should allow music lovers to use their existing sources with minimum effort. It should require the fewest possible ugly cables. And (drumroll, please): *It should be easy to use.*

Let's see how Denon's new PMA-50 integrated amplifier fulfills the requirements I just laid out. It has a completely modern DAC, which will play most PCM formats up to 384kHz/24-bit, as well as DSD64 and DSD128. That should accommodate most any computer audio file a user will likely encounter. It has an amplifier section rated at 50Wpc into 4 ohms, 25Wpc into 8 ohms, which should drive many speakers satisfactorily, especially in a small room like you might find in an apartment. It has five digital inputs: an asynchronous USB Type B jack, two TosLink jacks, a coaxial input on an RCA jack, and Bluetooth. There's also an analog input, which allows you to connect an analog source such as a turntable, although you'll need an external phono preamp as well. Rear outputs are limited to a pair of speaker terminals and one line-level subwoofer output so you can set up a 2.1 speaker system (left and right channels, plus a subwoofer). The front panel has a 1/4" headphone jack, a large central volume-control knob, an on/off switch, and a small status screen. It also has a button for selecting the source and one for turning on Bluetooth. The PMA-50 measures 7" x 3 <sup>25</sup>/<sub>64</sub>" x 10 <sup>5</sup>/<sub>32</sub>" and weighs in at 5 <sup>1</sup>/<sub>2</sub> pounds. It can be positioned horizontally or vertically. And at \$599, it's not crazy expensive. The PMA-50 is attractively styled, with brushed silver aluminum top, back, and bottom plates bent into a "U" shape. The front and side panels are also "U"-shaped pieces, painted black and nested into the top and bottom pieces. The recessed rear panel contains all the connections except the headphone jack. Like any recessed panel, it's a little hard to read, but setup is pretty much a one-time deal. The only cables you'll need are speaker cables and if you use

a wired digital source, a cable to attach it. So how well does the PMA-50 meet the specified requirements? I'd say it's right on target.

The PMA-50's small display screen to the right of the volume knob shows the type of input you're listening to, the sampling rate of digital recordings, and the input being used (e. g., USB-DAC). A graphic display shows you the volume setting when you turn the volume knob. (The display cleverly rotates if you orient the PMA-50 vertically.)

The PMA-50's remote control not only has all the controls on its front panel, but it also accesses a set-up menu which includes bass, treble, balance, and headphone-amplifier gain settings (low, medium, and high). There's also a three-position dimmer for the PMA-50 display, although, for once, I thought the brightest setting was just fine.

## Setting Up and Using the PMA-50

The PMA-50 ships with a Quick Start Guide printed in three languages, a CD which contains the full manual as a PDF file, a remote control, a USB cable, and a basic power cord which has only two conductors—no ground connection. The Quick Start Guide had clear, straightforward instructions, which were easy to follow. The full manual was also well laid out, and information was easy to find and understand—just what an audio-system novice needs. The CD manual is actually easier to navigate than the paper manual.

If you want to plug your Windows computer into the PMA-50, you'll need to install a driver, which is available as a download from the Denon website. Installing the driver is quite straightforward, requiring minimal computer skills. Linux or Macintosh computer users won't need to bother with drivers. But regardless of which operating system you use, you'll need to adjust the settings of your music-playback software so it works with the PMA-50. For the J. River Media Center software I use on my Windows laptop that meant I had to click Tools/Options and set the Audio Device to Digital Audio Interface (Denon USB Audio) so J. River would be able to use the installed driver.

The PMA-50 needed some break-in time to sound its best.

## EQUIPMENT REVIEW - Denon PMA-50 Integrated Amplifier

Right out of the box, it was bright and brittle, but with 100 hours of use, it started to sound fuller and smoother, with substantially deeper bass. And it continued to improve with more break-in. It ran slightly warm to the touch.

To use headphones with the PMA-50, just plug them into the jack on the front panel. If your headphones don't have a 1/4" plug, you'll need an adaptor; one may have come with your headphones. If you want to use speakers, you'll need speaker cables with bare wire or banana plug terminations. The speaker cable binding posts won't accept spade lugs. Speakers from 4 to 16 ohms will work with the PMA-50. When you plug in your headphones, it cuts off the speaker output.

Because they are easy to drive, I used some old Soliloquy SM-2A3 bookshelf speakers. Originally designed for compatibility with single-ended triode (SET) amplifiers, the SM-2A3s were rated at a highish 91dB sensitivity. A rear port loads the 5 1/4" mid/woofers. I used Kimber 4VS speaker cables to connect the PMA-50 to the speakers.

Departing from my usual reviewing routine, I started my PMA-50 listening sessions using headphones, since I expect that's how many people will first use the amplifier. I tried the following headphones: HiFiMAN HE-400, NAD Viso HP50, AKG K712, and Audeze LCD-X. The PMA-50 drove them all to satisfactory levels, though I'm no headbanger. The power-thirsty HiFiMAN HE-400 was the hardest to drive, but the PMA-50 handled it well when set to the mid- and high-gain positions, extracting a level of treble detail not always heard through those headphones. Most of my critical listening was

done with the AKG K712 headphones, since they were the type of medium-priced headphones someone would likely use with the PMA-50. Though not unusually hard to drive, the K712s benefit from some amplifier power, so I set the PMA-50 to the medium-gain position.

It was easy to establish a Bluetooth connection to my iPhone 6; I just pressed the Bluetooth button on the front panel and the PMA-50 started trying to pair. When it appeared in the iPhone Settings under Bluetooth, I just pressed "PMA-50" on the menu and I was in contact. You can play music from the smartphone, or stream music from on-line sites. When you want to switch back to the USB input to play music from the computer, press the input source selection button on the front panel.

The PMA-50 switched between PCM and DSD flawlessly, always displaying the correct format and sampling rate on the front panel. That should be no big deal, but it doesn't always happen, even with very expensive gear.

### Sound

*With headphones.* A novice hi-fi buyer who's used to listening to a smartphone with headphones may find the PMA-50's headphone amplifier its most immediately appealing feature, so that's where I started. The PMA-50 sounded smooth and relaxed. There was no peakiness or etch present in the sound, although the high frequencies were extended. On Alex de Grassi's *Special Event 19* (DSD64/DSF, Blue Coast Music), the PMA-50 played the track "Shenandoah" with gobs of harmonic detail, and the drone effect of de Grassi's

unusual guitar came across clearly. Transient detail was accurately portrayed, but not overemphasized. I was reminded how excellent this recording is.

On Jordi Savall's *La Folia, 1490-1701* (ripped to AIF format from Alia Vox AFA 9805), the track "Folia: Rodrigo Martinez 1490" displayed exceptional transient response; the sharply struck castanets had an almost physical impact. However, the *cascabels* (sleigh bells) seemed a little recessed, indicating perhaps a bit of a treble irregularity. The PMA-50 produced a lot of powerful bass from the headphones; however, it lacked the deepest extension that I hear with the subwoofer I use with my speakers. Even with the bass-rich HiFiMAN headphones, I didn't hear the subterranean frequencies on this track. The midrange seemed slightly elevated, making it easy to hear Savall's viola da gamba playing the main theme. I could distinguish between the harp and baroque guitar. (Since they play similar phrases, sometimes they tend to sound a bit alike.)

A little surprised at the PMA-50's lack of the deepest bass, I queued up Holly Cole's album *Temptation* (DSD64/DSF, Acoustic Sounds). The track "Invitation to the Blues" opened with tons of bass power and detail. So why was there an apparent difference from "Folia Rodrigo Martinez"? Well, while there's lots of bass on the Holly Cole album, it was not as deep as the bass on "Folio Rodrigo Martinez." In the midrange, Cole's voice caressed the superbly recorded songs with rich harmonics and delicate vocal nuances—a real hi-fi showcase which contradicts the urban audio legend that

excellent performances are invariably cursed with poor recordings.

At the risk of overdoing female vocalists (is that possible?), I queued up Rebecca Pidgeon's *The Raven* (176.4/24 FLAC, Chesky/HDTracks, remastering by Bob Katz). On "Kalerka," Pidgeon's soprano exhibited a bit of sibilance I've not often heard in this recording. Throughout, this album sounded a smidgen overemphasized in the upper midrange, though still very clean and detailed.

I wanted to check how music via Bluetooth compared to music from a wired computer connection, so I ripped the CD *La Folia, 1490-1701* in AIF format to my iPhone and played "Folia: Rodrigo Martinez 1490" over Bluetooth.

## SPECS & PRICING

- Rated output:** 25Wpc (8 ohms, 1kHz, THD 0.1%); 50Wpc (4 ohms, 1kHz, THD 1.0%)
- Output connectors:** 1/4" (6.3 mm) headphone jack; four 16-ohm speaker terminals
- Audio formats:** Digital audio interface (Linear PCM)
- Communication system:** Bluetooth version 3.0
- Supported profiles:** A2DP 1.3/AVRCP 1.5
- Supported codecs:** aptX low latency/AAC/SBC
- Price:** \$599
- Warranty:** 3 years, parts and labor

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## EQUIPMENT REVIEW - Denon PMA-50 Integrated Amplifier

I cranked the volume setting on the iPhone's Music app to its maximum setting and controlled the headphone volume with the PMA-50's volume control, which worked fine; the PMA-50 Bluetooth gain was compatible with the iPhone's Bluetooth gain. Through the Bluetooth connection, everything sounded very clean; however, the highs were a bit overemphasized. I should note that although I tried the Bluetooth connection after the amplifier had broken in, I didn't make a special effort to break in the Bluetooth connection itself. I don't know if that would have made a difference, but I couldn't live without my phone long enough to break in the Bluetooth. Wait—did I just admit I can't live without my iPhone? How sad.

*With speakers.* I didn't expect a lot of bass from the Soliloquy speakers' 5 1/4" mid/woofers. Often, speakers designed to work well with an SET's low damping factor sound lean and thin driven by solid-state amplifiers, which tend to have fairly high damping factors. So I was pleasantly surprised when I heard robust, powerful bass from the PMA-50 with the Soliloquies. In particular, the bass on "Invitation to the Blues" was more powerful than expected, with lots of detail. Holly Cole's vocals were quite clearly defined, and highs were smooth but extended.

As expected, through loudspeakers "Shenandoah" showed more dimensionality. There actually was a decent soundstage! The tonality of de Grassi's guitar was rich and full. On another song on this album, I was startled when de Grassi whacked the body of his guitar. Since the Soliloquy speakers were easy to

drive, the PMA-50 never came close to clipping. Unless you try driving low-sensitivity speakers quite loudly, I suspect the PMA-50 will work fine in a small room.

### Comparison

I didn't have a classic integrated amplifier to compare to the PMA-50, so I used another type of integrated amp, the Light Harmonic Geek Out 450. Reviewed in Issue 251, the Geek Out sees daily use driving a variety of headphones in my office computer system. J. River Media Center version 20.0.63 is the music playback software I use to drive the Geek Outs through their supplied 6" USB cable. Like the PMA-50, the Geek Out includes a DAC and a headphone amplifier, but not a power amplifier to drive speakers. Its power is provided by a computer's USB port.

Starting with "Folia: Rodrigo Martinez 1490," transients created by the percussion instruments really snapped. High frequencies were extended but not peaky. For a headphone amplifier, the Geek Out 450 really has a surprisingly good soundstage. It doesn't compete with speakers, of course, but for headphones it's pretty remarkable. Bass was powerful and extended. Only a few other headphone amps have produced deeper bass.

On "Shendoah," the Geek Out 450 produced a resonant sound with extended highs. The drone effect of de Grassi's guitar was pronounced, giving it an ethereal sound. Transients were quite well defined. The harmonic structure of the guitar was rather well portrayed, giving a very realistic guitar sound.

Holly Cole's "Invitation to the Blues" opened

with crushing bass. Through the Geek Out 450, her vocals were better defined than with the PMA-50. Cole's occasional coarseness in her vocal production was extremely realistic. Cymbals had that distinctly metallic sound, with sharply-defined leading-edge transients.

Pidgeon's "Kalerka" had a smidgen of emphasis on sibilants, but was clean and open-sounding.

As an aside, I still have trouble believing the Geek Out 450 costs only \$199. But it doesn't drive speakers.

### Competition

I haven't listened to these competing components, but thought it might be useful to compare their features and specifications. The \$799 Sony UDA-1S or UDA-1B (silver or black) is a more conventional-looking integrated amplifier with USB and coaxial digital inputs, an analog input, and both headphone and speaker outputs. Power output is rated at 23Wpc at 4 ohms, but at a rather high 10 percent distortion. It has a remote control. It plays DSD and PCM high-resolution files. Unlike the next two amplifiers, it does not have a Bluetooth input.

The PS Audio Sprout is priced at \$799 and is rated at 50Wpc at 4 ohms, 33Wpc at 8 ohms (no distortion level given), and comes in silver with a walnut top. It includes a moving-magnet phono preamp, but not a remote control. It plays only PCM computer audio files, not DSD. Its headphone amplifier produces enough power to drive most headphones. If you have power-thirsty headphones like the HiFiMAN HE-6, you'll probably already have a headphone amplifier capable of putting out the high power

they require, but for most headphones, the Sprout should be adequate. It has a line-level analog input and output on stereo jacks, and a phono input on RCA jacks. If you have a turntable, the Sprout would be the clear choice. I'd kinda like a remote, though.

The \$499 NAD D3020 is rated at 30Wpc at 8 ohms, but claims to produce much higher dynamic power. Its DAC is rated at 192kHz sampling rate/24-bit word length through its SPDIF input, 96/24 through its USB input. As those specifications imply, it does not play DSD files. A remote control is included. It has two analog inputs and a subwoofer output. No information is given about the headphone output. It comes in typical dark-grayish NAD color. It's designed to be oriented vertically, with the volume control on top.

### Bottom line

In my view, the Denon PMA-50 hits the bulls-eye as a beginner-level hi-fi component: It looks good, sounds good, has a lot of features for its price, is easy to hook up and blessedly easy to use. Its features, including its remote control and the increasingly popular Bluetooth connectivity, are genuinely useful. Even though its power is limited, it's very competitive at the price. Actually, there's no reason to restrict all this hi-fi goodness to beginners; it would make a terrific centerpiece for a bedroom or office system. Pricewise, I can't think of a better value. The Denon PMA-50 may not be state of the art (what would you expect at its price?), but it may be state of the start(up). tas

# 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 wansounding 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 phonostage. 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



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

silver) in the reassuring form-follows-function 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. **tss**

## 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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# Arcam FMJ A19 and airDAC

## Dynamic Duo

Spencer Holbert

**Though integrated amplifiers have been around a long time, they are often mixed bags. Some models try to do too many things at once, losing focus on what we listen for first—sound quality. Whether you are looking to purchase your first real hi-fi component or an affordable option for a second system, the Arcam FMJ A19 integrated amplifier delivers real high-end sound quality, without the high-end price.**

### Functionality and Sound

Though the A19's design is understated—downright minimalist, actually—don't let its lackluster exterior fool you. The A19 borrows heavily from its bigger and more expensive siblings, with features like a toroidal

transformer for its 50W Class AB output stage and the same volume control as top-tier FMJ models. With seven single-ended inputs, the A19 makes plenty of room for those with lots of sources—enough for two turntables, two DACs, a tuner, and your dad's old tape deck. Even if you

don't need all of them today, those extra inputs may come in handy down the road. Because of the resurgence in vinyl, Arcam has upgraded the A19's built-in phonostage to better reflect current listening preferences. The remote is a basic design, with the ability to control every feature except for a few user preferences that are adjusted via several button-combinations on the front panel. Despite some quirks that I will discuss later, overall this integrated offers everything you need for a mere \$999.

Now for the real meat—sound quality. Using components that I am very familiar with, I tried to determine exactly what the A19 does or does not bring to the listening room. After level-matching the A19, I was actually shocked to hear significant differences between the Arcam and several other integrations of similar specifications. The A19 is incredibly quiet compared to many components. Even when I turned the volume all the way up there was no audible hiss coming from the speakers; so you don't need to worry about distortion and noise with this amp. I hate to be the one who brings up THD, because as we all know this is by no means a measure of sound quality, but the A19 has a harmonic distortion rating of 0.003 percent at eighty-percent power—and that's low.

Listening to Ludovico Einaudi's "Experience" from *In a Time Lapse* (CD and vinyl), I heard a smooth high end that never sounded overly bright or grainy. The A19 was convincingly realistic on Einaudi's piano, and when the violins—arguably the most difficult instrument to accurately reproduce—joined in with their unusually sonorous solemnity, I felt like I was

listening to a genuine high-fidelity product (even though Arcam doesn't like to be associated with a "hi-fi" sound). So far so good.

I played the track several more times, then shifted my attention to the soundstage, which was on-par with what you would expect in this price range: generally wide, sufficiently detailed, with overall tight imaging (though somewhat misplaced locations compared to ultra-high-end systems). Soundstage depth was less deep compared to those more expensive systems, but nevertheless was plenty deep to satisfy all but the most demanding. What makes *In a Time Lapse* great for soundstage testing is that it was recorded in an Italian monastery with sound quality in mind, so it's very easy to tell when something is amiss. On "Experience," a harp placed behind and to the left of the piano is gently plucked amid the increasingly energetic violins. The Arcam A19 had sufficient resolving capabilities to allow the distant harp to be heard, though don't expect extreme soundstage depth with this—or any—integrated in this price range.

Maybe I'm being a little too tough on the A19's lack of soundstage depth. After all, imaging was fairly tight and was for the most part reasonably well executed. No "I'm there!" moments occurred, but nothing was egregiously wrong—complex soundstages are a difficult thing to resolve on such a tight budget. Then another thing announced itself: the slightly tubby bass. Low-end damping ability was a little lacking with the 4-ohm Endeavor E3 floorstanders. Yet, when compared to similarly priced integrations, low-end handling was equal to or slightly better, so no worries here.

I don't want you to give you the wrong

## EQUIPMENT REVIEW - Arcam FMJ A19 and airDAC



impression of the A19 by pointing out these things—they are meant to give you a realistic idea of what a \$999 integrated amp can accomplish. With regard to sound quality, \$999 buys you a musical, involving presentation with above-price-point performance in imaging. At

50W into 8 ohms and 90W into 4 ohms, the Arcam has plenty of power to rock out with most dynamic speakers, and its build-quality is solid. Really, it feels like a tank.

Overall, the A19 is an integrated that I would want to own at this price point. In fact, a hi-

fi newcomer friend of mine purchased it after a weekend of listening—that’s how much he liked it. Just know that “best-sound-ever” claims can’t be firmly rooted in the sub-\$1500 category; this integrated will help hook you on high end, but it won’t be the end-all, which is exactly what you want when you’re starting out—something that’s so good you want even more.

### British Quirks

The A19 has a few quirks that can be misconstrued as design flaws by those unfamiliar with the new British energy-consumption standards, so don’t panic if you come across them out of the box. I generally leave new components on 24/7 during the first week or so, but this proved problematic with the A19 due to the integrated’s auto-shutoff function. The first time this happened to me, it took a little while to figure out what had gone awry. I went in my listening room to find the A19 in standby, and pressing the power button and volume controls on the remote didn’t seem to wake it up. I assumed the integrated just needed to be cycled, so I turned it off and back on, and had the same issue. It turns out that if you power off the unit via the front-panel power button, the A19 defaults to standby, supposedly in case of power outages. Finally, I turned the volume knob on the unit and presto—it came alive again. The solution is to press the “Aux” and “Balance” buttons simultaneously to adjust this feature, and disable auto-standby altogether.

### Arcam airDAC

Along with the Arcam FMJ A19, I also received Arcam’s latest foray into networked DACs,

## SPECS & PRICING

### Arcam FMJ A19

**Inputs:** Six line-level RCA, one moving-magnet phono input, one 3.5mm

**Outputs:** Record out, preamp out

**Power:** 50W into 8 ohms; 90W into 4 ohms

**S/N ratio:** 105dB

**Frequency response:** 20Hz-20kHz +/-0.2dB

**Dimensions:** 17" x 11" x 3"

**Weight:** 19 lbs.

**Price:** \$999

### Arcam airDAC

**Inputs:** TosLink, digital coax, network UPnP (Ethernet), AirPlay

**Outputs:** RCA, digital coax

**DAC chip:** TI PCM5102

**Frequency response:** 10Hz-20kHz +/-0.1dB

**S/N Ratio:** 106dB

**Output level:** 2.15V RMS

**Sample rate:** Up to 96kHz/24-bit

**Dimensions:** 7.5" x 4.75" x 1.75"

**Weight:** 2.5 lbs.

**Price:** \$699

### ARCAM

The West Wing

Stirling House

Waterbeach

Cambridge CB25 9PB

UK

arcam.co.uk

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## EQUIPMENT REVIEW - Arcam FMJ A19 and airDAC

the Arcam airDAC (\$699). I consider myself pretty computer-savvy, so I found setup was straightforward. But if you've never fiddled with a wired or wireless computer network in your house, the airDAC is going to throw some curveballs. The manual stated that it was possible to set up the airDAC wirelessly and provided an IP address to do so, yet I couldn't connect without first using a direct-wired connection between my laptop and the DAC. Like I said, this is nothing new for people who have set up a home network, but if you have a desktop computer and no network, you will need to connect the computer and airDAC directly via Ethernet cable in order to adjust initial settings.

After the airDAC was set up, it was pretty smooth sailing. Using the free Arcam SongBook+ app for iPad, the airDAC found my RAID drive and other network-attached hard drives. The airDAC automatically indexed music from the hard drives, though it didn't distinguish between hard-drive partitions and displayed duplicate songs—a minor detail. The app is extremely fast, though it is a "light" version and doesn't display album artwork while scrolling through artist or album lists.

The airDAC features four input methods: TosLink, digital coax, Network Attached Storage (NAS) management, and Apple AirPlay. The first three methods worked just fine, sounded great, and provided everything you would expect from a networked DAC in this price range. The airDAC was about ninety percent of the sound capability of standard (non-networked) component DACs of similar pricing, which was more than I expected. The Apple AirPlay

feature was, well, underwhelming. It's limited to 16/48 (Apple's fault, not Arcam's), which is something I can live with, but there was a major delay between streaming from my laptop and the airDAC. When I hit Pause, almost three seconds went by before the song would pause. When I attempted to stream Netflix movies, the video and sound were so out of synch that I switched back to some Bluetooth speakers after only thirty seconds. This lag persisted even after I restarted both my computer and the airDAC and checked my settings. I have gigabit routers and switches in my network, and such lags have never been an issue with other devices. The point is, forget the Apple AirPlay and stick with the other inputs.

But the airDAC has one huge advantage over the competition: Music streaming from a NAS drive. With the airDAC, gone is the need to have a noisy computer or a finicky Mac Mini in your listening room. Simply transfer your music to an external NAS drive, plug it into the airDAC via Ethernet, and you're done. For \$699 plus a NAS drive (roughly \$100-\$200 depending on size), you get a music server and DAC that can be controlled from your smartphone or tablet, and that's huge. The airDAC can build playlists from multiple drives, stream everything seamlessly and with great sound quality, and it's a bargain. Unfortunately, the UPnP network streaming is limited to 96kHz/24-bit, but most people looking for an affordable music-server solution will be just fine with the airDAC's capabilities. For those of you who have amassed an enormous number of digital music downloads, like I have, the airDAC will satisfy your music-management needs. **tas**



### NuPrime IDA-8

#### Ultra Low Noise Class A+D Integrated Amplifier with DAC and Wireless Port

NuPrime's new Class A+D hybrid amplification technologies deliver the substance and warmth of Class A amplification and the efficiency and speed of Class D technology in a milieu of unmeasurable noise. The IDA-8's spacious, transparent, dynamic and luxuriously textured soundstage has to be heard to be believed.

- Ultra-Linear Class A Module (ULCAM) achieves audiophile-quality sound with Class-D's dynamics, speed and efficiency
- State-of-the-art DAC supporting USB PCM 384 and DSD256, that is also capable of decoding DoP formats via coaxial and optical inputs
- THD+N lower than 0.005% with a -130dB S/N ratio
- NuPrime SRC IC chip provides FPGA processing with ultra-low jitter and distortion
- NuPrime vibration-free isolation feet (patent pending\*)
- Analog line-out (Sub Out), with 3X the standard output power
- Four digital inputs and one stereo input for complete system flexibility
- Extension port for Bluetooth dongle and WiFi audio streaming (optional)

MSRP \$995



# NuPrime DAC-10H DAC/Pre and ST-10 Power Amplifier

Truly High Performance for Less

Steven Stone

In 2014, NuForce's cofounder, Jason Lim, with backing from the OEM factory, bought the assets of NuForce's high-end division, obtained the rights to NuForce technologies, and formed NuPrime Audio, Inc. Shortly afterward the NuForce company was sold Optoma.

NuPrime's first offering, the IDA-16 integrated amplifier, was reviewed by Vade Forrester (Issue 252). He concluded that, "I wouldn't be ashamed to put it on a shelf next to the fanciest component." NuPrime's latest, the \$1795 DAC-10H DAC/Pre and the \$1595 ST-10 basic power amplifier, are slightly more expensive than the \$2600 IDA-16 integrated amplifier, but promise an even greater level of sonic refinement and flexibility. How do they stack up in this highly competitive price range? Let's see.

## The DAC-10H

Although the DAC-10H is only 2.4" high by 8" wide by 14" deep, which corresponds to roughly half the width of a "full-sized" component, it packs a lot of features and performance into a small package. The DAC section is built around the ESS Sabre Reference ES9018 32-bit DAC chip. According to NuPrime this DAC chip can deliver 135dB signal-to-noise with -120dB total harmonic distortion levels. To reduce time-domain errors the DAC 10H utilizes symmetrical

signal processing combined with asynchronous data transfer. It supports PCM up to 384/32 and DSD up to 256.

On the analog side, the DAC-10H has borrowed from the NuForce P-20 preamplifier the stepped, thin-film switched-resistor ladder network for controlling volume. This method uses a MUSES chip combined with a proprietary look-up table to ensure that only a single resistor is in the signal path at any given volume setting. The volume adjustment

## EQUIPMENT REVIEW - NuPrime DAC-10H DAC/Pre and ST-10 Power Amplifier

is in 0.5dB increments and is displayed via a 0-to-99-numbered system on the front panel. Comparing different sources using these precise and repeatable volume adjustments was a pleasure.

In addition to the 99-step volume control, the DAC-10H also has dual gain settings for its outputs—the single-ended RCA output can have a maximum voltage of either 2 or 4 volts while the balanced XLR outputs have 4 and 8 volt levels. The headphone output also has two levels for the balanced and unbalanced output to allow for different headphone sensitivities and impedances.

In its input stages the DAC-10H uses ultra-low-noise JFETS with independent left and right power supplies that come from a multi-rail toroidal transformer coupled to a linear power supply. This helps achieve a crosstalk attenuation specification of at least 93dB at 1kHz.

The DAC-10H has two headphone outputs: a single-ended and a balanced connection. Both have the same output impedance of less than 10 ohms. The balanced headphone circuit uses an OPA2134 op-amp as a buffer for the pair of NuPrime-branded IC chips used to drive the balanced headphone outputs.

### Setup and Ergonomics

The DAC-10H front panel has some stylistic similarity with earlier NuForce designs that lean toward a modernist aesthetic of understated minimalism. On the upper left side of the front panel, you will find a single-ended headphone connection while on the right is the balanced connection. Between them is a

discrete set of LEDs that display the source and the bit rate (if any) being generated by that source. Under the display and headphone connections is a single row of rectangular buttons. From right to left, they include the low/high output switch, down volume, power on/off, volume up, mute, and headphone volume selector switches. The only labeling on these buttons are small graphic symbols.

On the back panel of the DAC-10H, you'll find two pairs (one single-ended RCA and one balanced XLR) of variable output analog connections, two pairs of single-ended analog inputs, two coaxial SPDIF inputs, two TosLink digital inputs, one USB 2.0 input, and an IEC AC power connection. While that sounds like a lot of connections to fit into a relatively tight space, the layout on the DAC-10H allows for easy access to all the inputs and outputs.

The overall fit and finish of the DAC-10H is commensurate with its technical specifications. All surfaces are impeccably finished. The little flourishes, such as the thin chrome bands around the two headphone outputs, give the DAC-10H an unmistakable flash of panache.

For most of the review the DAC-10H's balanced outputs were tethered to the NuPrime ST-10 power amplifier. The unbalanced outputs were split, one leg routed to a Velodyne DD10+ subwoofer, the other connected to an outboard headphone amplifier.

The DAC-10H comes with a unique-looking remote that is eight inches long and hexagonally sided. It's the same remote that NuPrime uses with the IDA-16 integrated amplifier. It duplicates all the controls on the DAC-10H, which is fortunate because if the DAC-10 is

located beneath your desk—as it usually is in my nearfield system—it's very difficult to use it “by feel” since all of its buttons feel identical. To ensure that you are pushing the correct button requires counting across from right or left. Ninety-nine percent of the time I used the remote, I found its angle of acceptance to be quite wide, even more so than most units I've used. My only complaint is that all the buttons rattle; in fact, they rattle so much that the DAC-10 remote is suitable for use as a percussion instrument.

During the review period I tried all manner of digital sources, from lowly 128mps MP3s to 128x DSD and 192/24 PCM. In every case, the DAC-10H played the files without incident. I'm also happy to report that during the review period the DAC-10 proved to be an extremely trouble-free component. Unlike many devices, the DAC-10H was absolutely silent during turn-on and turn-off with no thumps, clicks, or buzzes. Also, when you change inputs or unmute the DAC-10H, it does a gradual volume ramp-up instead of giving you the full volume setting immediately; this allows a user time to lower the volume if it was set too high from the previous input.

Considering its a plethora of input options, I see no reason why, despite its diminutive footprint, that the DAC-10H would not be up to the task of serving as the control center of a highly evolved audio system—it even has a home-theater bypass mode so you can use it in conjunction with a multichannel AV processor.

I tried a wide variety of headphones with the DAC-10H. With my most sensitive custom in-ears, the Westone ES-5, there was a slight

amount of low-level hiss. On the other extreme, using the single-ended outputs, the DAC-10H had no trouble driving a pair of Beyer Dynamic DT-990 600-ohm headphones well past satisfying levels. The balanced outputs worked splendidly with both the Mr. Speakers

## SPECS & PRICING

### DAC-10H DAC/Pre

**Inputs:** One USB digital, two coaxial digital SPDIF, two optical digital SPDIF, two analog stereo RCA

**Outputs:** Optical (up to 24-bit/192kHz), stereo RCA (line out), stereo balanced (XLR-3 socket pre-out), balanced headphone amplifier (XLR-4 socket), unbalanced headphone amplifier (6.3mm jack socket)

**USB sampling rates:** 44.1kHz-384kHz and DSD 2.8MHz, 5.6MHz, 11.2MHz

**Max. output power:** 680mW @ 1kHz and 600-ohm load at the XLR-4 output

**Dimensions:** 8" x 2.4" x 15"

**Weight:** 10.5 lbs. (4.8 kg)

**Price:** \$1795

### ST-10 Power Amplifier

**Input:** Two RCA

**Output:** Five-way binding posts

**Power Output:** 150Wpc at 8 ohms

**Gain:** 28dB

**Input Impedance:** 23.5k ohms

**Sensitivity:** 0.89V to rated power

**S/N Ratio:** 110dB at 1W, 10W, 100W

**Dimensions:** 215.4mm x 59mm x 394mm

**Weight:** 13.4 lbs. (6 kg)

**Price:** \$1595

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## EQUIPMENT REVIEW - NuPrime DAC-10H DAC/Pre and ST-10 Power Amplifier

Alpha Prime and HiFiMan HE-560 headphones. My original Grado RS1 headphones also had excellent bass extension and drive when connected to the DAC-10H's balanced output.

### The Sound of the DAC-10H

For me, the most outstanding aspect of the DAC-10H's sonic performance was its silence. Even with DAC/preamps that have almost the same signal-to-noise specs, I can usually hear differences between the "silences" at full output compared with fully attenuated outputs (bear in mind that in my nearfield system the speakers are only three feet away from my listening position and my room is very quiet). With the DAC-10H/ST-10 combination I could hear only the very faintest added hiss at full levels when I moved my ears within a few inches of a tweeter, but at the listening position I heard nothing. And why should this be such a good thing? Because the DAC-10H's excellent signal-to-noise ratio lets the music emerge from silence with a level of delicacy and subtlety that more closely approaches what I hear from a live musical event than do noisier DAC/preamps which don't have the same signal-to-noise capabilities.

Inner detail and low-level resolution through the DAC-10 are as good as I've heard through any DAC including the Antelope Audio Platinum DSD DAC. The differences in depth recreation and soundstaging precision between my original 128x DSD recordings and 44.1 down-sampled versions were immediately obvious when comparing them through the DAC-10H.

Depending on the recording, the sense of three-dimensionality portrayed through the

DAC-10 can be nothing short of remarkable. Listening to B. B. King's classic album *Live at the Regal* over the TIDAL app combined with the latest Amarra SQ+ 2.1 on my Mac Mini connected to the PS Audio DSD DAC, it was easy to hear how the audience sound comes from a point well behind the lateral plane of the band. Also the clarity and tightness of the electric bass was exemplary.

Since I also have an early stereo LP pressing of the same recording as well as a CD version, I was able to do some A/B/C listening, comparing the TIDAL stream with the ripped CD played back through Amarra Symphony, and then the LP played back via my VPI TNT III turntable with Graham 1.5 tonearm, ClearAudio Victory II cartridge, and Vendetta 2B phono preamp.

While the differences in soundstaging, depth, and frequency extension were essentially non-existent between the CD and the TIDAL stream, the LP had noticeably superior dimensional portrayal—instead of a wall of audience there was an individualization of each voice heard within the audience. Also B.B.'s vocals on the LP had more immediacy and dynamic energy. A friend who was present during the comparisons said to me, "I wish I could have the top end, midrange, and spatial characteristics of the LP in the digital copy, and the low-frequency clarity and punch of the digital on the LP." Yes, the DAC-10H's analog section and stepped volume control is capable of passing through even the subtlest of audible information in both the analog and digital domains.

Using the DAC-10H's headphone output I was impressed by the solidity of the image, the delicacy of upper frequencies, and the

control of lower frequencies. Compared with the built-in amplifier in the Oppo HA-1, which was the DAC/pre I had in the system previously, the DAC-10H was a step up, both in its ability to drive difficult headphones via its balanced connections, and in its portrayal of low-level detail. I also compared the DAC-10H's headphone outputs with a dedicated single-ended tube headphone amplifier (since it has not been officially released or unembargoed I can't reveal its name yet). The DAC-10 was its equal for midrange purity and upper frequency extension. In the bass, the DAC-10H was more controlled with better inner detail and dynamic punch. My conclusion: The DAC-10H's headphone outputs are good enough to make the need for an external, dedicated headphone amplifier optional—and for many headphones, superfluous.

### The NuPrime ST-10 Power Amplifier

The NuPrime ST-10 amplifier is what NuPrime calls "near-reference class." Why only near-reference? As far as I can tell it's so called because this stereo amplifier only puts out 150 watts per side into an 8-ohm load. The ST-10 utilizes NuPrime's proprietary, fourth-generation V4 amplifier module. According to NuPrime, this latest version offers substantial improvements including a 20dB reduction in the noise floor, a shortened circuit pathway design, increased output current, and 600kHz as the power amp's switching frequency. Other improvements over earlier designs include a new linear power supply that employs a high-efficiency toroidal transformer; superior reliability when not under a load, and an

enhanced even-order harmonic circuitry that according to NuPrime, "resembles the most attractive features of tube-amp sound."

Although the ST-10 is a "digital" power amplifier, it is not a standard Class D switching amplifier. According to NuPrime's owner's manual, "Instead of the conventional sawtooth configuration, NuPrime's patented circuit design uses an analog-modulating signal that adds neither noise nor jitter. Rather than reverting to off-the-shelf solutions, NuPrime's in-house advances have further unlocked the switching amp's potential without the difficulties pure digital-switching amplifiers simply cannot avoid." The cliché that should follow would be, of course, "Not your father's Class D amplifier."

Among its technical advantages, the ST-10 has a damping factor of 400, which means it should be able to control any excess diaphragm movement better than an amplifier with a lower damping factor specification. The ST-10 also has far lower amounts of phase shift than most amplifiers due to its unique closed-loop circuit design.

The front panel of the ST-10 closely resembles that of the DAC-10H except it has fewer buttons and lights. Actually the ST-10 front panel has exactly one button, on the left side of the faceplate, and one light on the right side of the faceplate. That's it, apart from the NuPrime logo in the center.

### Setup and Ergonomics

Although the ST-10 provides 28dB of gain rather than the usual standard 26dB, for most systems this won't be an issue, and many systems will

## EQUIPMENT REVIEW - NuPrime DAC-10H DAC/Pre and ST-10 Power Amplifier

benefit from that extra 2dB of gain. The ST-10's rear panel has all the connections that you would expect on a basic power amplifier: one pair of balanced XLR inputs, one pair of single-ended RCA inputs, one set of stereo outputs using five-way binding posts, 12-volt trigger connector, an IEC AC connector, and a toggle switch for balanced or unbalanced input selection. However, unlike many stereo power amplifiers, the ST-10 doesn't have provisions for bridging it into a mono mode.

When you push the on/off button on the front panel you will hear a soft click from the amp's relays after a second, and then it's good to go. When you turn the ST-10 off, it has a delay of approximately ten seconds before it shuts down completely.

### The Sound of an ST-10

Over the years I've reviewed and used plenty of digital power amplifiers from Bel Canto, Wyred 4 Sound, April Music, and others, and I appreciate what a well-designed model can bring to a system. And it happens that the ST-10 is the best digital power amplifier I've heard to date.

As you might have gathered from its specifications, the ST-10 is a very quiet, extremely low-noise power amplifier that, as long as it isn't pushed into clipping, sounds exceedingly neutral and uncolored. I tried the ST-10 with a variety of speakers from the fairly inefficient 84dB-sensitivity Aerial Acoustics 5B to the 95dB-sensitivity Audience 1+1, as well as the ATC SC7 II, Dunlavy SC-1AV, and Mirage OM3. In every case the amplifier did a superb job of driving the speakers with authority and control.

I was especially impressed by the ST-10's performance at the top and bottom of its range. The bass was taut and tuneful. Conversely, the upper midrange and treble were airy yet accurate. On recordings with exaggerated upper midrange or treble energy I was aware of the additional musical information, but it was never emphasized to the point of harshness. After living with the ST-10 for a while I can understand why NuPrime draws attention in its sales literature to the ST-10's "tube-like" upper-frequency characteristics. While the ST-10 certainly doesn't soften or roll those off in the manner of classic tube designs, it brings to its upper frequencies the kind of ease and sweetness that are usually found in power amplifiers that employ tubes somewhere in their circuitry.

Depth recreation, dimensionality, and image specificity were also exemplary through the ST-10. On my live 128x DSD recordings of the Boulder Philharmonic, the soundstage was accurately portrayed with the spaces between the instruments elucidated with a level of specificity that was equal to the best I've heard from any amplifier in my systems.

### Final Thoughts

Within their product categories the DAC-10H DAC/preamp and ST-10 basic power amplifier are priced at the lower mid-level, yet they both deliver a level of performance that could be considered exemplary regardless of their cost. The DAC-10H has the capabilities, sound, and feature set that should keep it current for a number of years, while the ST-10 produces a level of sound quality that unless you absolutely

must have more power output capabilities, will make "upgrading" to anything but a far pricier and more powerful amplifier more of a sideways proposition than an upward one.

As it is a relatively new firm, NuPrime has yet to develop the reputation and visibility of more venerable audio companies. But given the quality of its first three products, the IDA-16, DAC-10H, and ST-10, it's hard not to predict that NuPrime will be a force to be reckoned with now and in the future. Even if you have far more in your equipment budget than the cost of the DAC-10H and ST-10, I recommend giving these NuPrime products a listen, if you can. They deliver true high performance for far less money than you might expect. LAB

 NUPRIME





# Hegel H80 Integrated Amp

High Performance, Reasonable Price

Kirk Midtskog

**H**egel 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. As such, the H80 still offers a commendable level of the company's

## EQUIPMENT REVIEW - Hegel H80 Integrated Amp

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 clanky 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. **tas**

## SPECS & PRICING

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

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# Audio by Van Alstine FET Valve CF Preamplifier

Modern Tube Sound at its Best

Dick Olsher

**T**here 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 phono stage. 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 phono stage (\$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

### AUDIO BY VAN ALSTINE, INC.

2665 Brittany Lane  
 Woodbury, MN 55125  
 (651) 330-9871  
 avahifi.com

### 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

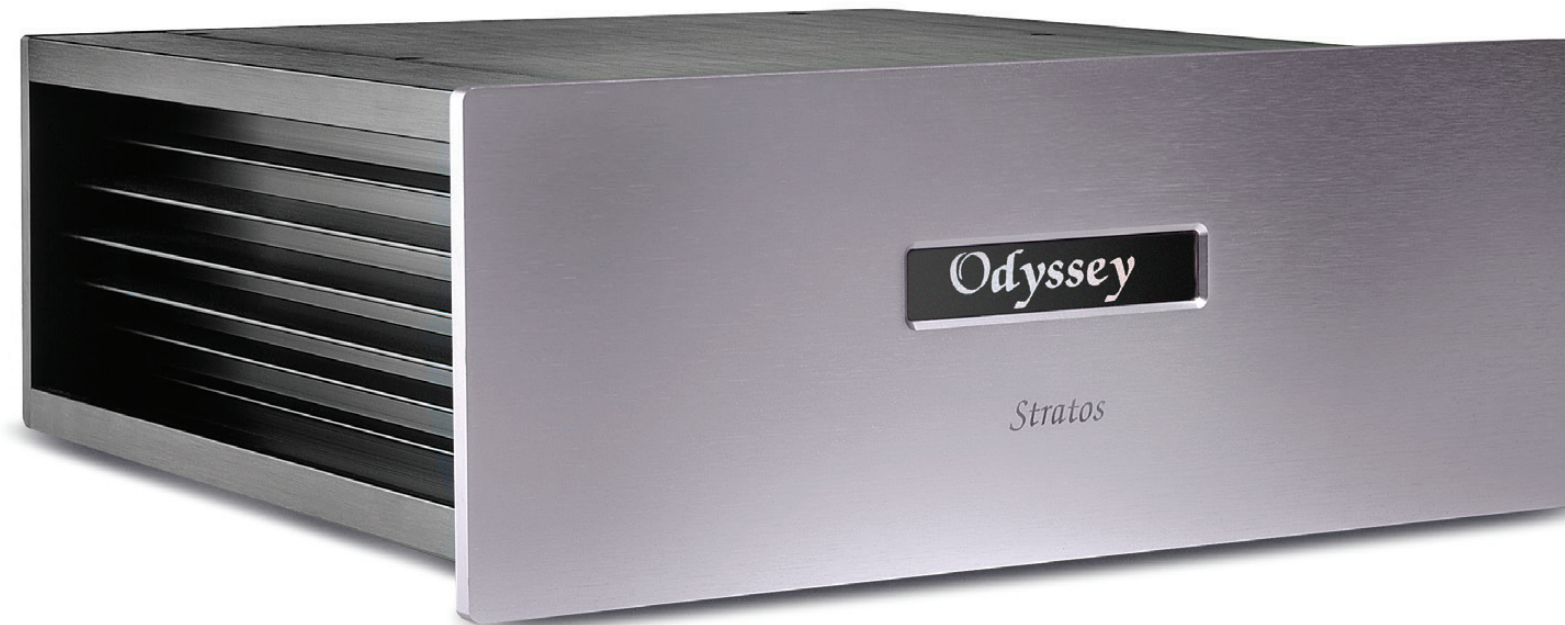
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# Odyssey Stratos Monoblock Amplifier

Fabulous Value

Jonathan Valin



**T**hose of you with long memories may recall that in Issue 195 I began my review of Klaus Bunge's wonderful \$995 Odyssey Khartago stereo amp with a disquisition on the excellence of the (then-brand-new-to-me) \$50k Soullution 710 stereo amplifier. I did this to draw a comparison between the best amp that a whole of of money could buy and the best amp that cost next to nothing.

As fate would have it, in a month or so I will be reviewing another Soullution amp, the 710's replacement, the, uh, 711. History doesn't really have to repeat itself in this case, since I've had

the Odyssey Stratos monoblocks for quite some time. But why not let it repeat itself, thought I, since the grounds of the comparison are roughly the same? The \$65k Soullution 711 is the

best solid-state amplifier I've yet heard in my system—in fact, the best solid-state amplifier I've yet heard. (I haven't auditioned the new Soullution monoblocks, but Robert has, and his conclusions are the same as mine.) How do Odyssey's \$2700-the-pair monoblocks hold up against the stiffest competition I can throw at them?

Of course, it is usual good practice to compare an affordable amp to something a

mite closer to it in price. While such apples-to-apples comparisons are obviously fairer and more reasonable, they have also always seemed to me to be a bit demeaning, as if the reviewer were tacitly admitting that the product under test has to be held to a different standard of excellence than something that costs a whole lot more than it does. This said, I would be lying to please the "if-I can't-afford-it-it's-a-rip-off" crowd (and they are legion, folks, at least on-line) to say that I expected the Odyssey monoblocks to equal the Soullution 711 (nor do they). Despite what some pundits—and a whole lot of ignorant Internet posters—claim, most (not all) of the time you do get what you pay for in high-end audio. The question, as you will see, is whether you truly want to pay for it.

As budget-priced electronics go, the Odyssey Stratos monoblocks are unusually odd ducks—the same kinds of odd duck that the Khartago stereo amp was. Both aren't merely "based" on much more expensive amplifiers; they essentially *are* much more expensive amplifiers.

To crib notes from my Khartago review, in the late Nineties Klaus Bunge, the gregarious, bear-like German expat who is the brains and most of the muscle behind Indianapolis-based Odyssey Audio (the rest of the work force are his wife and children—making the company a true family business), decided to offer a more "cost-effective" line of amps and preamps to complement the pricey Symphonic Line products he imports from Deutschland. Somehow Claus managed to talk the folks at Symphonic Line into letting him use the exact same circuits in his budget Odyssey amps

## EQUIPMENT REVIEW - Odyssey Stratos Monoblock Amplifier

that they use in their gourmet numbers. The Khartago, for instance, has specs that are almost identical—as they should be, considering that they’re virtually the same design—to those of the celebrated Symphonic Line RG 11 Mk 4. Both output 130Wpc into 8 ohms; both have a bandwidth that extends out to 400kHz; both have high damping factors, exceptional slew rates, and oodles of current. The only thing they don’t share is price. The Symphonic Line RG 11 Mk 4 is upwards of \$7000; the Odyssey Khartago costs \$995.

The same equation holds true for the Odyssey Stratos monoblocks, which use the circuit found in Symphonic Line’s RG 11 Mk 4 mono amps. Once again the specs are nearly identical (600kHz bandwidth, 180W output, 120-amp current delivery, high damping factor, etc.), and so is the considerable difference in price. The RG 11 Mk 4 monos cost \$14,000 the pair; the Stratos monos list for \$2700 (\$3400 for the Stratos Mono Extreme version with an additional 60,000→F of capacitance and a second transformer).

How does Bunge achieve this economy? First, by building and stuffing his less-costly PCB boards with his own high-quality, but less-exotic-and-pricey parts (although Odyssey does offer all sorts of parts-quality tweaks, such as Nichicon Muse caps, Vishay/Dale resistors, and extra WIMA metal-film caps, for a very modest uptick in price). Second, by sticking the amps’ innards in relatively utilitarian—albeit handsomely finished and custom-made—anodized-aluminum boxes. And third, by selling the end products factory-direct only. All this handiwork is done in the good ol’ U.S. of A.,

and each and every Odyssey amp comes with a twenty-year transferable warranty.

So are the Strati as good as the fabulous Khartago? In a word, yes. In two words, considerably better.

What you will get for your extra \$1700 are more power, higher resolution of inner detail, truly remarkable ambience retrieval (especially in the mid-to-low bass—for which, see below), a much better defined and extended bottom end, much wider and deeper soundstaging, and a more lifelike (which is to say, more dead-center-neutral) overall tonal balance. At the same time, you will get even more of the same virtues that set the Khartago apart—to wit, none of the customary peppery solid-state grain or background noise (and I mean none), zero added brightness and coarseness in the upper mids, zero added edge or spikiness on hard transients, and no transistor darkness in the treble (indeed, like the Khartago, the Stratos has an ARC-like touch of light and bloom on top). What you will get, in short, is a superb amplifier capable of handling any load, with no significant weaknesses and many outstanding strengths. For the money, the Stratos is, I think, impossible to beat.

But let’s say money isn’t an object. Let’s say you’re simply shopping for the best electronics and are asking me what I’d recommend. How does the Stratos compare to the most realistic-sounding solid-state amp I’ve heard to date—the Soulution 711?

Well, it’s not quite as high in detail as the 711. On tuttis, individual players within string choirs—the CSO’s, for example, going all out on the *Feria* of Ravel’s *Rapsodie espagnol* from Chad Kassem’s

fantastic reissue of *The Reiner Sound* [AP]—aren’t as breathtakingly finely differentiated as they are via the Soulution amp (or the Constellation Centaur). Having said this, I should quickly add that, compared to almost anything short of a statement-level Constellation, Pass, Boulder, Zanden, or ARC, the Odyssey Stratos is a monster of resolution. This is *not* an amp that smears inner detail; it simply doesn’t have the 711’s near-matchless way with textures, with the tiny variations in timbre and dynamics within ensembles that mikes at recording sessions tend to pick up (and ears at concert halls not so much). Trust me: Though you will hear the slight difference in resolution (if you’re listening for it), it won’t be anything close to a deal-breaker.

Next, though quite engagingly lovely in timbre, the Stratos is not as gorgeous-sounding as the 711, whose black-granite density of tone color in the bass and power range (i.e., lower mids) is both thrilling and lifelike. As I said earlier, the Stratos is dead-center neutral in balance.

Now, you could argue, with justification, that the Stratos’ essential neutrality makes it less dark-sounding than the “bottom-up” Soulution, and consequently more open and extended in the treble, which, because of the difference in bass and power range weight and timbre, sounds more “exposed” through the Odyssey amp than it does through the 711. But I think that argument would be misleading. The 711 doesn’t have *less* treble than the Stratos; it has *more* lifelike color, energy, and weight in the bass and lower mids (and everywhere else, actually). Nonetheless, the Stratos is inarguably sweet, open, and extended in the

upper octaves. Indeed, it is sweet, open, and extended everywhere it plays.

In the mid-to-low bass, the Stratos presents a real challenge to the superb Soulution. I’m sure all of you who listen to classical music are aware of the way that the deepest notes of massed cellos and doublebasses, particularly when they’re accompanied or doubled by timps, can come into and go out of perfect focus on tuttis. Rather than separate harmonious instrumental lines you can on occasion end up hearing a powerful jumble, wherein the timp is hard to distinguish from the doublebasses,

### SPECS & PRICING

Stratos Mono	Stratos Mono Extreme
<b>Power output:</b> 180W RMS @ 8 ohms, stable into a 2-ohm load	<b>Power output:</b> 200W RMS @ 8 ohms
<b>Bias:</b> Class A/AB	<b>Bias:</b> High Class A/AB
<b>Current output:</b> 120 amps	<b>Capacitance:</b> Additional 60,000uF
<b>Frequency response:</b> 1Hz-600kHz	<b>Transformer:</b> Additional 400VA Plitron transformer for 800VA total
<b>THD:</b> <0.04 percent	<b>Weight:</b> 66 lbs.
<b>Damping factor:</b> 800	<b>Price:</b> \$3400 (pair)
<b>Input impedance:</b> 22k ohms	
<b>Inputs:</b> RCA and XLR	
<b>Dimensions:</b> 19" x 7" x 18"	<b>ODYSSEY AUDIO</b> 6731 West 79th Street Indianapolis, IN 46278 (317) 299 5578 odav@odysseyaudio.com odysseyaudio.com
<b>Weight:</b> 56 lbs. each	
<b>Price:</b> \$2700 (pair)	

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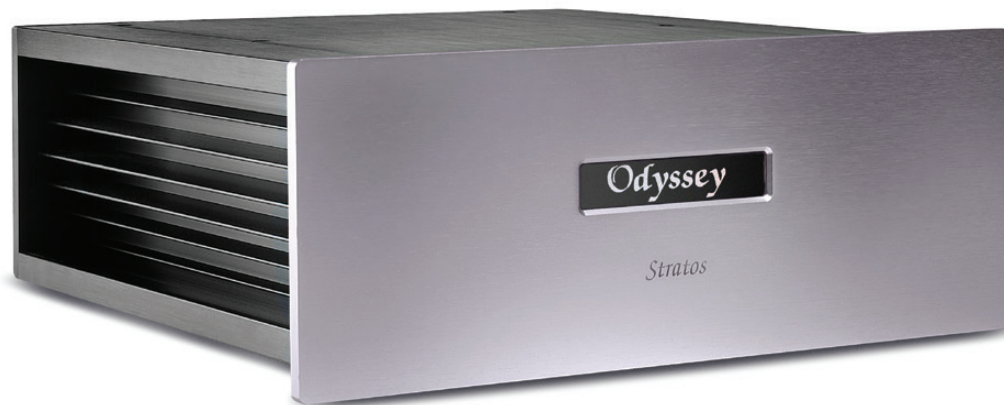
## EQUIPMENT REVIEW - Odyssey Stratos Monoblock Amplifier

and the doublebasses from lower-pitched notes on the cellos. (The rock 'n' roll equivalent is, of course, Fender bass doubled by kickdrum.)

What you may not be aware of—and I, for one, wasn't—is the degree to which this slight, occasional blurring of the sonic picture is sometimes caused not by the loudspeakers interacting with the room they are playing in, but by the recorded instruments interacting with the hall *they* were playing in—or, to put this more precisely, by the amplifier's (and, subsequently, the speakers') inability to distinguish between the music and its powerful reverberation *on the recording*.

The truth of this observation was brought home to me via the Reiner LP of Ravel that I mentioned above. While the Souldution 711 (and every other amp I've tried with the D-5s) made it sound as if the Raidhos and my listening room were very occasionally misbehaving on a scant few notes in big tuttis; the Odyssey Strati made it clear that it was, in fact, not the speakers *per se* but the *interaction between* the source, the amplifier, and the speakers that was causing the problem.

Never before in my experience with this recording—which stretches back some forty years—have I heard the reverberation of Chicago's Symphony Hall so clearly and unmistakably distinguished from the actual notes of the basses, cellos, and timp, whose individual musical contributions were also wholly clarified.



In the bottom octaves, the magical separation of instrumental sound and hall sound that the Odyssey Stratos monos effected on certain ostinatos and tuttis of the *Feria* was astonishing, unexpected, and entirely new. What had been, in rare instances, a muddle of different events, in which the timing of sounded notes and their reverberations were seemingly compressed into a single powerful “boom,” became an orderly *sequence* of events from which all boom and confusion were eliminated. That, folks, was and is a considerable accomplishment.

Having said this, I should add there is a price to be paid for this unparalleled resolution and clarity of pitches and durations in the mid-to-low bass. While the Strati separate certain bass-range notes from their echoes with greater clarity than the 711 (or any other amp I've tried) when both are paired with the Raidho D-5s, they don't deliver the bass range or lower midrange with the same awesomely realistic power and color as the Souldution amp. Indeed, I have to think that the 711 isn't, in fact, dropping the ball on certain pitches so much as transmitting the same information with so much more energy that the D-5's woofers are, very occasionally, causing my room to add its own “ringtone” to the proceedings, where the Stratos' lighter-balanced bass doesn't trigger this effect.

Indeed, while exceedingly fast and powerful, the Strati aren't the equals of the Souldution 711 in transient speed, leading-edge definition, density of color, or sheer clout in the low end—or anywhere else. Thus, Chris Franz's machine-gun drumming at the close of “Life During Wartime” from Talking Heads' *Stop Making Sense*, while still *plenty* lifelike, doesn't have the same thrillingly realistic physical impact through the Strati that it has through the Souldution, nor is Tina Weymouth's chucking bass line as powerful and prominent. In fact, nothing—voice nor instrument—has quite the same lifelike presence through the Stratos that it has through the 711. Though you could argue that the Odyssey is the more relaxed

(or neutral) presentation, I think (make that, I *know*) I'd miss the greater excitement and more beautiful tone color that the Souldution generates.

What about soundstaging? Here, the Stratos and the 711 are equals. Both reproduce a stage of impressive width and depth (on recordings that have stages of impressive width and depth), the chief difference being that what I call “action”—which is the way that instruments on the stage seemingly “bloom” into the foreground and recede into the mid- or background with changes in intensity and pitch—is somewhat better reproduced by the Souldution. (This is to be expected, given the 711's superior color, transient speed, and impact.)

On the basis of what I've just written you might think the Stratos falls short of the Souldution 711 in just about every way (save for its incredible discernment in the mid-to-low bass). And so it does. But it doesn't fall short by all that much. This is simply a fantastic monoblock amplifier, even in direct comparison to the best solid-state I've ever heard, and its shortcoming vis-à-vis the much costlier benchmark, while audible, are matters of degree rather than outright omissions. The 711 doesn't do anything that the Stratos doesn't also do, albeit to an appreciably lesser extent, where the Stratos does do one thing—at least, in my room with my speakers—that the 711 doesn't.

As it isn't likely that those of you shopping for the Strati are going to be A/B'ing them with a Souldution 711 (on Raidho D-5s and a Walker Black Diamond V turntable), and as these Odyssey monoblocks cost twenty-four times less money than the Souldution 711 (and fifty-seven times less than Souldution's fabulous new monoblocks, the 701s), I can't recommend them highly enough.

But let me go a step further: Even if you did A/B these monoblocks with super-amps and super-speakers (as I did), you might still find yourself pondering whether the difference in sound justifies the difference in expenditure. (That it clearly does is beside the point.) The way I see it, the fact that the Odyssey Stratos monoblocks could give even a jaded listener like me momentary pause makes them super-amps in their own right. Yes, you can buy better. The question, as I said near the start of this review, is: Do you really want to? **tas**

# OUR TOP PICKS **ELECTRONICS**



## Hegel H80 Integrated Amplifier

**\$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](#) (245)



## Denon PMA-50 Integrated Amplifier

**\$799**

With a built-in DAC that plays back most PCM formats up to 384kHz/24-bit, as well as DSD64 and DSD128Denon, and an amplifier section rated at 50Wpc into 4 ohms (25Wpc into 8 ohms), Denon's PMA-50 integrated amplifier/DAC hits the bulls-eye as a beginner-level hi-fi component: It looks good, sounds good, has a lot of features for its price, is easy to hook up and blessedly easy to use. Its features, including remote control and Bluetooth connectivity, are genuinely useful. Even though its power is limited, it's still very competitive at the price. Reviewer Vade Forrester writes, "there's no reason to restrict all this hi-fi goodness to beginners; the PMA-50 would make a terrific centerpiece for a bedroom or office system. Pricewise, I can't think of a better value.

[denon.com](#) (review in this issue)



## Wyred 4 Sound mINT Mini Integrated Amplifier

**\$1499**

Rated at 100Wpc, Wyred 4 Sound's mINT (Mini-Integrated Amplifier) isn't simply a Class D integrated; it also sports a built-in DAC with three digital inputs (USB, TosLink, and coax), a pair of analog inputs, and a dedicated headphone amp. The mINT has an easy, natural musicality, along with good pace and drive. Dynamic range is somewhat limited, as is ultimate volume, but the mINT is consistently able to draw you into the music, no matter the type.

[wyred4sound.com](#) (229)



## NuPrime DAC-10H DAC/Pre and ST-10 Power Amp

**\$1795 and \$1595**

In 2014, NuForce's cofounder, Jason Lim, with backing from the OEM factory, bought the assets of NuForce's high-end division, obtained the rights to NuForce technologies, and formed NuPrime Audio, Inc. Its latest offerings, the DAC-10H DAC/Pre and the ST-10 basic power amplifier, deliver high sonic refinement and flexibility for the money. The DAC-10H packs a lot of performance into a half-width package, supporting PCM up to 384/32 and DSD up to 128x via its built-in ESS Sabre DAC. As with the preamp, the performance of NuPrime's 150Wpc ST-10 stereo amplifier is exemplary—the best Class D switching power amplifier Steven Stone has heard to date. Within their categories these two are priced at the lower mid-level, yet they both deliver performance that could be considered exemplary regardless of cost.

[nuprimeaudio.com](#) (review in this issue)



# Analog

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

A Chicken in Every Pot

Wayne Garcia



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

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

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

Though the basics remain the same—MDF plinth, cast-steel platter with felt mat, a belt-drive synchronous motor with simple Sorbothane “suspension,” and a choice from among seven gloss colors for the plinth—the Debut Carbon's most significant upgrade over the Debut III can be found in the model's name, which refers to the lighter, more rigid, single-piece 8.6" carbon-fiber arm tube that replaces the III's aluminum arm.

The Debut Carbon comes pre-mounted with Ortofon's 2M Red moving-magnet cartridge, which sports an elliptical stylus and a healthy 5.5mV output, making it compatible with essentially any built-in or outboard phonostage. If you want to use the Debut Carbon to transfer your LPs to a music server, it can be ordered with a built-in phonostage and analog-to-digital converter (with a USB

output) for an additional hundred dollars. Either version of the 'table is available in seven high-gloss colors (black, red, green, blue, yellow, silver, and white).

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

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

#### ASSOCIATED EQUIPMENT

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

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# Climbing the Ladder

Climbing the ladder of AudioQuest interconnect cables leads to better and better performance, thanks to less and less interference from the cable.

This is made possible by the use of superior materials and the implementation of increasingly more sophisticated construction techniques, such as: the progression from Long-Grain Copper to solid Perfect-Surface Silver, from Foamed-PE insulation to FEP Air-Tubes, from Metal-Layer Noise-Dissipation System to multi-layer Carbon-Based NDS, from low-distortion Gold-Plated terminations to extreme-purity Red Copper plugs with Hanging-Silver plating, and more.

Despite their differences, our Bridges & Falls, Rivers, and Elements audio interconnects are all closely related. **Follow the color code:** Chicago is a bigger, better version of Evergreen, but PSC copper-based Golden Gate is clearly better. Red River is a Triple-Balanced bigger, better version of Golden Gate, but doesn't offer the further advantages of Big Sur—and so it goes, on up to Wind.

The reason for the two sides of the ladder is simple: The Double-Balanced **Bridges & Falls cables can be fitted with a choice of RCA plugs, 3.5mm mini-plug, 3.5mm female, or DIN plugs** (usually for Naim electronics). The Triple-Balanced (except Chicago) **Rivers & Elements cables can be fitted with RCA or balanced XLR plugs.**

The Triple-Balanced progression continues upward through top Element Series cable **Fire**—a remarkable cable **fully deserving its nickname "WEL Jr.,"** as it uses all the same materials and construction techniques as the Wild and WEL models, at a smaller scale.

Start at the bottom, where the AQ value system is already 100% evident, or climb as high as you like. Keep climbing until the incremental cost of the higher model is no longer the **least expensive way to make the most improvement**—but beware, you might find yourself at the top of the ladder or beyond before reaching that point.

Sincerely,



William E. Low



**audioquest**





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

Rega Dreams of Analog

Wayne Garcia



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

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

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

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

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

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

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

159 Leslie Street

Dallas, Texas 75207

(972) 234-0182

soundorg.com

### Associated Equipment

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

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# Clearaudio Concept

High Value

Wayne Garcia



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

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

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

## Clearaudio Concept with MC Concept Cartridge

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

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

## EQUIPMENT REVIEW - Clearaudio Concept

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

To put this in perspective, the cartridge in my reference vinyl playback system sells for \$500 more than this entire package—and my entire setup costs six times as much. Although I'm not going to tell you that the Clearaudio Concept equals that performance, what I will tell you is that it is good enough in all the ways

that count—resolution, dynamics, low-noise, and that hard-to-pin-down thing I'll call musical involvement—that I enjoyed the hell out of my time with it. Couple that with its terrific German build and finish, and the Concept strikes me as a hands-down bargain. **tas**

### SPECS & PRICING

**Type:** Belt drive, unsuspended turntable

**Speeds:** 33.3, 45rpm

**Dimensions:** 16.5" x 5" x 13.8"

**Weight:** 28 lbs.

**Price:** \$1400

#### MUSICAL SURROUNDINGS

5662 Shattuck Avenue  
Oakland, California 94609  
(510) 547-5006  
musicalsurrroundings.com

#### Associated Equipment

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

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## PolyTable Turntable

The PolyTable is designed and manufactured by George Merrill in the USA for the music lover who wishes to own a quality turntable but has a budget. The simple design criteria is to provide a quality product for anyone purchasing their first true high performance turntable. The looks are striking. The sound performance will best any table in the price category and way beyond. You will be very pleased!

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- Designed with Energy Management Technology.
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- No metal or glass used in the critical energy path.
- Two piece isolated platter system with Damped drive platter.
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- RCC Mat bonded to the record support platter.
- Oil Well Bearing.
- Adjustable leveling feet with built in bubble level.
- As with the most expensive tone arms the supplied tone arms features VTF adjustment, VTA adjustment and Azimuth adjustment. This allows an upgrade to any cartridge.
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- 33.3 - 45 RPM 60 HZ. Available for 50 HZ operation.

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[hifigem.com/polytable.html](http://hifigem.com/polytable.html)

# Acoustic Signature Wow XL Turntable

## Solid Foundation

Spencer Holbert



**W**hat'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  $\pm 0.1$  percent 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")

## EQUIPMENT REVIEW - Acoustic Signature Wow XL Turntable

it blocked two adjacent outlets on my power 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.

### 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 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
- Bearing:** Tidorfolon proprietary bearing
- 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

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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 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'

## EQUIPMENT REVIEW - Ortofon Quintet Cartridges

“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 sweetspot 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. **tas**

### SPECS & PRICING

#### Quintet Red & Black

Type: Moving coil

Output: 0.5mV (Red); 0.3mV (Black)

Recommended load impedance: >20 ohm

Cartridge body: ABS

Coil wire: Copper (Red); aucturum (Black)

Tracking Force: 2.1-2.5 grams

Weight: 9 grams

Price: Red, \$299; Blue, \$499; Mono, \$499; Bronze, \$799; Black, \$999

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# Funk Firm Flamenca Turntable

## Dancing on Two Threads

Spencer Holbert



**T**he best time in an audiophile's life must be when he or she discovers a truly great product that doesn't completely ruin the budget. It's like the car enthusiast who dreams of owning a Bugatti, but buys a Camaro to get the biggest bang for his buck. A supercharger provides the added power and thrill factor in an economical way, and brings him that much closer to the supercars. High-end stereo components are much the same. We all want the state of the art, but few of us can afford it. But when we take our time, we can find those truly exceptional products that catapult our systems to the next level. While it's not the end-all in turntables, the Funk Firm Flamenca will have you dancing with joy for under \$1500 (\$900 sans F6 tonearm).

### Two Threads Are Better Than None

The Funk Firm Flamenca is now shipping with the brand-new F6 "pickup arm," which is a thread-bearing tonearm— probably something most people have never seen. Whereas most tonearms use an actual bearing of some design or another, the F6's arm tube is suspended from two polymer threads that look like a thick fishing line. This design gives the impression that the 'arm is

almost floating on air, and the 'arm sounds like it, too. Even though Arthur Khoubesserian of Funk Firm prefers the term "pickup arm" because his tonearms have no tone, the F6 definitely has a feeling to it. It's almost as if you can hear its weightlessness, a certain ethereal air and lithe gracefulness, when listening to the Flamenca and F6 together. Because I also had the Funk Firm FXR-II on hand, it was easy to A/B the two 'arms. I actually preferred the sound of the F6 to that of the FXR-II, even though the FXR-II costs \$2400. I'm not sure if the thread-bearing design of the F6 is inherently better, but I preferred it.

Even though I liked the sound of the F6, I definitely did not like the setup. A thread-bearing tonearm is a delicate and tricky beast. Because the entire arm tube is suspended by two threads, the magnetic anti-skate found on most turntables in this price range is out of the question. So instead of weights or magnets for anti-skate, the F6 uses the tension placed on the threads. Atop the housing from which the threads are suspended is an anti-skate dial, which is highly sensitive and requires only minute pressure to apply the correct force. This is where things get tricky. It would be very easy to turn the knob one way or the other just a little too much and pop—there goes the thread. One of the other issues with this type of design is that as you adjust the anti-skate,

## EQUIPMENT REVIEW - Funk Firm Flamenca Turntable

you also change VTA. Even though the added torque only lifts and lowers the 'arm slightly, VTA is also altered, which means you have to re-adjust the 'arm's VTA, which, in turn, may effect anti-skate! This constant tweaking of the tonearm can be pretty tedious, and it took several hours to get things just right. In the long run I was rewarded with great sound, but if you are looking for a 'table that is basically plug 'n' play, this might not be the one for you (at least with this particular tonearm).

The Flamenca plinth and platter will be familiar to fans of British turntables. The platter is solid glass, and the plinth is a low-mass design. The platter is driven by a servo-controlled DC motor, which has both 33 and 45rpm selections, and two tiny screw adjustments to set that perfect speed. The motor makes a very slight ticking noise, but this is inaudible during playback.

On to tricky set-up step number two. Funk Firm has eschewed the classic rubber belt in favor of a thread—yes, an actual thread—that is doubled and fits snugly around the platter and the motor wheel. Fitting the thread onto the platter can be very tricky, indeed. So tricky, in fact, that Funk Firm offered a prize at the 2014 Audio World hi-fi show in Brighton, UK, to those who could successfully fit the thread onto the platter. Now, it only took me a few tries to actually get the thread on, but this isn't your typical rubber belt. It's going to be a little frustrating for some people to attach it. Theoretically, this thread belt should have fewer problems with stretching, which means better long-term speed stability than rubber. Better to have something that's difficult at first and lasts a long time, than something easy that eventually stretches.

### The Sound of Two Threads Dancing

For my Flamenca audition I used the Ortofon 2M Black moving-magnet cartridge, Rogers High Fidelity EHF 200 Mk2 integrated amp, Endeavor E3 floorstanders, and Wireworld cables. My latest music obsession is alt-classical composer Ludovico Einaudi's, whose *In a Time Lapse* is hauntingly beautiful. On the track "Experience," Ludovico's piano joins with violins, cellos, and a distant harp to create an amazing soundscape. While the Flamenca reproduced a bit more surface noise than other turntables I've heard recently, that little bit of added noise was overshadowed by the airiness with which the Flamenca presented the various instruments. The Flamenca had really great imaging, much better than what I would have expected from a \$1495 turntable; the depth of the harp struck me as unusually good. Many turntables in this price range seem to put things on a thin, two-dimensional plane—like a flat, high-gloss wall. But the Flamenca dug deeper and extended the soundstage back from the speakers, creating a much more dimensional presentation.

This was definitely due to the F6's ability to let the 2M Black do its job. Though the Flamenca was solid throughout the audio spectrum, the highs really shone, especially on James Blake's phenomenal *Overgrown*. The Flamenca allowed Blake's unique mix of electronic music and soulful multi-octave singing to come alive on the track "Retrograde," during which he hums up and down an incredible range backed by only a simple piano. The Flamenca also seemed to reduce overemphasis of sibilants. Listening to Valerie June and her sublime half-country, half-soul debut album *Pushin' Against*

*a Stone* gave me goosebumps. Her voice on "Somebody to Love" sounded much more like it did when I heard her live than it usually does on a recording. Of course, no component sounds exactly like the real thing, but I couldn't help closing my eyes and remembering the night I listened to her sing on stage. This is a surprisingly good turntable.

Though the highs and mids were really solid, the Flamenca lagged behind just a little bit when attempting to resolve the sophisticated bass lines of Amon Tobin's experimental ambient album *Isam*. I'm not sure if this is an inherent issue with a thread-bearing tonearm, but it seemed like the Flamenca had a difficult time tracking the incredibly erratic bass lines on the track "Journeyman," during which super-deep bass moves left and right, front and back, and even up and down. This is a torture test for even expensive turntables, so the Flamenca can be forgiven its shortcomings. But if you want to listen to any kind of music that employs electronic bass phasing and your budget is \$1500, you might be better served with a good DAC. Again, this is a difficult feat for any turntable to bring off, but the F6 tonearm wasn't as adept as the FXR-II in the low end.

This slight sluggishness in the bass department was also apparent during my favorite symphonic music, Stravinsky's *Rite of Spring*. The dissonant strings, the French horns, and the crash of the gong all sounded crisp, never overly bright, and very breezy, but when the thunderous rolls of the drums came rumbling in there was a bit more muddled confusion than I would have preferred.

### Conclusion

Though the Flamenca paired with the F6 tonearm has a somewhat cumbersome setup—that is, if you want to really dial in your turntable—it excels at the highs and mids, and portrays music within a surprisingly focused and deep soundstage. Despite its slightly elevated surface noise, the 'table suffers little with vibration issues, and is a sleek design that won't kill your budget. We can always dream of the ultra-high-end turntables, but for those of us on a Camaro budget the Funk Firm Flamenca will give your system that much needed performance boost—and for a lot less than a supercharger. **tas**

## SPECS & PRICING

**Motor:** 33/45rpm servo-controlled DC Motor

**Wow & flutter:** Less than 0.15 percent

**Dimensions:** 16" x 12.5" x 4.5"

**Weight:** 19 lbs.

**Price:** \$900; \$1495 with F6 tonearm

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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](http://soundorg.com) (171)



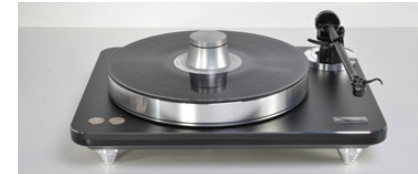
**Clearaudio Concept**  
\$1400; \$2000 with Concept MC

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](http://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](http://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](http://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](http://ortofon.com) (244)



# DACs, Music Servers, & Disc Players

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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><b>Disc types:</b> 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><b>Internal storage:</b> 1GB</p> <p><b>Inputs:</b> 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><b>Outputs:</b> 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><b>DAC resolution:</b> (USB Audio) 2 channels @ 192k/24b PCM, (Coaxial/Optical) 2 channels @ 96k/24b</p> <p><b>Dimensions:</b> 16.8" x 4.8" x 12.2"</p> <p><b>Weight:</b> 17.3 lbs.</p> <p><b>Price:</b> \$1199</p> <p><b>OPPO DIGITAL, INC.</b> 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. **tas**



# Light Harmonic Geek Out 450 DAC and Headphone Amplifier

Huge Performance in a Tiny Package

Vade Forrester



**E**ver since AudioQuest released its miniscule DragonFly combination DAC and headphone amplifier, I've been fascinated by miniature combo components. Ideal for headphone listeners who want to use their computers as a source for music playback, combination DAC/headphone amplifiers provide superior sound (way superior) to the typically wimpy headphone amplifiers in home computers. In addition to driving headphones, combination DAC/headphone amplifiers can also drive line-level inputs on an amplifier if you use an appropriate cable. But before proceeding with this review, we need a catchy term for this genre of equipment; calling them combination DAC/headphone amplifiers doesn't exactly roll off the tongue (or the keyboard). I rather like a term I've seen various places on the Internet: dongle-DAC. That reflects the fact that most of the combination DAC/headphone amplifiers attach to a computer's USB port via a short USB cable. Some of them can plug directly into the USB connector, but that can put a lot of strain on the connector, especially if your headphone cable is stiff. So dongle-DAC it is, at least in this review. Incidentally, AudioQuest started the dongle concept when it released a dongle cable it called the DragonTail to use with its DragonFly. Since then, most dongle-DAC manufacturers include a dongle cable with their DACs.

Light Harmonic began life as a manufacturer of very-high-end DACs. Its Da Vinci was stunning in sound quality and styling, and equally stunning in price: \$20,000. When DSD recordings became available, Light Harmonic's Da Vinci Dual DAC was one of the first that would play that format. Instead of producing a DAC that would do both PCM and DSD, it built a

double-layer DAC that stacked a DSD-only and a PCM-only DAC. Pricing was commensurate with this uncompromising approach: \$31,000. And if that seems high, Light Harmonic has announced a model called the Sire with a projected price of \$120,000.

When Light Harmonic wanted to enter the dongle-DAC competition, it created a division

## EQUIPMENT REVIEW - Light Harmonic Geek Out 450 DAC/Amp

called LH Labs, and used a crowd-funding approach to fund the design. To generate excitement, LH Labs needed something to appeal to the younger crowd targeted for the funding campaign, so they called the device the Geek Out. Apparently the name was a stroke of genius. Since the amounts raised wildly exceeded the target, LH Labs decided to offer three versions of the Geek Out, with amplifiers of different output power. The \$199 USD Geek Out 450 reviewed here has an output capability of 450mW, while the \$299 Geek Out 1000 produces a full 1000mW (that's a full watt, enormous for headphones). There's also a \$289 Geek Out IEM 100, which produces 100mW and is optimized for very sensitive in-ear monitors that could be shredded by overly powerful amplifiers. All versions of Geek Out ship with a dongle cable called a Slacker and a cloth carrying case. The Slacker, which is just a USB extension cable, is only 6" long, and if used with a desktop computer (at least with mine), leaves the Geek Out hanging in the air. However, you can order a second Slacker (for \$19) and daisy-chain the two together.

Geek Outs don't have a separate power supply; they're powered by the computer's USB connection, which is also their only audio input. They do have two output connections: one with a very low output impedance (.47 ohms) and the other with a 100-times-higher (but still low) 47-ohm impedance. The former output should drive any headphone, including the lowest-impedance models, while the latter output should drive line-level inputs and high-impedance headphones. Both outputs can be used simultaneously.

Measuring 3" by a smidgen over 1½", the Geek Out is larger than the original DragonFly, but smaller than other dongle-DACs I've seen. Connectivity is via a USB Type A connector on the input end and two each stereo output jacks on the output end. Headphones plug directly into one of the Geek Out's output jacks; if your headphones have a ¼" plug, you'll need an adaptor, but your headphones probably came with one. To connect a Geek Out to an amplifier, you'll need an interconnect cable with a stereo plug on one end, splitting into two separate cables terminated by RCA plugs. Fortunately, given the popularity of headphones and associated electronics, such cables are now common. My Geek Out 450 has a silver case, while the Geek Out 100's case is black, and the Geek Out 1000's red.

The first time you touch a Geek Out that's been running awhile, you could probably guess from its hot case that the Geek Out's headphone amplifier runs in Class A. The user guide warns that the Geek Out can reach temperatures of 158° Fahrenheit. Ouch!

Sometimes a dongle-DAC leaves out a few features you'd find on a full-size DAC, but not the Geek Out; it uses an ESS 9018K2M chip to play PCM sample rates of 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz, 352.8kHz and 384kHz in 16-, 24-, and 32-bit depths, as well as DSD64 and DSD128. That's virtually everything commercially available, although there are a few DSD256 recordings have been released. Lights on the bottom of the Geek Out indicate the sampling frequency and type of input signal.

The Geek Out has two filters—Time Coherence

Mode and Frequency Response Mode—that you can select by pressing one of the two buttons on the side of the unit. LH Labs describes the filters as follows: "Time Coherence Mode (TCM) uses LH Labs' minimum-phase digital filter and time optimization algorithm, which removes all post-ringing from the original signal and realigns the impulse response. This presents the listener with a more well-defined and natural soundstage. Frequency Response Mode (FRM) uses a slow roll-off linear-phase digital filter with our proprietary frequency-domain optimization algorithm. This mode gives you a smoother and clearer sound with even lower THD+N than our previous version."

Like most DACs, the Geek Out works with Linux and the Macintosh operating systems without a driver, but the Windows operating system requires a driver. LH Labs updates the Geek Out driver and operating system, so you should visit its website occasionally to see if there are new versions available.

### Setting Up and Using the Geek Out

For this review, I used my desktop computer, an aging Dell Inspiron 530, running J. River Media Center version 20 as the server software. I plugged in the Slacker USB cable provided with the Geek Out into my computer and to the Geek Out, and plugged my headphones into the .47-ohm output jack. I tried several headphones in my collection: HiFiMAN HE-400, AKG K701, AKG K712, and Audeze LCD-X. Only the K701s needed more power than the Geek Out could provide. I was surprised that the low-sensitivity HE-400s worked with the Geek Out. But they not only worked; they sounded better than they

have with most other headphone amplifiers I've used. Go figure. The Geek Out had no trouble at all with the very sensitive LCD-Xs, and since they are the best headphones in my collection, they are the ones I used for listening impressions. It may seem goofy to use \$1699 headphones with a \$199 dongle-DAC, but the Geek Out was not embarrassed by the pairing.

Since I used a Windows computer as my server, I had to download and install the Windows driver. That process was simple and straightforward. There's a detailed on-line instruction sheet that tells you how to download the driver and install it into Windows; however, there's nothing telling you how to install it into your server program. Since LH offers four drivers—an ASIO driver, a WASAPI

## SPECS & PRICING

**Input:** One asynchronous USB 2.0 Type A

**Outputs:** Two stereo jacks

**Output impedance:** .47 ohms and 47 ohms

**Output power:** 450mW

**Bit depths:** 16, 24, and 32 bits

**Sample rates:** PCM: 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz, 352.8 Hz, and 384kHz;  
DSD: DSD64 and DSD128

**Price:** \$199

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## EQUIPMENT REVIEW - Light Harmonic Geek Out 450 DAC/Amp

driver, a Kernel Streaming driver, and a Direct Sound driver—some suggestions about which is recommended for popular server programs like J. River Music Center and Foobar2000 would have been helpful; this stuff is not intuitive. Drawing on past experience, I used the WASAPI driver with J. River Media Center.

While it was easy to install the driver, it was not easy to update the Geek Out's firmware. The update process is described on an instructional video on the LH Labs website that seemed a bit hurried and mumbly. I tried three times to perform the update before I got the process to work. Operator error? Maybe, but I'm an experienced computer user. An attempt to get help from LH Labs' technical support was useless.

The driver installation also installed an icon in the notification area of the Windows desktop, which provides a Light Harmonic Control Panel that gives access to some of the settings for the Geek Out, including volume. Unfortunately, the icon consists of several black dots, and since the taskbar that runs along the bottom of my computer screen is also black, the icon was invisible. When I pointed to the apparently vacant space in the notification area, an explanatory message popped up, so I could tell something was actually installed in that space. There are 12 other icons from other programs in my notification area, all visible with different screen settings, so it seems surprising that Light Harmonic couldn't design an icon that's visible for all screen settings.

The user guide has a stern warning to be careful to turn the volume down before listening. That is very important, since the

Geek Out turned-on at full volume every time I switched my computer on. I'm not sure why the driver can't remember the last volume setting used; no other driver I've used, and that would be a lot, has turned on at maximum volume. Since the standard Windows volume control had no effect on the Geek Out's volume setting, you must use the "invisible" icon for the Light Harmonic Control Panel to control loudness.

### Sound

I own several other dongle-DACs and have tried others, but the Geek Out surprised me with the quality of its sound. Playing old fave "Folia Rodrigo Martinez" from Jordi Savall's *La Folia 1490-1701* (44.1/16 AIFF, Alia Vox), I first noticed that the deepest bass notes were somewhat attenuated, missing a tiny bit of impact. The Audeze LCD-X headphones are capable of awesomely deep bass, so the attenuation had to come from the Geek Out. Elsewhere in the recording, I heard sharp, snappy transients that penetrated the information-rich soundfield. The guitar and harp, playing similar figures in the same frequency range, were easy to distinguish, which is not always the case. Savall's viola da gamba sounded unusually rich, with lots of body, although the string tone was plenty powerful when Savall dug in hard with his bow. Percussion instruments were reproduced with good detail, though not the best I've heard. For headphones, the soundstage was pretty well spread out, with instruments fairly well localized.

On Rebecca Pidgeon's *The Raven*, (176.4/24 FLAC, Chesky), the audiophile-favorite track "Spanish Harlem" demonstrated its usual squeaky-clean, distortion-free sonics. The

upright bass was amply deep, the violins sounded particularly sweet, and piano transients were well defined. I missed a little detail that I hear from loudspeakers, which creates an almost visual impression of seeing Pigeon enunciate each word.

Headphones are not noted for their soundstaging capabilities; nevertheless, I cued up the track "Miserere" from the Tallis Scholars' *Allegrì's Miserere & Palestrina's Missa Papae Marcelli* (96/24 FLAC, Gimell). To my delight and surprise, the Geek Out produced a spacious soundstage from the Audeze headphones: a large environment, with the singers' placement fairly well defined. Most surprisingly, the sense of depth for the solo group of singers located behind the main group, was quite vivid. While not equaling the soundstaging performance of speakers, this was notably better soundstaging than I usually hear from headphones.

From Reference Recordings' fresh! label comes a performance of Dvorák's Symphony No. 8 by the Pittsburgh Symphony under its conductor Manfred Honeck (DSD64/DSF). Through the Geek Out, the recording positively glowed, with thumping orchestral dynamics that made the performance very exciting. It's wonderful to have the Pittsburgh recording again.

To check out the Geek Out's handling of solo instruments, I cued up the cut "Shenandoah" from Alex de Grassi's album *Special Event 19* (DSD64/DFF, Blue Coast Records). The Geek Out reproduced de Grassi's unusual guitar with plenty of details, both transient and harmonic. I could easily hear how each note was launched, how it propagated into the room and then decayed into

silence. Especially realistic was the initial transient, as each string was plucked. The odd drone effect produced by de Grassi's guitar was clearly reproduced. Both string and body sound were superbly depicted by the Geek Out—a very realistic and detailed recording of a guitar.

### Comparison

Conceptually similar to the Geek Out is iFi Audio's nano iDSD DAC/headphone amplifier, which sells for \$189 and has a battery-operated headphone amp rated at 130mW, considerably less than the Geek Out. The iFi nano iDSD's internal battery means the unit can operate independently from a computer and be used with any device that has a USB output, like a smartphone or iPod. Battery life is said to be 10 hours. The nano iDSD has several features I like a lot: 1) a volume control knob, which works better than any digital volume control I've seen, 2) the volume control knob incorporates an on/off switch so you can turn off the unit to save battery power, 3) a dongle cable that's 24" long, so the dongle-DAC doesn't dangle in mid-air, 4) RCA output jacks for the DAC section, so you can use the nano iDSD's DAC section with a hifi system without an adaptor cable, and 5) a USB Type B input, which should work with standard USB cables. The last two features make the nano iDSD easier to use with an external amplifier than most other dongle-DACs. For what it's worth, the nano iDSD is one of the few DACs that can presently play DSD256 recordings. Although it's not germane to this review, iFi makes some accessories for the nano iDSD that can further improve its sound—at a price, of course.

## EQUIPMENT REVIEW - Light Harmonic Geek Out 450 DAC/Amp

After replacing the Geek Out with the iFi nano iDSD, and changing the settings in J. River Media Center to use the nano iDSD ASIO driver, I proceeded to listen. On "Folia Rodrigo Martinez," bass extended deeper, creating the impression that the recording space was larger. Savall's viola da gamba sound emphasized the string tone over the body, not sounding so much like a whole, real instrument. Percussion instruments had impact, but receded into the background a little more. There was less spread of instruments

across the soundstage, more right/left distribution.

"Spanish Harlem" sounded clean, but just a little mechanical—more like a hi-fi playing than a person singing. The upright bass was deeper, more resonant. The piano sound put relatively more emphasis

on sustain and decay, rather than on leading-edge transients.

On "Miserere," the soundstage was not as well defined, nor the singers placed so precisely within the soundstage. The distant solo group had a sense of separation, but didn't sound as far back in the room as it did through the Geek Out. The tenor soloist in the main group didn't sound as realistic as he did through the Geek Out. These differences were small, but noticeable.

Dvorák's Symphony No. 8 sounded less harmonically rich, but still had lots of dynamic punch. The nano iDSD's lower power output

wasn't obvious; its dynamics were just as exciting as the Geek Out's.

Alex de Grassi's guitar sound emphasized the strings more than the body. Again, a small but perceptible difference.

My experience with the nano iDSD dongle-DAC had shown me that its headphone amplifier is not quite up to the performance of its DAC section. When I used the RCA output jacks to feed the signal from the DAC section into iFi's upscale separate micro iCAN headphone amplifier, the overall sound improved noticeably. The \$259 micro iCAN headphone amp is a Class A unit, which sounds more detailed and refined than the amplifier in the nano iDSD dongle-DAC—at a price.

I enjoyed revisiting the iFi nano iDSD dongle-DAC, but was happy to switch back to the Geek Out when the review was completed. The Geek Out's refined portrayal of harmonics and its nearly-loudspeaker-like soundstaging were hard to do without.

### Bottom Line

A fantastic combination of features, sound, and price, the Geek Out 450 is one of those rare components that screams *value!* LH Labs' ability to get this kind of performance out of a device this small for this little money attests to some incredible engineering chops. While I've noted some minor operational glitches that make using the Geek Out more of a hassle than it should be, the problems I've mentioned are not serious, and once I figured out workarounds, using the Geek Out was a blast. The sound was never less than engrossing.

The Geek Out 450 is out of this world! **tas**



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Revox Joy S208 Remote Control

# Sony PHA-2 DAC/Headphone Amp

Road Warrior

Steven Stone



**A**s 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 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

## EQUIPMENT REVIEW - Sony PHA-2 DAC/Headphone Amp

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 TuneMark 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 Wyred 4 Sound mPre with that same Internet radio feed also coming through my MacPro's iTunes into the Wyred 4 Sound 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-2 is massive. When I recently attended AX-PONA in Chicago I opted to carry the Astell&Kern AK100 as my primary portable audio device be-

## EQUIPMENT REVIEW - Sony PHA-2 DAC/Headphone Amp

cause 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 Beyerdynamic 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. **tbs**

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

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

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## Three Miniature Portable USB DACs

Music on the Go

Steven Stone

**F**or 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



## EQUIPMENT REVIEW - Three Miniature Portable USB DACs

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 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 Wyred 4 Sound 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 or 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 Wyred 4 Sound 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 Wyred 4 Sound 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

## EQUIPMENT REVIEW - Three Miniature Portable USB DACs

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 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 percent 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 mo-

## SPECS & PRICING

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

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## EQUIPMENT REVIEW - Three Miniature Portable USB DACs

ment 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 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 Wyred 4 Sound DAC-2 DSD SE, as was depth recreation and low-level detail. When I set up

a matched level A/B with both the Wyred 4 Sound 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. **tas**

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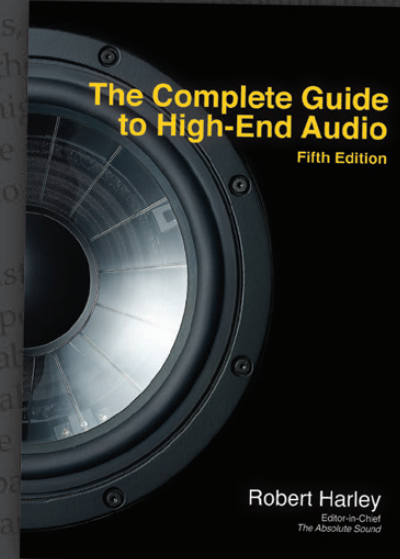
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# Meridian Direct DAC

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 ovular-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

## EQUIPMENT REVIEW - Meridian Direct DAC

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. **tbs**



### 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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## EQUIPMENT REVIEW - Meridian Direct DAC

# Meridian Prime Headphone Amplifier

The last two years have seen the engineers of Meridian Audio as busy as elves in Santa's workshop. First there was the Explorer, a pocketable USB DAC for dedicated headphone wearers. Next there was the Direct. The third and possibly final jewel in the crown is the just-released Prime—a premium analog headphone amplifier with a built-in USB DAC. Meridian considers it a “reference” product, and in my brief time putting Prime through its paces, it's a claim I cannot dispute.

Prime includes dual high-quality oscillators, based on those found in Meridian's Reference Series components. It can handle any standard sample rate up to 192kHz with minimal jitter. The Prime headphone amplifier's USB input is upsampled and filtered with Meridian's apodising digital filter. Of particular interest is Meridian's proprietary Analogue Spatial Processing technology (ASP) which, in Meridian's words, is geared to provide “a more natural soundstage that's more like listening on loudspeakers.”

The USB section of Prime is a true Class 2 USB input powered entirely from the interface—no additional power supply required. Meridian points out that since the USB conversion system is interface-powered, when it is disconnected “all digital circuitry in the unit is deactivated,” ensuring that no digital noise is introduced into the analog circuitry.

The look is classic Meridian, or more accurately miniaturized classic Meridian, designed by the company's co-founder Allen Boothroyd. The Hobbit-scaled enclosure is a dual-skinned chassis of

interlocking extrusions, a technique that further isolates the circuitry. There are no screws—the box is opened by a hidden magnetic release mechanism. The volume control uses a flexible coupling link from the shaft of the potentiometer to the rear of the enclosure minimizing microphonics from mechanically induced noise. LED pinlights on the front panel illuminate to indicate input selection and sampling rate, as well as ASP.

Designed for multiple headphone users, the front panel has dual 1/4" input jacks and a mini 3.5mm jack for earphones and in-ear devices. The Prime is suited to any headphone of any load. Parts selection is also prime and includes, for example, an Alps volume pot and Nichicon caps. The back panel houses a USB input, a mini-jack input for personal players, and a pair of gold-plated RCA inputs. (LP sources? By all means.) There's also a set of preamp outputs meant to drive a small desktop amp or active loudspeakers. However, when headphone-only listening is preferred, depressing the power button until it glows green disables the circuitry driving the preamp output—a cool function that gives the Prime that additional purist edge over the competition.

I haven't done a comprehensive survey of headphone amps like some of our staffers, but in its transparency, low noise, excellent dynamics, and ability to get me out of my head and into the music, the Prime is, well, prime. Through AKG K501 headphones and the Cardas EM5813 earphones, the perceived noise floor is vanishingly low. As a

result the recovery of low-level dynamics is enhanced, giving the amp its pacy, lively personality. In my brief time with the Prime I was all over the place with musical selections that ranged from classic James Taylor and Carole King high-res HDtracks to ripped CDs of various genres and Rachmaninoff's *Symphonic Dances* from the Reference Recordings HRx disc. Superb timbre and image definition were my initial impressions, but as the system warmed up I appreciated the warmish glow and musical ease of the Prime—bits of the old analog magic that made me put aside my reservations about computer-audio playback.

As for ASP, I was expecting something akin to an audio whoopee cushion. In other words, something that was initially a bit of fun, but tiresome in the long run. What I encountered was something vastly more satisfying. The effect was subtle but not overwhelming. There are two ASP modes—flat and a (very subtle) bass boost. Either way, there were no weird shifts in tonal balance. My go-to headphones retained their familiar tonality—the AKGs still sounded a little lean, the Cardas remained a bit lush and warm. But through both it sounded more like the instrumentalists were suddenly playing on the same stage, sharing the same acoustic space rather than slipping through the side entrances of your ear canal.

ASP reproduces music with more presence, a firmer central image, and more dimensionality. It enables the music to shift away from the extreme right and left ear positions. It's particularly impressive reproducing the soundspace of well-recorded orchestra, though pop vocals also seem to beef up

with physical weight and depth. It's almost as if the recording has suddenly developed a third track, like a center channel only more subtle. For this listener, I only switched off the ASP to remind myself why I didn't want to listen to music without it.

### And That's Not All, Folks!

Prime is powered by the included wall-wart supply but in early December there will be another option—the Prime Power Supply for an additional \$1250. Sporting the same footprint as the Prime headphone amplifier, this external power supply keeps AC noise away from the analog stages of the headphone amplifier. Ken Forsythe, Director of Product Management, told me that with the external PS installed the noise floor drops another 5dB thanks in large part to its relatively massive two-pound toroidal transformer. Far and away the coolest feature of the Prime Power Supply is a USB thru-put, which strips the 5V power from the PC and adds it to the power supply. Forsythe feels the sonic improvement in soundstage openness is impressive and should appeal to customers seeking “that last 5 percent in over-the-top performance.”

## SPECS & PRICING

**Output:** Suitable for impedances between 16 ohms and 1k ohm  
**Dimensions:** 6.3" x 2.0" x 5.9"  
**Weight:** 2 lbs.  
**Price:** \$2000  
[meridian-audio.com](http://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

## EQUIPMENT REVIEW - Rotel RDD-1580 DAC

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 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:

## 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

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## EQUIPMENT REVIEW - Rotel RDD-1580 DAC

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 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

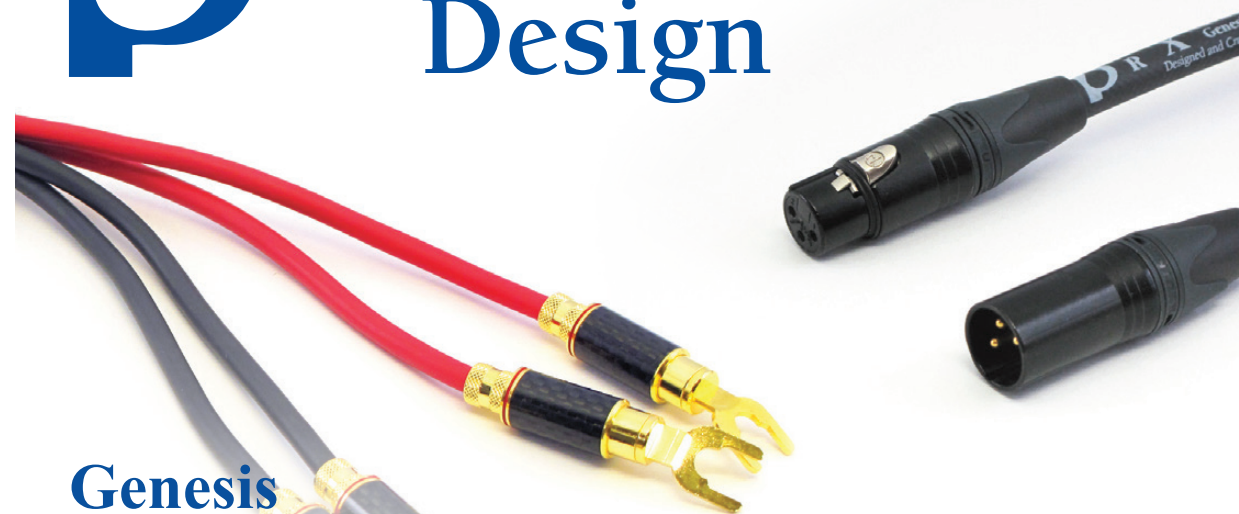
of, but I couldn't determine whether the switch from USB 1.0 to 2.0 actually made a difference in my Mac setup, because the 192kHz indicator light was illuminated before I read the owner's manual (I might have been overeager).

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*

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# Sony HAP-Z1ES HDD Audio Player

Game Changer



**A**s 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 HPA-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 1/4" 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 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

## EQUIPMENT REVIEW - Sony HAP-Z1ES HDD Audio Player

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 Beta copy of the Mac version which had just become available. It worked flawlessly.

## SPECS & PRICING

**Frequency response:** 2Hz-80kHz +/-3dB

**Dynamic range:** 105dB or higher

**THD:** 0.0015 percent 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

### SONY ELECTRONICS INC.

16530 Via Esprillo  
San Diego, CA 92127  
(858) 942-2400  
sony.com

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## EQUIPMENT REVIEW - Sony HAP-Z1ES HDD Audio Player

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 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; 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.

## EQUIPMENT REVIEW - Sony HAP-Z1ES HDD Audio Player

### 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

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**



# OUR TOP PICKS DACS, MUSIC SERVERS, & DISC PLAYERS



## Oppo BDP-105 \$1199

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](http://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.

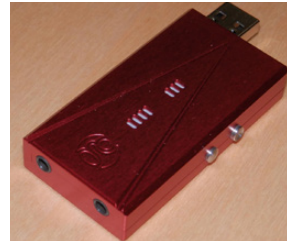
[sony.com](http://sony.com) (241)



## 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](http://audioquest.com) (241)



## LH Labs Geek Out \$199

For its next act, Light Harmonic, creator of the \$20k Da Vinci DAC, introduced through a Kickstarter campaign the \$199 Geek Out 450 DAC and headphone amplifier. For \$199, you get a superb DAC that decodes any PCM format as well as DSD and double-DSD, a powerful 450mW headphone amplifier, and a host of useful features. (The \$299 Geek Out 1000 offers a full watt of output power to drive low-sensitivity headphones; a third variant is optimized for very sensitive in-ear monitors.) A fantastic combination of features, sound, and price, the Geek Out 450 is one of those rare components that screams value, and delivers a fully developed three-dimensional soundstage.

[lhlabs.com](http://lhlabs.com) (251)



## 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](http://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](http://resonancelabs.com) (245)



# Loudspeakers



# Pioneer SP-BS22 LR

## The Devil and Mr. Jones

Neil Gader

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

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

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

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



## EQUIPMENT REVIEW - Pioneer SP-BS22 LR

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

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

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

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

its own physical limitations, self-censoring if you will.

I would never have guessed at the outset that I'd be taking the BS22 so seriously when it came time to write this review, but in the right room this game little compact has in many areas turned in a performance worthy of speakers well beyond its almost laughably low price point. All courtesy of the man behind that tiny back-panel signature. The BS22 is simply one of the great buys out there, without reservation. **tas**

### SPECS & PRICING

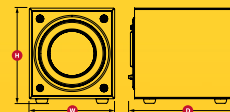
**Type:** Two-way, bass-reflex  
**Drivers:** 1" tweeter, 4" mid/bass  
**Frequency response:** 55Hz–20kHz  
**Sensitivity:** 85dB  
**Impedance:** 6 ohms  
**Dimensions:** 12.6" x 7.2" x 8.5"  
**Weight:** 9.1 lbs.  
**Price:** \$129/pr.

**PIONEER ELECTRONICS**  
P.O. Box 1540  
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\* All height dimensions include feet, depth dimensions include grilles.

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289 mm x 254 mm x 336 mm

#### d110

10-inch driver, 750 watts  
**Dimensions\* (H x W x D):**  
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340 mm x 305 mm x 403 mm

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JL AUDIO® | How we play.™

# KEF X300A Digital Hi-Fi Speaker System

Plug-in!

Neil Gader



**K**EF'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 *bbbuuurrrp* 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. **tas**

## 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

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# Infinity Primus P363

Technology Make Things Better, and Cheaper

Robert E. Greene

**H**ow well a speaker has to work to be satisfying is not an open-ended question. Eventually, speakers will get to be as good as there is any use in their being and when that happens, technological progress being what it is, it will not be long before they are as good as they can be at low prices.

People ought to rejoice in this, not resist it. Music is for everyone. But however one feels about the idea, in the face of speakers that cost tens or even hundreds of thousands of dollars a pair, the whole point might seem very remote at present.

“And then along came Jones”—or in this case, the Infinity Primus P363—and suddenly the idea seems a lot less remote than before. There have been other inexpensive speakers that were startlingly good. Several times in the history of TAS one writer or another has declared some inexpensive speaker to be good enough or even all but perfect (I recall an early NEAR speaker for example, and Harry Pearson’s reaction to the Sound Dynamics 300ti). Nor am I going to suggest that the Infinities as I shall call them hereafter are perfect. They are built to a price point and there are things one could do a little better by spending more on construction. Indeed, there is a sort of cottage hobbyist industry flourishing of people modifying these speakers for

themselves or others.

What I am suggesting is that these speakers are both remarkably good and remarkable in the rationality of their design. Infinity has apparently isolated the things that really count about sound and gone after these things while cutting corners—corner-cutting being necessary at the price—in ways that do not matter all that much. The results are startling indeed.

These speakers are very inexpensive. They are four-driver, three-way floorstanders. And they are currently being offered for sale quite frequently for under \$300 a pair. (Their MSRP is higher but they are being heavily discounted.)

I am well aware that if I just start talking about the sound—although Neil Gader described a somewhat earlier version of the speakers as “amazing” in his capsule review in a survey in issue 149—people are likely to think that this is just REG being an iconoclast or an agent provocateur, doing for speakers what he tried to do

for phono cartridges years ago with his review of the Audio Technica ATML170.

## The Technical Story

So I want first to tell you about the technical behavior of the speakers. Lots of you probably think that speaker sound is not well characterized by measurements, but bear with me and perhaps we can clarify this point a bit along the way.

Let’s start with distortion. For all practical purposes, the Infinities do not have any. The distortion is on the order of 55dB down from the signal from 100Hz on up at 90dB (this 55dB down corresponds to around 0.3 percent or less). The Canadian NRC’s famous speaker-measurement program does not even bother to show in its distortion measurements distortion levels that are more than 45dB down. They clearly think below that level, distortion is inconsequential. On this basis, the Infinities are essentially perfectly “clean,” truly distortion-free. The

## EQUIPMENT REVIEW - Infinity Primus P363

Eminent Technologies and most electrostatics are even a little lower—maybe 60dB or more down from signal or in the case of the ETs even better at many frequencies. But the Infinities are running about as well as a box dynamic speaker is likely to run in this regard and better than most. And they sound it. The Infinities are really clean and pure-sounding. You want clean midrange; they give you clean midrange.

Next act: The Infinities are really flat in response. Now here one has to be a little cautious. They are not absolutely as smooth in the midband as some speakers that run a single driver from the bass on up to say 3kHz. The Harbeth P3ESR is smoother from say 300Hz to 1kHz, for example. But not by much! The Infinities have a very smooth, neutral midrange, and the very small measured variations around 600-800Hz are just that, very small.

Now what is true is that, to my ears, the whole region above around 1kHz could be pulled down by about 2dB to good advantage. As is, the speaker sounds a little midrange-recessed relative to the upper mids and lower treble, above which response is very smooth and flat but slightly up in level. Many audiophile speakers are, in fact, midrange-forward, so this small recession effect may strike you more than it really should. In any case, such a small reduction of the treble is a trivial thing to do electronically. (Buy an NAD and the controls will be right in front of you.)

Now we get to where the Infinities just go romper-stomper over practically all the competition. Namely: The off-axis behavior of the Infinities is just all but perfect in evenness

and lack of coloration. The Infinities follow the pattern of rolling the off-axis down starting at a fairly low frequency (as opposed to say the JBL LSR 6332, which also has very smooth off-axis behavior but keeps directivity constant up to around 1kHz and shoves the baffle-step down quite low, by using a wide front cabinet). This is a choice, but it is an



essentially perfectly executed choice in the Infinities. And if you stay down where you belong in listening position, (i.e., below the tweeter's axis), the vertical consistency of the speaker is also superb. (As this listening position is low, it might make sense to lift the speakers up, on cinder blocks say.)

The effect of this is that the Infinities are superbly uncolored and un-speaker like. And they vanish as sources in a way few others can match, presenting a seamless and stable sonic image. This is no-compromise behavior. Not good for the money, not good for two or three times the price, but just plain good, period. You can spend \$90,000 for a pair of speakers and not do as well in radiation pattern. In fact, most likely if you spend that kind of money that is exactly what you will do—not as well—because, in fact, very few speakers do do as well.

### What Technical Information Means About Sound

So let's pause for a moment and ask ourselves, just exactly what can be wrong with a speaker that has ultra-low distortion, very smooth and flat frequency response, and extraordinarily smooth off-axis behavior, and which incidentally will play really loudly with rather little power needed. The answer of course is, not much. A speaker like this is bound to sound really good and indeed it does. Floyd Toole has retired from Harman (of which Infinity is a division). But his influence lives on and if he was a bit doctrinaire about flat response, off-axis consistency, wide bandwidth, and low distortion being all that mattered about speakers, that does not mean

that these things do not count for a very great deal. And the Infinities are the proof of the pudding.

All right, so there are a few problems. First of all, this is a speaker that I take it is aimed at the home-theater market, and the balance is bass-oriented, or more precisely there is a certain lack of control, even boom, around 100Hz. Presumably people have figured out that every speaker is going to need some fixing up in the bass most likely, and, hey, should have found out that when the frequency response is corrected, the timing (phase behavior) will also be corrected. So this whole bit with the boom

## SPECS & PRICING

- Type: Floor-standing three-way loudspeaker
- Driver complement: Two 6" anodized aluminum (Metal Matrix Diaphragm) woofers, one 4" MMD midrange driver, one wave-guided MMD tweeter
- Crossover frequencies: 350Hz, 3kHz, 24dB/octave slopes
- Sensitivity: 93dB
- Frequency response: 38Hz-20kHz
  
- Maximum suggested amplifier power: 200 watts
- Nominal impedance: 8 ohms
- Dimensions: 8" x 39" x 13"
- Weight: 48.5 lbs.
- Price: \$398 per pair (frequently discounted)

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## EQUIPMENT REVIEW - Infinity Primus P363

in the bass is a sort of non-event. (I know some people are a bit troubled by the idea that fixing frequency response fixes phase response, but it is just mathematics. You can believe in it without worrying about how it works.)

The Infinities have metal drivers (aluminum anodized on both sides to create a coating that supposedly damps breakup modes). Any potentially troublesome out-of-band breakup of metal drivers is well-suppressed here by the steep-slope crossovers. I think the effect of this suppressed breakup behavior is not really going to be audible on music material. I suppose in an ideal world the break-up frequencies would be even further out-of-band. Some manufacturers go to heroic and expensive measures to shove the breakup modes way, way out of band. That is better in theory—but at a certain point it may be only in theory. Phenomena do have thresholds, and it is worthwhile listening to see what one really needs in such situations.

### The Actual Sound

So how good do these speakers sound? With bass adjusted, treble shelved down slightly, speakers positioned so the listener is on the best axis—and incidentally with the listener at least 8 feet from the speakers (which do not integrate correctly very close up), they sound remarkably good, with a neutral character, a remarkable vanishing act as an apparent source, a lot of detail without exaggerated treble (high percussion is really excellent), and enough dynamic capability to deal with large-scale music. My usual orchestral favorites tests pieces—Rachmaninoff *Symphonic Dances* on ProArte, Dallas Symphony, Mata, for example—

sound well-resolved, smooth, natural both in tonal character and stereo presentation, and completely convincing dynamically. The extreme bottom is missing but at the price there will plenty of money left for a subwoofer if you must have pipe organs and earthquakes.

In a dark room, not knowing what was being played, I think few people would be willing to say definitely that they were not listening to a high-priced assault on the higher realms of speakerdom. This probably sounds heretical, for a pair of speakers that costs less than many people spend on a power cord or two. But there you have it. The times, they are a-changin’.

This does not mean that the Infinities are the ideal speaker for any particular listener, though I find it hard to believe that, with the treble tamed, anyone would not like them. For one thing, the choices of radiation pattern that speaker designs make influence how they sound, and any one choice may not be for you in particular. And drivers of other materials have a subtly different character which might lead to a preference elsewhere. But those things are true for speakers that cost a bundle, too.

At the very least, this is a speaker that everyone ought to listen to carefully. At the price, one could almost buy them just to try them out, or a club or group of friends could buy them for the price of a movie ticket for each member. I do not want to appear to be deliberately provocative, but these things are really something. In many fundamental ways they are in the top echelon of anything out there. Hard to believe, perhaps, but have a listen. They do more than sound like a really good speaker. They sound to me like the



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# Epos K1

## More Than Meets The Eye

Neil Gader



**T**he \$799 Epos K1 is a stylish two-way compact with a nifty little secret up its sleeve (for which, see the sidebar.) The smallest of the British brand's newly minted, three-model K Series, the K1 joins the 34.5"-tall K2, a medium-sized floorstander also equipped with dual mid/bass drivers, and the recently introduced kingpin, the K3. All are bass-reflex designs, featuring drivers mounted from the rear of the front baffle and, uncommon to speakers in this range, a forward-firing slotted port.

At just under a foot in height, the K1's stout MDF cabinet is uncommonly rigid—thanks in part to a newly developed bracing pattern augmented with internal damping that reduces cabinet colorations to new lows for Epos. The front baffle encircles the transducers to the edges of their surrounds and there are no visible mounting bolts or screws to sully the smooth design. (Epos also offers an optional protective magnetic grille that automatically snaps into place against the baffle.) The satin finished K Series is available in black or the bright arctic white of the review sample I received. The driver array includes a 25mm soft dome with high-temperature voice coil. It's ferrofluid-cooled and driven by a neodymium magnet system. The mid/bass transducer is a six-inch polypropylene cone with a 25mm high-temperature voice coil and shielded magnet system. Internal wiring is 18-gauge oxygen-free copper throughout. Twin sets of terminals are provided for users who find bi-wiring too alluring to dismiss.

Two-way compacts, stand-mount or floor-standing, have steadily chipped away at an old laundry list of small-speaker limitations—from output deficits to attenuated bass extension and overly compressed dynamics. The K1 reflects constructive developments in all these areas with a character that's open, dynamically engaging, and mainly neutral in tonality. Its spectral balance is lighter overall as befits its pint-size profile, but it's not a lightweight sonically. The midrange has a slightly forward lean and descends smoothly into a nicely proportioned mid-to-upper bass region. The K1's output in the upper bass is very good for the speaker's mod-

est size, which lends it a welcome warmth that secures music's foundation and pulse, and generates a sense of gravity—a quality often lacking in sub-12"-tall compacts. While the addition of a good subwoofer reveals the *full* range of ambience and acoustic air in a recording, the K1, in a good setup, is quite convincing on its own.

The K1 reproduces vocals of all stripes with point-source-like solidity, as it demonstrated on Audra McDonald's "Lay Down Your Head," a vocal and string quartet track that underscored the attractively full-throated midrange of the K1. On a 24-bit/96kHz high-resolution track like Ana Caram's bossa nova cover of "Fly Me To The Moon" the reproduction of Caram's soothing vocal, the gentle energy of the classical guitar, and the softly brushed snare and metallic crackle of the hi-hat were detailed, beautiful, and lifelike. Similarly Eva Cassidy's soaring version of "Fields of Gold" highlighted the ability of the K1 to reproduce the expansive and immersive reverberant field around the singer. Treble response was quite smooth, pleasantly open, and well integrated into the greater tonal spectrum. The sibilance range was kept nicely in check. There were minor hints of darkness on the very top, with less than the full load of speed, brilliance, and detail found in the finest tweeters; nonetheless, the K's tweet is a top competitor in the under-\$1k class.

The K1 offers superior balance and poise on small-to-medium-scale music, but can also rise to the challenge of full-range symphonic pieces like Copland's *Fanfare for the Common Man*—which has dynamics that can give fits to even the largest loudspeakers. Certainly the smallish mid/bass driver can be pushed beyond

## EQUIPMENT REVIEW - Epos K1

### The Secret Revealed

Each K Series can be ordered or upgraded to fully active status using the optional Active-K module. The module replaces the easily removable rear panel/passive crossover assembly, converting the speaker from a passive monitor to a fully active one. Thus modified, the K1 becomes in essence a completely different animal. Here are the details: Built-in to the Active-K module is a Creek-designed power amplifier. The original lossy passive crossover is replaced with an active version, allowing superior driver integration and even wider dynamic range, thanks to the use of EQ (equalization) below the port resonance. A selection of digital inputs is provided that includes a high-quality multi-input DAC, asynchronous USB, and a Bluetooth receiver. Also included is a set of analog inputs. A handheld remote control provides input selection and volume adjustment. Essentially the Active-K1 is transformed into a fully integrated system that only requires a source to rock 'n' roll. The transition is designed to be an easy one, capable of being done in the field by the user or dealer. I'm hoping to receive the Active-K for evaluation when it becomes available, and I'll let you know my impressions in a forthcoming Further Thoughts. Stay tuned.

reason, or asked unfairly to fill cavernous volumes of cubic footage. But in these instances, the K-1s compress evenly and undramatically, adjoining images shrink slightly, and tonal decay is somewhat attenuated. Basically the K-1 is an amazingly potent little speaker that pretty much doesn't know the meaning of the word "uncle."

Along those same lines the K1 is really in its element establishing a beat and keeping a listener's toe tapping. And for that I have to credit the fortuitous arrival of *The Beatles in Mono* 14-LP box set (reviewed in this issue's music section). The K1 and these marvelous reissues—cut from the original analog mastertapes, no digital finagling—seemed to have a natural affinity for one another. Perhaps it's the K1's British monitor roots, but there were moments during songs like "Blackbird" or "Mother Nature's Son" that I felt like a fly on the wall of the control room at Abbey Road.

Although the K1 doesn't always pull a full-Houdini and vanish into the soundstage such as, say, a classic like the ProAc Tablette, its image focus is still very good. On Fleetwood Mac's "Gold Dust Woman" from the 24-bit/96kHz file, the K1 preserves the distinct quality of the lower-level harmonies of Lindsey Buckingham and Christie McVie as they backup Stevie Nicks' lead. There is just minor smearing of complex groupings of images, things that top-notch ribbons and beryllium tweeters can resolve all day. Still, back in the real world, the K1's imaging is unashamedly solid.

Bass response is very good, actually excellent for a speaker whose height doesn't even break the one-foot mark. It's decidedly tuneful and well controlled, with a pleasing roundness and resonance. Extending into the fifty-cycle range isn't peanuts for a speaker this size, and the K1 will give listeners more than a mere impression

of soundstage information and timbral detail. There's a little thickness in the 80-120Hz range, but it doesn't cloud over the responsiveness and clarity of the mids; rather, it helps to anchor the stage, preserve dimensional cues, and make up in midbass authority for what the K1 lacks in the lowest octaves.

Epos is proud, and in my opinion justifiably so, about its implementation of its slotted port. It not only saves baffle space, but also allows high volumes of air to pass without overhang or the "chuffing" effects commonly found in conventional tube ports. The result, says Epos, is significantly improved low-frequency response and power-handling with minimal coloration from a relatively small driver and modest cabinet volume. Also to its credit the K1 mates smoothly with a good fast subwoofer like the REL S5 (review to come). If you want to really get down to *fundamentals*—the sort that a pair of big tom-toms deliver—a sub on the order of the REL is a must. More than adding extension, which it most assuredly does, the REL defines initial bass transients and timbre with greater clarity and color than the K1 or any small monitor can manage on its own.

The Epos K1 is one seriously classy little speaker with genuine sonic integrity. It sports many of the virtues that endear us to the finer, pricier two-way compacts, while minimizing the common shortcomings in its "blue plate special" price category. A hugely satisfying effort from Epos to say the least, and as you'll read in the sidebar the story doesn't end here. To be continued.... **tas**



### SPECS & PRICING

**Type:** Two-way bass-reflex, compact loudspeaker  
**Drivers:** 25mm tweeter, 6" mid/bass  
**Frequency response:** 51Hz-30kHz  
**Impedance:** 4 ohms  
**Sensitivity:** 88dB  
**Dimensions:** 11.8" x 7.3" x 8.9"  
**Weight:** 12 lbs.  
**Price:** \$799

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# MartinLogan Motion 35XT

Sweet and Lowdown

Neil Gader



I first encountered the MartinLogan Motion 35XT at the California Audio Show in San Francisco last September, and my ears perked up immediately. Even under the less than ideal show conditions, these stand-mounted compacts were engaging, rock-solid performers. So much so that I just had to see how things would shake out in my own listening room, for as every veteran audiophile can attest, sometimes first impressions stick and sometimes they don't.

The Motion 35XT is a two-way design in a bass-reflex enclosure with a rear-firing port. It's one of two stand-mount speaker options in ML's Motion Series, a "mix and match" collection that also includes three XT floorstanders, a pair of center channels, plus designer FX models, ultra-slim XL models, and even a sound bar, for goodness sake. The one common thread this broad lineup shares is ML's Folded Motion Tweeter—a fairly esoteric transducer in this modest price range but a not entirely surprising feature given that MartinLogan built its reputation on exotic electrostatic designs that harken back to the original full-range CLS from 1986. In many ways the Folded Motion driver is derivative of the classic Heil Air Motion Transformer wherein an ultra-low-mass diaphragm (4.5" x 2.75") is pleated, accordion-style, embossed with a conductor, and suspended in a magnetic field. The diaphragm squeezes the air along the pleats or "folds" and, voila, music. Its virtues are its extremely low mass, tiny excursions, and large radiating surface. MartinLogan has used this design on previous models, but this new generation boasts a 40 percent larger diaphragm area. The three XT models (35XT, 50XT, and 60XT) feature this new, larger-diaphragm tweeter; the other four Motion models use the standard Folded Motion driver.

Beneath the aforementioned Folded Motion Tweeter rests a 6" black aluminum cone mid/woofer in a cast-polymer basket. It uses a rigid, structured dust cap to reduce cone break-up modes. Both drivers are bolted securely in place between the underlying baffle and a black-

anodized brushed-aluminum outer baffle. The handoff between mid/bass and tweeter occurs at 2.2kHz via a crossover network that features a custom air-core coil, low DCR steel-laminate inductors, polypropylene film capacitors, and high-quality electrolytic capacitors. The tweeter receives thermal/current protection, as well.

The enclosure is a stout construction of ¾-inch MDF; its top panel is raked gently front-to-back presenting a non-parallel surface meant to reduce resonances and internal standing waves. The Motion 35XT is nicely detailed and richly finished in deep gloss—a clear step up from the typical bookshelf. Other features include ML's signature perforated steel grille, which attaches magnetically, and dual custom-angled, 5-way, tool-less binding posts for connection versatility.

The sonic character of the 35XT is first and foremost, refined. And like any contemporary small monitor worth its salt, the 35XT manages to vanish within the soundspace with ease. It has a smooth, neutral to neutral/light character not untypical of compacts that tout a single, smallish, mid/bass transducer and restricted internal volume. But it's not an edgy cold signature, which is often the case. There is a relaxed quality to the 35XT that takes a natural acoustic recording like Stravinsky's *Pulcinella* and delivers wind sections and upper strings with sweetness and openness. Transients, low-level resolution, and micro-dynamics are likewise also very good—I always listen for the soft tapping of the keys of the oboe midway through this ballet. The 35XT never

## EQUIPMENT REVIEW - MartinLogan Motion 35XT

missed a cue. The result of ML's efforts are treble octaves that possess an expansive yet precise sound that delivers images with air and substance—a realistic effect that isn't normally captured by a typical dome tweeter, but clearly is by MartinLogan's Folded Motion design. In many ways, solo images have some of the same freely suspended openness and sparkling character that I typically associate with Maggies and Quads, although on a more restricted basis with the 35XT. When I listened to Glinka's song *The Lark*, arranged for piano, the transmission of sound was almost frictionless, with free-flowing, fluttering keyboard trills and little to no smearing.

As I listened to The Carpenters' hit "Sing," the harmonica intro with piano accompaniment was pristine, the harmonica untrammelled by colorations, just reedy-pure and quicksilver fast. Vocal sibilants were natural—sharp but not spitty. On this high-resolution DSD track I could hear all kinds of minutiae, including the tape hiss softly joining the overall mix when Karen's vocal track is brought up and the accompanying flow of reverb cascading down the soundspace. However, at the upper frequency extremes harmonics seemed to darken slightly. As I listened to Miles Davis' "So What," some of the upper-frequency air and whitish pressure generated from Davis' mouthpiece were hinted at rather than fully realized.

Imaging, on the other hand, was exceptional; the kaleidoscope of panned vocals and images zipping across the soundstage from Yes' "Owner of a Lonely Heart" and "It Can Happen" were startling in their movement and clarity. Soundstage dimensionality—at least



laterally—was well resolved, but depth was a little lacking. The speaker has a tendency to emphasize and press forward a recording's backgrounds—for example, the backing singers, principally Michael McDonald harmonizing behind Steely Dan's Donald Fagen during "Hey Nineteen." Similarly the vast ambience and the depth of the soprano soloist within the Turtle Creek Chorale on the Rutter *Requiem* were not fully revealed; rather everything was pressed forward and flattened slightly.

Outside of the lowest octave—the 20-40Hz range is beyond the grasp of the 35XT—bass response was faithful and tuneful, with good tonality and pitch specificity. And to its credit, the bugaboo of port overhang was all but non-existent at any rational listening level. Predictably, the 35XT had limits on large-scale dynamic shifts in the midbass regions, and its mid and upperbass were a bit shy of ruler-flat. Although the duet for bass violin and trombone

from *Pulcinella* indicated some suppressed macrodynamic energy, the 35XT still managed to more than pull its own weight (and that of the instruments)—quite an accomplishment for a compact barely topping thirteen inches.

Keep in mind that the quality of bass response performance will be commensurate with positioning in the room, meaning the 35XT needs the reinforcement of the wall directly behind it. In my room, midbass and upper bass response smoothed out appreciably at a distance of about 28" from the backwall to the speaker's rear panel.

Driver integration, a critical aspect of the listening experience, becomes ever more significant with hybrid designs such as the 35XT. Mixing driver materials, types, and technologies can be a little like stirring oil and water—the drivers struggling to integrate with each other and to sing with one voice. In other words, the heavier (read: slower) woofer can be heard to be operating at a disadvantage to the feather-light folded diaphragm of the tweeter. Fortunately evidence of this familiar divide was negligible in my listening sessions with the 35XT. The human voice is excellent at exposing inter-driver irregularities, but the 35XT proved its mettle to my ears. It managed to strike a canny musical balance. An impressive achievement, to say the least.

All told, the Motion 35XT offers some stiff competition to battle-hardened rivals like the Sonus faber Venere 1.5 with its espresso midrange, or the Focal Aria 906 with its punchy bass response and all-around dynamism. But of these contenders only the ML has the virtue of its sweet tweet, and offers such a high level

of overall transparency and musicality. The 35XT is a worthy heir to the proud tradition at MartinLogan. **tbs**

### SPECS & PRICING

**Type:** Two-way, bass-reflex, hybrid ribbon/cone, stand-mount loudspeaker  
**Frequency response:** 50Hz-25kHz +/-3dB  
**Drivers:** Folded Motion XT Tweeter (4.5" x 2.75" diaphragm), 6" aluminum mid-bass  
**Sensitivity:** 92dB @ 2.83 volts/meter  
**Impedance:** 4 ohms  
**Dimensions:** 13.5" x 7.6" x 11.8"  
**Weight:** 18.5 lbs.  
**Price:** \$1299/pr.

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#### ASSOCIATED EQUIPMENT

Sota Cosmos Series IV turntable; SME V tonearm; Sumiko Palo Santos, Ortofon 2M Black & Quintet Black; Parasound JC 3+ phono, Lehmann Audio Decade phono; MacBook Pro/Pure Music; Lumin A-1 Network Music Player; mbl C51 integrated, Rowland Continuum; ATC SCM20, Kharma Elegance S7 Signature loudspeakers; Kimber Select 6000 Series, Synergistic Tesla CTS, Wireworld Platinum Eclipse 7 speaker cables and interconnects; Audience Au24SE phono & power cords; Kimber Palladian, Synergistic Tesla, power cords; AudioQuest Coffee Ethernet, USB, and Carbon FireWire

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# PSB Imagine X2T

## Bring on the Bass

Julie Mullins

**I**magine a company that claims its \$1299 loudspeakers make “real sound for real people,” and what’s likely to be your gut reaction? At the very least, it’s safe to say you wouldn’t expect such a speaker to sound “great.” And as a rule you’d be right.

Well...meet the exception. PSB has created a transducer of incredible value for an incredibly reasonable price: the aptly named Imagine X2T Tower. (Indeed, it is already an award-winner—a Reviewer’s Choice Award from *Soundstage! HiFi*—and will likely get a Golden Ear from me and earn well-deserved spots in our next Buyer’s Guide and Editor’s Choice lists.)

In appearance, this four-driver three-way is anything but flashy: a slim, compact, dual-front-ported, quasi-D’Appolito (midrange on top, dual woofers on the bottom, tweeter in between) floorstander about three feet tall, with an MDF enclosure that comes in any finish you want as long as it’s black ash. Perhaps the X2T’s main distinguishing feature is the mustard-yellow hue of its twin woofers, whose cones are made of injection-molded, clay/ceramic-reinforced polypropylene. But what the X2T lacks in eye-catching looks, it more than makes up for in ear-pleasing sound.

Famous for being persnickety when it comes to sonic quality, PSB founders Paul and Sue

Barton—the husband-and-wife duo whose initials form the Canadian company’s name—have consistently found ways to bring high performance to lower price points. Their goal for the Imagine X line was simply to offer the most accurate sound for the money. Naturally, various design and build compromises came into play, with careful consideration paid to what could be stripped away from PSB’s more expensive models, and what had to be retained.

Luckily for listeners (particularly those who are just getting started or who might not have the deepest pockets), PSB does its homework. In a pioneering move, in 1974 it became the first loudspeaker company to use the advanced acoustical labs housed at the National Research Council Canada (NRC) for product development. Since that time, the PSB design team has devoted many years to research at the NRC facilities, where the focus has been as much on how we perceive sound, as on what sounds good. PSB’s double-blind testing eliminates listener bias, enabling researchers to gain insight into which sonic characteristics are most important—and which can be more or less left out of the equation.

Beneath its unpromising exterior the X2T is a highly engineered speaker artfully designed to play to the ear. Geared to getting the most out of the midband, this three-way uses a midrange driver that is housed in its own enclosure for

## EQUIPMENT REVIEW - PSB Imagine X2T

ideal dispersion and minimized distortion at high SPLs. Moreover, the driver features an injection-molded, poly-filled carbon-fiber cone designed especially for the X2T. The one-inch tweeter dome is made of pure titanium, with a phase plug that is intended to help extend high-frequency response and control breakup (in addition to protecting the dome).

In part because of their surprisingly powerful bass (which we'll get to in a moment), the X2Ts should be placed away from walls by three feet or so—to help minimize room reinforcement, especially in small-to-mid-sized spaces. Solid-state amplifiers probably are the way to go for better grip on the woofers, and (once again) to help offset some of this transducer's inherent low-end emphasis. For this review, I used the Odyssey Audio Stratos monoblocks fed by an ARC tube preamp and phonostage.

Before delving into my listening notes, I feel compelled to share one of the most striking discoveries I experienced listening to the X2Ts. In spite of their darkish overall balance, these speakers can be quite transparent—that is, they regularly reveal a given recording's strengths and weaknesses. As a consequence, sound quality varies widely and (naturally) from disc to disc. For example, the X2Ts really elevated their game on certain extremely well-recorded selections, such as the Analogue Productions 45rpm reissue of the Rachmaninov *Symphonic Dances*, where (despite some slight, yet attractive depression of the brilliance range) their beauty, resolution, and power were reminiscent of *much* more expensive speakers.

According to the PSB's website, the X2T's new 5 1/4" midrange driver features a novel

shape and filleted surround intended to optimize the reproduction of voice. And, indeed, vocals generally proved to be a strong suit. Madeleine Peyroux's soulful rendition of Leonard Cohen's tune, "Dance Me to the End of Love," for instance, had a surprising measure of the smoky sweep and gentle swing that it has through JV's superb \$220k Raidho D-5s. However, the PSB's darker, "bottom-up" balance was also evident on occasions, giving something like Pete Seeger's sunny tenor on The Weavers' classic "Guantanamera" (from the group's live 1963 Carnegie Hall reunion LP) a decidedly baritone tint that it doesn't have on the Raidhos (and didn't have in life).

On the other hand, Louis Armstrong's trumpet—which plays into the PSB's wheelhouse—on "Stars Fell on Alabama" from *Ella and Louis* [AP] blew me away. (Then again, it would be a sad speaker day if Satchmo's playing didn't shine.) On this same album, the recording quality of the accompaniment varies, and here it often faded far into the background. (I had the image of Oscar Peterson's piano being played timidly, unobtrusively in a corner, as if he didn't want to detract from the main event.) This wasn't really the speakers' fault; they merely became the "messengers" of what had been recorded. Although such transparency to sources is far from unique, it's still pretty impressive in \$1299 loudspeakers.

The X2T's primary strengths lie in the power range and the bass, where it can really turn heads. This little speaker delivers surprisingly dense tone color and hefty, extended low end—an unexpected feature in such a package at such a price point. Because bass is something

audiophiles tend to drop big coin for, the X2T's quality in the bottom octaves is a rare treat that absolutely sealed the deal for me. In definition and solidity, the X2Ts may not deliver the kind of bass you can sit on, but its bottom octaves are still unusually full, powerful, and nicely differentiated in pitch.

Actually, the slight predominance of the two 6 1/2" woofers (each housed in its own separate acoustic chamber) produces what I've already said is a bottom-up sound. Whether or not you like this kind of bass-centric balance, it is hard to deny that it can add lifelike richness and body to the presentation. In general, I found it to be rather pleasing.

I appreciate accuracy, but I also like a little heft and warmth with certain styles of music, some rock 'n' roll or pop, for instance. So I did some 80s throwback listening (and 90s, too). Much of REM's *Life's Rich Pageant* on MoFi vinyl powered through with exciting energy and drive. On the spare ballad "Swan, Swan, H," Peter Buck's acoustic guitar resonated beautifully with realistic articulation. Marshall Crenshaw's "Someday, Someway" on MoFi was also reproduced with impressive accuracy on jangly guitar, jingly bell, and bass guitar. And in spite of Crenshaw's somewhat limited range, the X2Ts really allowed the emotion of his voice to shine through. On Dead Can Dance's "Spider Strategem," percussion had relatively crisp snap and the tabla beats thrilled, creating a pleasing counterpoint to the ethereal vocals. The track sounded at once heavy and light—and quite agreeably so—despite some murkiness in the bottommost octaves. (I'd estimate that the bass goes down into the upper thirties or

low forties before nose-diving.) As I've already noted, some of the X2T's finest moments arrived with Rachmaninov's *Symphonic Dances* and Earl Wild's piano and Arthur Fiedler's Boston Pops ensemble on Analogue Productions' great reissue of the RCA *Rhapsody in Blue*. (Classical music seemed to be another forte for the X2Ts.) These famously well-recorded masterpiece's strengths were revealed in all their regal glory, though here and there winds, strings, and higher-pitched percussion could have used a little more energy, air, and sparkle in their top octaves.

In staging, the X2T is decidedly upfront, though still expansive. The soundstage might

## SPECS & PRICING

**Type:** Four-driver, three-way, quasi-d'Appolito, floorstanding loudspeaker

**Drivers:** One 1" titanium cone tweeter; one 5 1/4" injection-molded, fiber-reinforced polypropylene cone midrange; two 6 1/2" injection-molded, clay/ceramic-reinforced polypropylene cones woofers

**Frequency response:** 30Hz-20kHz +/-3dB

**Power handling:** 200 watts

**Dimensions:** 9" x 40 1/8" x 17 5/8"

**Weight:** 52 lbs. (each)

**Price:** \$1299

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## EQUIPMENT REVIEW - PSB Imagine X2T

not be the deepest around, but in almost all cases the imaging of singers, instruments, and players was pretty precise, offering greater sonic verisimilitude. The sax, horns, and bass on The English Beat's classic "I Confess" on MoFi vinyl dazzled with full, and quite realistic, exuberance.

As impressive as the X2Ts are, some lambs had to be sacrificed in order to get so handsomely to this price point. Though they don't lack speed of attack, the X2Ts aren't the lightning bolts that some (much pricier) transducers are; nor do they have the same definition and articulation of such big-bucks speakers (although this was more apparent on certain instruments and recordings

than others). At times, as I've said, I was a little hungry for more soundstage depth. And the reproduction of upper harmonics left a bit to be desired, with a general feeling of rounded softness in the brilliance range and shading in the treble that made some instruments either fade down or sail past like Macy's Thanksgiving Day floats on an overcast November morning.

But I wouldn't want to dwell on these shortcomings. With the X2Ts, you get your money's worth and then some. Exceptionally well engineered for their price, these speakers play with a midrange focus and naturalness, and a bass-range power and resolution that simply aren't available in most other loudspeakers at this price. They really deliver the goods, especially on well-recorded music, be it classical, jazz, or rock 'n' roll. Vocals, strings, piano, drums, low-pitched winds, and brass tended to have the greatest accuracy and realism, but the X2Ts provided surprisingly faithful reproduction of most recordings.

As easy as these speakers are to enjoy—and especially given their unbelievably high value—they certainly live up to PSB's marketing message: "real sound for real people." I loved 'em. *tas*



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# Magnepan .7

## Julie Versus The Maggies

Julie Mullins

**L**et's face it: Most audiophiles are into cone loudspeakers. And why not? They're plentiful, good-sounding, and (at least in many cases) quite affordable. Though force of habit is a powerful thing, what if there were an alternative that was every bit as good-sounding (maybe even better-sounding) and just as affordable, only it didn't have cones and didn't come in a box? Although I imagine most of you have already made their acquaintance in previous versions, let me introduce you to Magnepan's latest "mini" planar dipole, the two-way, floorstanding, all-quasi-ribbon-driver MG .7—a speaker that is capable of a more natural and full-range sound than any previous "mini" Maggie, and a more natural and full-range sound than anyone might reasonably expect for the money.

### The .7s Versus Your Room

Let me say right off the bat that these are very impressive speakers offering a practically unbeatable quality-to-cost ratio. Of course, they do have certain peculiarities. For one thing, with Magnepan's proper setup in your room is arguably more critical than it is with most other types of speakers. It certainly took some experimentation with positioning to get the .7s to sound their best (though the result was worth every minute of effort). Happily, these guys aren't too heavy, only 27 pounds each, so they can easily be shifted around to suit your room's needs—even by a gal!

Though small by Maggie standards, the .7s are still four-and-a-half-foot-tall, one-foot-four-inch-wide rectangular panels about the height of a largish dynamic floorstander, a little wider than

same, and, at under an inch in depth, about twenty times thinner. Their figure-8 dipolar dispersion (see below) makes sidewall reflections less of an issue with the .7s than it is with wide-dispersion cones; however, if the .7s (or any Maggies) are toed-in toward the listener rather than made parallel to the backwall, then part of their rear wave *will* bounce off sidewalls, potentially adding (as it does with any loudspeaker) brightness from early-arrival reflections. What this means is that with Maggies you should take some of the same care in placement vis-à-vis sidewalls as you would with any loudspeaker, especially if you toe the speakers in.

The Maggies should also be placed a reasonable distance from back walls, in order to avoid doubling and/or cancellation in the bass from the dipolar .7s'

out-of-phase rearwave. (In the end I set them up about three-and-a-half feet from the rear walls.)

Unlike most dynamic loudspeakers, the Maggies can be positioned with their tweeters in different locations—to the inside of the speaker, firing more or less directly at you, or on the outside of the speaker, firing less directly at you. All you need to do to change the tweeter orientation is swap the left speaker for the right one. Obviously the location of the tweeter makes a difference in tonal balance, imaging, and soundstaging. Though JV and I preferred the sound of the .7s with their tweeter to the outside in the room in which we were listening, the inside position did have more presence, image focus, and treble energy. Obviously any decision about tweeter orientation will depend on the size of



## EQUIPMENT REVIEW - Magneplan .7

your room and how far you're seated from the panels.

Once again like all Maggies, the quasi-ribbon panels of the .7s need some break-in before they sound their best. Though quite listenable out of the box, they will sound better (less bright in the upper mids, more filled-out, freed-up, and energetic in the bass) with several weeks of play.

### The .7 Versus The MMG

At 15-1/4 inches wide and 54-1/4 inches tall, the .7s are about an inch wider and better than six inches taller than Maggie's other much-less-expensive two-way "mini," the MMG. However, unlike the MMG, both the tweeter and the mid-range/bass panels of the .7s are quasi-ribbons (as opposed to quasi-ribbon and planar-magnetic, for which see JV's sidebar), giving the new Maggie an audible leg up in speed, resolution, bandwidth, and overall coherence over their little brothers. Not only are the .7s more extended in the treble than the MMGs; thanks to their considerably larger mid/bass panels they are also more extended in the low end, which Jon and I judged to go down more or less linearly into the low 50s. Perhaps the best news is that they will only set you back mere pocket-change (for high-end gear): \$1395 the pair.

### The .7s Versus Cones

As you probably already know, planar speakers use a different kind of technology than cone or horn loudspeakers. The most obvious visible difference is that there's no box to "house" the drivers or to damp their backwave—and thus no "box coloration." Planars produce equal

amounts of sound front and back, and, at least in theory, use the room (or the distance between their panels and the walls) to "damp" or attenuate their rear wave.

What you can't see in a planar speaker is the drivers themselves, which are also very different than cones. The .7s use ultra-low-mass strips of aluminum bonded to very thin sheets of Mylar as drivers. Suspended between permanent bar magnets, these featherweight "quasi-ribbons" are faster and lower in distortion than much-more-massive cones. (Once again, see Jon's sidebar for an explanation of how quasi-ribbons work.)

It may be obvious, but a driver's mass and a speaker's box inevitably and profoundly affect what you hear. Magneplanars offer the advantages of an extremely low-mass/low-inertia/large-surface-area driver suspended in a more open, unrestricted, less resonant and resonance-prone framework than that of a dynamic loudspeaker's massive enclosure. All of this results in a boxless "airiness" to the sound and a naturalness of timbre that allow acoustic instruments to shine.

### The .7s Versus Music

In my listening tests, I spun a wide range of LPs and some digital tracks, too. At the risk of sounding cliché, my musical tastes really run the gamut. (If you saw my record collection, you might even wonder whether I had multiple personalities!) Anyway, I'd like to share some listening examples and how the Maggie .7s fared with each.

I knew going in that no speaker is going to be perfect on every kind of music, and that per-

haps the most important consideration for a potential buyer is how well his listening preferences match up with a speaker's characteristics: with what the speaker does well, and what it doesn't do as well. Magneplanars are famous for their accurate reproduction of the mid-range, so I expected them to deliver impressively realistic sound with almost all acoustic instruments (save perhaps for big bands and very large orchestras). And deliver they did!

On digital tracks from *Temptation*, Holly Cole's well-known covers of Tom Waits tunes, the "airiness" of the sound of the Maggies was a match made in heaven with Cole's breathy vocals. "(Looking for) The Heart of a Saturday Night" was a real standout in its faithful sonic reproduction of the entire Holly Cole Trio's stellar performance. Translation: The recording sounded beautiful and true-to-life. Also, I could swear that the presentation, while open and graced with a striking measure of air and light, felt like it existed within some precisely (almost mathematically) defined soundfield. Quite a large field, but still a space with a specific form and shape that was different than the form and shape of the listening room. I suppose what I'm talking about is a "soundstage," the .7s' recreation of which was kind of stunning. When you add this remarkable reproduction of ambient space to the .7s' natural timbre, they are clearly an excellent choice for acoustic music recorded live or in an actual hall.

With *Temptation*, the only time the .7s took a dive was on a few, big, low bass notes in the opening bars of "Jersey Girl," where there was some audible clipping as the .7s reached/exceeded their excursions limit, although the vol-

ume I was listening at was fairly substantial.

Which brings me to bass-heavy rock and roll.

Personally, I tend to like a little bit of added color and drama with such music. I enjoy experiencing the weight of a Fender bass guitar and feeling the punch/impact of a kickdrum. And on their own the .7s just don't do this particular trick the way cones do.

So I decided to bring some JL Audio subwoofers into the mix. (It's worth noting that Magneplan offers its own add-on woofer option, the Magneplanar Bass Panel or DWM, which essentially contains two bass drivers on one thin-film planar-magnetic panel. Because they're "all-Maggie," the DWMs might integrate very seamlessly. I would certainly like to give them a test drive when I get the opportunity. Hopefully I'll be able to report back soon.)

## SPECS & PRICING

**Type:** Two-way floorstanding planar loudspeaker with quasi-ribbon tweeter and quasi-ribbon mid/woofer

**Frequency response:** 50Hz-24kHz +/-3dB

**Impedance:** 4 ohms

**Sensitivity:** 86dB/2.83V/1 meter, 500Hz

**Dimensions:** 15 1/4" x 54 1/4" x 1/2"

**Weight:** 27 lbs. (each)

**Price:** \$1395

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## EQUIPMENT REVIEW - Magneplan .7

With some rock and roll, the JL Audio subwoofers added needed muscle and punch. A high-res digital file of the Stones' "Gimme Shelter," for instance, sounded big, brash, and bold with the subwoofered .7s. And not just in the bottom octaves. You could also better feel the weight and power of Merry Clayton's "backing" vocals—not to mention Keith Richards' driving guitar. A couple of cuts from the Pixies' indie/post-punk *Surfer Rosa* on vinyl sounded heavier than thou. The insistent throb of "Cactus" and the building, searing strains of "Where Is My Mind?" simply filled the room. This was music you could hear and feel.

That said, weight isn't everything.

On much music the magic of pure, authentic acoustics rang true through these Magneplans to very satisfying effect with no subwoofers required. For instance, "The Girl from Ipanema" from the 1964 eponymous Getz/Gilberto album sounded infinitely more spacious and open without the subs. The song floated and soared in all its subtle, understated beauty. Also on the jazz front, *Coleman Hawkins Encounters Ben Webster* was a captivating experience without subs. The breathiness and buzzy vibrations from Hawkins' tenor saxophone reed sounded incredibly real and present. The soundstaging felt true-to-life. The piano's low notes were clear and warm. You could easily pick up nuances of the recording space.

The bottom line is this: As I spent more time experimenting with the .7 speakers both with and without the addition of subwoofers, I discovered that I definitely preferred some music with them, but many selections without. Generally speaking, I found my preferences

fell along lines of musical genres, though sometimes even *those* lines got a little blurred.

Without subs, for example, the acoustic/electric sound of the live version of "Late in the Evening," from *Simon & Garfunkel: The Concert in Central Park* made me want to dance to its catchy salsa rhythms. Closing your eyes you could picture the stage full of instruments in a rich scene that must have been an unforgettable concert experience.

Even some classic rock tracks (particularly those without big driving bass) worked well without the subwoofers. On David Bowie's "Diamond Dogs," the solid percussion came through vividly and felt balanced against the raw electric guitar and the rocking piano via the .7s all by themselves. (And that cowbell never sounded better.)

### The .7s Versus Amplifiers

But before you start thinking we're entering some sort of hi-fi utopia, know that while this design eliminates some variables from the equation, it also brings with it other demands and considerations.

For one, the .7s are a bit power-hungry: They require an amplifier capable of driving a low-sensitivity 4-ohm load. I listened first with a tube amp, but definitely heard better results with a solid-state one. Why? The tube amp gave almost too much leeway to the bass, making it less clearly defined. This also left the upper midrange more exposed (i.e., a shade bright). Some might like the more forward projection (not unlike what you'd hear from horn loudspeakers) of tubes, but I liked the more blended, balanced feel of the solid-

## Ribbons, Quasi-Ribbons, and Planar Magnetics

For those of you who don't understand the difference between "true" and "quasi" ribbon drivers, let me explain. In a nutshell the incredibly lightweight foil of a true ribbon *is* the driver—it simultaneously conducts the signal and vibrates to turn it into sound waves. In a "quasi-ribbon," the foil is not the driver—or not exactly. In a quasi-ribbon, that strip of aluminum foil is itself attached to an extremely lightweight strip of Mylar; the foil, which is suspended between permanent bar magnets, acts as the signal conductor (a planar voice coil, if you will), transmitting the signal to the entire surface of the Mylar, which, in turn, vibrates (together with the aluminum) to produce sound.

As a point of comparison, in a traditional planar-magnetic panel the Mylar driver is not driven uniformly over its entire surface by a foil of aluminum as it is in a quasi-ribbon; instead, it is driven by a latticework of thick signal-conducting wires that are attached to the Mylar itself. The difference in the uniformity of drive and in the relative mass of the driver should be obvious.

Up until the MG-1.7, all Maggie speakers used a mix of ribbon (typically for high frequencies), quasi-ribbon (typically for high frequencies and upper mids), and planar-magnetic drivers (typically for the lower mids and the bass), which, as I just noted, made for variations in uniformity of drive, uniformity of dispersion, uniformity of moving mass, and uniformity of power-handling that could be heard as discontinuities in the overall presentation. This was particularly true of the transition between ribbon tweeter and quasi-ribbon or planar-magnetic panels, but also of the transition between quasi-ribbon and planar-magnetic panels.

What made the 1.7 (and subsequent .7 Series Maggies) such a landmark—and a departure—is that every driver in it, from its super-tweeter panel to its tweeter/upper-mid panel to its lower-mid/bass panel—were quasi-ribbon, making it the first Magneplanar to use ribbon technology in all of its drivers. Though a two-way and not a three-way like its bigger brother the 1.7, the .7 is the first "mini-Maggie" to use quasi-ribbon technology for all drivers. As was the case with the 1.7, the result is a loudspeaker of superior "uniformity"—a speaker's whose power-handling, dispersion, resolution, and overall presentation are more "of a piece" than any previous miniature Maggie. JV

state amp, so I stuck with that for most of my listening.

### The .7s Versus You

At a tough-to-beat price point that would make even the thriftiest loudspeaker lovers open their wallets, the .7s become even more attrac-

tive when you consider that Magneplan is also offering a 30-day in-home trial and a money-back guarantee. Whether you're in the market for a starter pair of high-quality speakers, or have the proverbial champagne taste on a beer budget (or both!), why *wouldn't* you consider these babies? They're terrific.



## JV Versus the .7s

I don't know how I'm going to improve on Ms. Mullins' review. We are in complete agreement on every point. However, since I'm expected to comment, here goes.

As many of you know, I've heard, reviewed, and owned more Magnepan loudspeakers than any other brand, so, given my recent extended sojourn in the land of ultra-high-end cone speakers, listening to Maggie's latest offering was very much a homecoming. It is easy to forget, given the gorgeous timbre and seemingly unlimited dynamic range of something like Raidho's quarter-million-dollar, multiway, ribbon/diamond-coned D-5s or Magico's near-\$200k aluminum-enclosed, beryllium/carbon-fiber-driver Q7s, how much sonic realism a \$1395 Maggie can still buy ya, particularly in the midband, where it counts the most. It is also easy to forget that the .7s represent a different sonic paradigm than the exceptionally rich, exciting, "musicality-first" Raidhos or the astonishingly high-resolution, high-neutrality, "accuracy-first" Magicos. The .7s don't sound inherently gorgeous and thrilling, and they don't sound inherently like exact replicas of mastertapes. As has been the case with all Maggies since Jim Winey invented them, the .7s are intended for "absolute sound" listeners—which is to say that they fare best with acoustic music and will appeal most to fans of same.

All you have to do is listen to a voice—be it Thomas Hampson on "Das Trinklied vom Jammer der Erde" from the Tilson Thomas/SFO *Das Lied von der Erde* or Louis Armstrong and Ella Fitzgerald on "Cheek to Cheek" from Analogue Production's *Louis and*

*Ella*—to instantly hear why these plain, rectangular, ultra-thin, boxless, room-divider-like panels have appealed to high-end audiophiles for the better part of half a century. Their sheer openness and wonderfully lifelike midrange timbre and presence will grab you even if you don't know or care about how they work. Voices such as the ones I just mentioned simply sound less like they're coming from loudspeakers and more like they're "there" in the room with you. Ditto for instruments that play primarily in the midrange, like, oh, John Coltrane's bluesy sax or Curtis Fuller's gliding trombone on *Blue Train*. In fact, the Maggies are so good at what they do in the midrange that they don't just sound great in their own right; they also make even the priciest competition sound slightly flacid, boxy, and/or analytical by comparison.

Like all Maggies, the .7s crave power and I agree with Ms. Mullins that they sound better defined in the bass and less forward in the upper mids (albeit also less bloomy and present) when driven by solid-state amplifiers rather than by tube ones. (The .7s are definitely easier to blend with subwoofers when driven by transistor amps, which better damp and control their bottom octaves.) They also sound less bright and more spacious with their tweeters to the outside, rather than to the inside (although inside placement does add pop-out-at-you presence to closely miked voices).

No Maggie, or at least no Maggie that I've heard since the Tympani Series, does the mid-to-low bass with realistic power (multiway cone speakers such as the big Raidhos and Magicos simply stomp them in this area). And though Maggies have always had great depth of field—producing very wide, deep, tall soundstages that are also exceptionally neutral (in

the sense of not being darkened, constrained, or otherwise colored or distorted by the sound of a box)—they have never been world-beaters when it comes to depth of image. By this I mean that instruments and voices sound slightly "flatter" in aspect, more one-dimensional (or bas-relief), through Maggies than they do through the best cones.

Like all Maggies the .7s have to be pushed hard (i.e., played loud) to achieve a semblance of the large-scale dynamic impact of well-designed cones. And no matter how loudly you play the .7s (or any Maggies), their bass panels won't match the excursions of really good dynamic woofers and midranges. This doesn't matter as much with the wind, brass, or bowed/plucked string instruments of a symphony orchestra. But with the electronically amplified instruments (and much of the percussion) of rock music, the presentation can sound a bit gutless. The information is there, all right, but the energy that brings it to life (and raises goosebumps) isn't.

Of course, the .7s' bottom-end dynamic reticence and reduction of power-range color and oomph is somewhat off-set by their lifelike speed on transients like drum and cymbal strikes and their simply superb reproduction of drumhead textures. (No speaker reproduces the "skin" of a drumhead the way a Maggie does.) On the other hand, the big resonant barrel of a tom goes more than a bit missing with the .7s, as does the kick of a kickdrum or the semi-pulling-away-from-a-curb rumble of a Fender bass or synth.

All of which means that the .7s probably aren't the ideal speakers for much non-acoustic rock 'n' roll or certain kinds of hard-driving jazz. At least, not by themselves.

However, for reasons I don't completely understand, the .7s proved easy to match to subwoofers—which, trust me, has *not* been the case in the past with Magnepan—whether they were JL Audio's very large and expensive Gothams, which are the best subs I've ever heard, or the same company's very small and affordable e110s, which are the second best. Crossed over at about 70–80Hz (24dB/octave), the JL subs provide the bottom-end extension and power that the .7s on their own just don't have, and they do so with relatively minimal losses in the midrange openness and bloom that Maggies have a patent on. They also virtually eliminate the slight brightness of the .7s by filling out the tonal balance.

No, the subwoofered .7 system is not quite as expansive and completely free of box coloration as the .7s are all by themselves. (I mean you *are* adding the sound of subwoofer enclosures to the presentation.) And no, you still won't get the upper-bass/power-range density of tone color, three-dimensionality, and sock that you hear with big Raidhos or Magicos. What you will get, however, is the most lifelike, high-resolution, relatively compact, full-range loudspeaker system I've heard for anything remotely close to this kind of money.

The bottom line here couldn't be simpler. If you like chamber music, small-combo jazz, folk, or acoustic rock, the .7s will satisfy you more completely than any other mini-Maggie that has preceded it. If you like larger-scale music and listen at higher volumes, the addition of one or two JL Audio e110s will supply the dynamic range and low-bass extension such music thrives on. Either way, this is a great loudspeaker. Drive it with a pair of Odyssey Audio Strati, and you will have a small, affordable system that approaches the state of the art. 108

# B&W CM6 S2

## Stand-Mount Winner

Spencer Holbert



**T**here seems to be two camps of loudspeaker aficionados: those who swear by floorstanders, and those who swear by stand-mount speakers. I've been on both sides at various times in my life, mainly because of space—floorstanders go in large rooms, and stand-mount speakers go in small rooms, right? Floorstanders provide room-filling bass, while stand-mount speakers provide much better mid and high frequencies due to one less crossover point and reduced cabinet resonances, right?

Well, at least most people I talk with are of this impression. Now that I have a pretty large listening room, I was curious to test B&W's new \$2000 CM6 S2 stand-mount loudspeaker with B&W's iconic "Tweeter on Top" technology. I listened to them extensively in my smaller listening room, but I was also curious to hear how they would perform in my main listening room, now that it has doubled in size. In short, they performed surprisingly well overall, and exceptionally in the mids and highs with a generous helping of low-end pleasure.

### Setup and Design

Even though I have a large listening room, I settled on a setup with the speakers eleven feet apart, and four-and-a-half feet from the rear walls, with a 20-degree toe-in. I tried placing them as far apart as possible for maximum soundstage width, but despite the CM6 S2's wide tweeter dispersion, imaging began to suffer after about fourteen feet. Keeping the CM6 S2s less than twelve feet apart with a listening position around ten feet kept the imaging tight and the soundstage immersive. My listening preference is to have extremely tight and accurate imaging; I can tolerate a bit of brightness or lack of low-end extension, but a diffuse, inaccurate, or smeared soundstage drives me nuts. Even in a live setting microphones can be bright and bass can overload the venue, but rarely—if ever—is "imaging," as we know it, off. With the proper toe-in for your room—in my case 20 degrees—the CM6 S2s can provide both a wide soundstage and detailed imaging.

The one caveat about toe-in relative to listening-position distance with the CM6 S2s

is brightness from the tweeter, which can be overpowering if you are sitting nearfield in a small room. With these speakers, I found a toe-in that aims the tweeters a little wider than the edges of your ears worked best to produce a wide, precise, and not-too-bright soundstage.

Surprisingly, the CM6 S2s are bi-amp capable, which I think would work best for those employing lower-powered tubed amplifiers. Although it's great that these B&Ws can be bi-amped, I didn't make much use of the provision in my listening tests. My tube amp produces 80W in triode, and 112W in ultralinear, and I preferred the sound of a single amp to that of two—at least with these speakers.

B&W's iconic Tweeter on Top—more precisely described as a free-mounted, decoupled, double-dome aluminum tweeter—has been redesigned for the CM Series loudspeakers. The CM6 S2 is the only stand-mounted loudspeaker in the CM Series to employ the Tweeter on Top design, which is generally only found on its bigger—and more expensive—floorstanding siblings. So what's the purpose of a tweeter housed in its own enclosure mounted atop the speaker? According to B&W, such a configuration isolates the tweeter from enclosure resonances, minimizes the diffraction of high frequencies by the enclosure, improves time-alignment with the midrange driver (and thereby reduces acoustic lobing), and allows fine-tuning of the tweeter itself.

The CM6 S2s have a sensitivity of 88dB and a nominal impedance of 8 ohms, which puts them right in the middle of the sensitivity range. I would recommend having at least 60W of amplification at your disposal, and preferably 100W. Remember, doubling amplifier

## EQUIPMENT REVIEW - B&W CM6 S2

power leads to a 3dB increase in SPL at 1m, so make sure you have enough juice if you like to crank it up every now and then, otherwise you could drive your amp to clipping, and that's not good for your speakers, your amp, or your ears.

The CM6 S2 is available in three finishes: gloss black, satin white, and rosenut. (My review pair was finished in rosenut, but I have seen the gloss black and satin white elsewhere, and they look really sleek.) One of the cleverest design elements of the CM6 S2s is the provision for directly coupling the stands to the speakers with bolts, which not only prevents them from being bumped off their perches, but also better facilitates the transfer of resonant energy from the enclosure down to the spikes (and thence to the floor) at the foot of the stands. All in all, the CM6 S2s look good, are easy to set up, and offer a bevy of unique design features not typically found at this price point.

### Listening

I could start off by talking about the mids and highs of the CM6 S2, but it was the low end of these stand-mounts that really surprised me. I recently reviewed a pair of MartinLogan Balanced Force 210 subwoofers (forthcoming), and when I hooked up the CM6 S2s I initially thought that the subs were still on. It wasn't that the CM6 S2s went incredibly deep, but rather that they rolled-off at a much lower frequency than I was expecting. Bass extension is claimed to be 50Hz, with a -6dB point of 45Hz, which is plenty low for listening that doesn't require huge SPLs. Sure, the sounds of a pipe organ or the lowest notes of an upright bass aren't very powerful, but they're still quite audible. If you

listen mainly to small-scale classical, chamber music, piano, solo vocal, or acoustic, the CM6 S2s will provide sufficient low-end extension for your needs, especially if you're in a smaller room. Even in my large room, bass-centric music was taut and precise—though lacking punch. And if you hanker for more bass, there is always the option of adding a subwoofer.

Of course, stand-mount speakers shine in the mids and highs. This was especially true when I listened to my favorite alt-classical composer Ludovico Einaudi. The tracks "Corale," "Time

Lapse," and "Experience" from the album *In a Time Lapse* [Universal UK] were spectacularly detailed and crisp, particularly in the mids. I was also impressed with the amount of depth in the soundstage, which reflected the recording venue of this album—a monastery in Verona, Italy. I've found that many stand-mount speakers don't seem to be capable of reproducing the ambience of this space, but the CM6 S2s did a fine job, if not quite a stellar one. The CM6 S2s produce a soundstage with plenty of accuracy in two dimensions—height and width—but they aren't going to blow you away when it comes to depth, even with a very large listening-position-to-speaker distance.

Vocals, on the other hand, were really superb with the CM6 S2s. Rebecca Pidgeon's oft-played *Retrospective* [Chesky Records] really shone with these speakers, and her classic rendition of "Spanish Harlem" was beautiful in almost every regard, save for the tweeters which tended sometimes to over-emphasize sibilants and make the highs seemed a bit bright. But the detail and accuracy were still there.

Listening to Chris Jones' *Roadhouses and Automobiles* [Stockfish] produced a very similar effect: great imaging, soundstage, and mids, but a little on the bright side. After playing with the setup some more, I found I basically had two choices—ease up on the brightness and sacrifice the imaging, or go for better imaging and tolerate the slight brightness. I went with the imaging, of course. I don't want to give the impression that the CM6 S2s are *harsh*, but I'm young and my hearing is still very sensitive in the high frequencies, so certain instruments

bothered me a bit. If high frequencies aren't an issue for you, or if you like a little bit of added brightness, then these stand-mounts won't present an issue. Still, be aware that the CM6 S2s have a bit of added top-end sparkle.

### Conclusion

After the critical listening and evaluation of a speaker, I always ask myself a simple question, "Did I tend to listen to that piece of gear far longer than was necessary to complete my review?" With the CM6 S2s—despite their being a bit on the lively side for my taste—the answer was yes. In fact I listened to them well after the review period was over. When a speaker makes you want to listen to music, it's a winner, simple as that. tas



## SPECS & PRICING

Type: Two-way, bass-reflex stand-mount loudspeaker

Weight: 19.6 lbs.  
Price: \$2000

Driver complement: 1" decoupled tweeter, 6.5" Kevlar mid/bass  
Frequency response: 50Hz-28kHz

**B&W NORTH AMERICA**  
54 Concord Street  
North Reading, MA 01864  
(978) 664-2870  
bowers-wilkins.com

Sensitivity: 88dB  
Impedance: 8 ohms

Recommended amplifier power: 30-120W

Dimensions: 15.9" x 7.8" x 11.9"

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# ClairAudient 1+1 Personal Reference Monitor

1+1 = 3

Steven Stone

**A** couple of months ago I reviewed Audience's smallest speaker, "The One" in TAS. I thought it was one of the best desktop/nearfield speakers I'd ever heard, regardless of price or technology. So, when I was offered a chance to review "The One's" bigger brother, the 1+1, I was more than willing. If I had to sum up the 1+1 speaker in a single sentence I'd write, "It's 'The One' on steroids."

For readers who've never heard of Audience or its ClairAudient line of speakers, the company's beginnings go back to 1979 when Audience's president, John McDonald, met the late audio designer Richard Smith. Together they founded Sidereal Akustic. McDonald left Sidereal in 1986, and then teamed up with Smith in 1997 to form Audience. From the beginning Audience's primary goal was to build a full-range-driver speaker without tweeters, woofers, or crossovers. Nine years of research went into developing a driver design that could accomplish Audience's sonic goals. Finally in 2009 Audience unveiled its first product, the ClairAudient 16 loudspeaker. Other models soon followed, including the 16+16, 8+8, 2+2, 1+1, and most recently "The One."

## Tech Info

What does using a single, solitary, driver sans woofers, tweeters, and crossovers get you sonically speaking? The answer in one word is coherence. The entire Audience speaker line is designed to achieve this goal. By eliminating a crossover circuit, the sonic issues, such as phase anomalies at the hinge points, vanish. Also the timing and group-delay problems introduced by a crossover's filtering components are no longer an issue.

But there is no "free lunch" in physics. Eliminating the crossover puts greater demands on the full-range driver. It's very hard to produce a full-range driver that has even power-handling throughout its frequency range. It is also difficult for a single full-range driver to create an even dispersion pattern without beaming at higher frequencies.

Although Audience is understandably reticent

to release too many specifics on the inner workings of its proprietary "dual-gap motor" A3S driver, according to its Web site, "The A3S has an exceptionally flat response from 40Hz to 22kHz +/-3dB in certain enclosures. No other single driver available today can deliver this kind of performance."

The A3S driver cone is made of titanium alloy combined with a concave dust cap constructed with constrained-layer damping to control high-frequency break-up modes. The total mass of the driver cone is only 2.5 grams. This low-mass cone is coupled to a patented oversize motor structure using neodymium magnets and a large voice coil. According to Audience the A3S has "12mm of usable excursion with less than 1dB compression at levels up to 95dB SPL." To achieve this usable excursion requires an especially oversized spider made of "special materials."

The A3S driver has vents in its pole pieces to allow a more unobstructed airflow to and from the voice coil. This not only aids in cooling but also prevents turbulence created by the driver's large excursions. Other key components in Audience's A3S driver include the proprietary basket design and patent-pending S-shaped speaker-surround. This surround minimizes diffraction and allows for large excursions while maintaining uniform resistance on both sides of travel. The result is lower measured harmonic distortion levels.

As you might suspect from its name, the Audience ClairAudient 1+1 uses two A3S drivers. One faces forward while the other is mounted on the back of the enclosure and fires to the rear. Both A3S drivers are in phase with each other. This bi-pole arrangement offers several

## EQUIPMENT REVIEW - ClairAudient 1+1 Personal Reference Monitor

advantages over the single-driver "The One." First, having two drivers increases the 1+1's power-handling capabilities and its sensitivity. The 1+1 is 3dB more sensitive than "The One," and can handle twice as much power (50 watts RMS rather than The One's 25-watt suggested maximum). Second, the two-driver configuration extends the speaker's low frequencies. The 1+1 cabinet also has a pair of passive drivers, one mounted on each side of the enclosure, which further augment the 1+1's bass.

The 1+1 cabinet isn't a rectangular box; instead it has non-parallel front and rear baffles as well as angled edges to reduce diffraction. The 1+1's grilles are attached to the enclosure magnetically making them easy to remove and re-attach. Whether the 1+1 sounds "better" with the grilles on or off is a matter of taste, since the grilles have some effect on both imaging and overall harmonic balance.

The overall build-quality of the Audience ClairAudient 1+1 is quite luxurious, with a deep-black gloss finish on most of the cabinet that is complemented by the rich wood grain of the side panels.

The 1+1 rear panel sports a single pair of five-way gold-plated binding posts (there's no point in bi-wiring a full-range driver). My only quibble with the 1+1's physical configuration is that it would have been a nice option if speaker grilles were available to cover the side-firing passive drivers. The front and rear A3S drivers look just fine without the grille covers, but the side-firing passive drivers are not as well integrated into the side panels. The overall look of the speaker could benefit from the side-mounted passive radiators being covered by speaker grilles.

### The Setup

Most of my listening to the Audience ClairAudient 1+1 speakers was in my nearfield high-end desktop system. Like its smaller sibling, the 1+1 is small enough that without some kind of stand it will end up well below ear level when placed on a desktop. I used the same pair of closed-cell high-density "stands" that I use with many of my small desktop monitor reviews, as well as a pair of Ultimate Support adjustable speaker platforms to raise the 1+1 speakers so the center of the drivers were level with my ear height.

Although the 1+1 speakers will produce a remarkably cohesive and well-defined image almost regardless of how they are set up, proper set-up geometry is important for optimal imaging. I recommend using a tape measure to insure that the speakers are precisely triangulated so they are equidistant from your ears. Having one speaker more than an inch closer than the other can have an audible effect on their time-alignment. Also the toe-in between the two speakers needs to match. I used Genelec's free "Speaker Angle" iPod App to put each speaker at exactly the same angle.

With a sensitivity of 87dB at one watt, I found that the 1+1s mated well with a variety of amplifiers. During most of the review I used a single April Music S1 power amplifier, which had more than enough power to drive 1+1 speakers to ear-bleed levels. I also used the 1+1 in a separate system driven by the tiny Olasonic Nanocompo Nano UA-1 integrated amplifier, which puts out only 13 watts into 8 ohms. Even with this small amplifier the 1+1 speaker could play cleanly at satisfying volume levels.



## SPECS & PRICING

**Impedance:** 8 ohms

**Sensitivity:** 87dB/1W/1m

**Maximum RMS continuous output per pair:** 104dB

**Maximum RMS continuous power per speaker:** 50 watts

**Dimensions:** 6" x 8" x 9.75"

**Price:** \$1795

### AUDIENCE

120 N. Pacific Street, #K-9

San Marcos, CA 92069

(800) 565-4390

[audience-av.com](http://audience-av.com)

### ASSOCIATED EQUIPMENT

**Source Devices:** MacPro model 1.1 Intel Xeon 2.66 GHz computer with 16 GB of memory with OS 10.6.7, running iTunes 10.6.3 and Amarra Symphony 2.6 music software, Pure Music 1.89 music software, and Audirana Plus 1.5.12 music software

**DACs:** Antelope Zodiac Platinum DSD, Wyred 4 Sound mPre, April Music Eximus DP-1, Empirical Audio Off-Ramp 5, Mytek 192/24 DSD DAC

**Amplifiers:** April Music Eximus S-1, Accuphase P-300

**Speakers:** ProAc Anniversary Tablette, Role Audio Kayak, Aerial Acoustics 5B, Audience Clair Audient "The One, Velodyne DD+ 10 subwoofer

**Cables and Accessories:** Wireworld USB cable, Synergistic Research USB cable, AudioQuest Carbon USB cables. PS Audio Quintet, AudioQuest CV 4.2 speaker cable, AudioQuest Colorado interconnect, Cardas Clear interconnect, Black Cat speaker cable and Interconnect, and Crystal Cable Piccolo interconnect, Audience Au24SE speaker cable

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## EQUIPMENT REVIEW - ClairAudient 1+1 Personal Reference Monitor

### Robert Harley Listens to the 1+1: More Than a Desktop Loudspeaker

I've been listening to the 1+1s on my desktop system and am continually amazed by their midrange transparency, resolution, and naturalness. Many expensive high-end loudspeakers would kill for this kind of midrange performance. In addition to its transparency and lack of coloration, the 1+1s are imaging champs, completely disappearing into the soundfield despite being positioned on either side of a large computer monitor—and I was driving my pair with a \$104 Class D Chinese integrated amplifier.

Just out of curiosity I put the 1+1s on Sound Anchor stands in my main listening room next to the Magico Q7s and drove them with \$300k worth of reference-level sources and electronics. Although positioned well away from any walls in a large room, the 1+1s' bass balance was surprisingly full and warm. Of course, you shouldn't expect deep extension or bottom-end dynamics from this small speaker, but that's not their *raison d'être*. Where the 1+1s excel is in the mids, which can only be described as magical. Reproducing the entire frequency range with a single driver, and with no crossover parts in the signal path, pays huge dividends in the naturalness of instrumental timbre, the sense of hearing nothing between you and the performer, and the ability of the loudspeakers to get out of the way of the music. Vocals were sensational for any loudspeaker, never mind one that costs less than \$2k.

I expected to hear a reduction in top-octave air and extension given that the 3" driver covers the entire frequency range, but the 1+1 had no shortage of treble detail, particularly when I was sitting on-axis to the driver. The soundstage was wide and deep, with pinpoint imaging. I agree with Steven Stone's conclusion that the 1+1 is a superb small nearfield monitor, but it's more than that. As part of a main system in an appropriately sized room I could imagine the 1+1 delivering an eminently satisfying musical presentation, particularly for those listeners who value midrange transparency over the last measures of dynamics and bass extension.

#### The Sound of the Audience 1+1

Given that I called Audience's "The One" the best dedicated desktop speaker I'd heard, how much better could the Audience 1+1 be? Much better? A little bit better? No better? Let's see...

First, let me detail how and where the 1+1 bests its smaller sibling. Near the end of the review period I managed to destroy both drivers on my review pair of "The One" speakers

when they received a dose of ABBA at full level from my Accuphase P-300 power amplifier. Replacing the blown drivers with new ones was an easy job that took less than 30 minutes. But since that experience I've been more careful to check output levels before choosing a source when using "The Ones." With the 1+1 speaker's greater power-handling capabilities I feel a bit more comfortable turning them up to 10 or even 11. And while I never heard "The One"

speakers show any audible signs of distress when playing loudly at my desktop, I do feel that on big, dynamic musical selections the 1+1 speakers have a bit better control and finesse during triple forte passages.

Where else does the Audience 1+1 best "The One?" Listening to my live concert DSD5.6 recordings I noticed the 1+1 speakers had slightly better dynamic contrast, principally on peak levels during triple-forte passages. Using the SPL meter in the Audiotools app I noticed that when the low-level outputs were matched between the two speakers the 1+1 produced, on average, a 1.5dB increase in peak volume during the loudest passages.

In imaging precision the 1+1 and "The One" speakers were equals. The 1+1 duplicates "The One's" uncanny ability to disappear while creating a seamless three-dimensional soundstage. And not only do the 1+1 speakers disappear when you're sitting in their sweet spot, their sweet spot is large enough that no amount of chair-based gyrations will alter their imaging. The only "tricks" needed for optimum soundstaging are that the two speakers should be equidistant from your ears and raised up off your desktop so that the center of the drivers is at or very near ear height.

The 1+1 do deliver more midbass energy than "The One" speaker, and for some listeners they may have sufficient bass extension so that they could be employed without a subwoofer. But for anyone who requires a true full-range desktop or nearfield system, a subwoofer is recommended. I used a Velodyne DD+ 10 subwoofer crossed over at 65Hz into the 1+1 speakers. Besides the additional low-frequency

extension, using a subwoofer also relieved the 1+1 speakers of low-bass duties, which allowed them to play louder than they could when fed a full-range signal.

#### 1+1 = 3

When I finished my review of the Audience ClairAudient "The One" I was convinced it was one of the best nearfield monitors I'd ever heard. My time with the larger Audience 1+1 speakers hasn't reduced my positive impressions of "The One," but it has induced me to place the 1+1 above the "The One" at the top of my own personal "best" nearfield loudspeaker list.

Just like "The One," the Audience 1+1 creates a three-dimensional soundstage that allows an audiophile to easily listen into the subtle low-level nuances of a mix or live performance. Also, like all Audience speakers, the 1+1 provides a seamless, phase-coherent, crossover-less, sonic presentation that makes it very hard to go back to listening to a conventional multi-driver speaker without hearing the sonic discontinuities caused by the crossover design and its components.

If you are planning to assemble a high-performance nearfield listening system I urge you to audition the Audience 1+1 (or if your budget is tighter, "The One"). They are both superb transducers that show that the right technology in the right application creates magic. tas

# GoldenEar Triton Five

## Must-Audition

Jacob Heilbrunn



**I**n Greek mythology, the demigod Triton is a creature of the depths who carries a trident. Half-man, half-fish, he resides in a golden palace at the bottom of the sea. But perhaps his most distinguishing characteristic is his ability to blow vigorously into a twisted conch shell to calm or rouse the waves.

So Triton is a fitting name for legendary manufacturer Sandy Gross' latest loudspeaker, the GoldenEar Triton Five. Much like the Greek god of yore, this GoldenEar speaker, roughly in the middle of the marque's lineup, has the ability to create upheaval or calm within the space of a few seconds. Connect speaker cables to it, hit play, and you have a rather formidable beast playing at musical levels far beyond its very modest (by high-end standards) price range. Indeed, install it into a system like mine, where much of the equipment is considerably more costly, and it more than holds its own in both musicality and sheer output.

These speakers, in other words, can rock, which is what they did when I put the pedal to the metal with a rare first pressing (courtesy of a magnanimous friend) of *Led Zeppelin II*, an LP released by Atlantic in April 1969. "Whole Lotta Love" had a whole lotta impact through the Tritons, with drum whacks whizzing through the air fronted by electric guitar solos and various sound effects. Is it beneficial for your ears to listen at those levels? Of course not. So I cooled it fairly soon. But still, even if such sound levels would give Gross himself heartburn, the inner audio devil in me couldn't resist seeing if the Triton Fives really have what it takes to peel out. They did, and do.

The Triton Five features an abundance of noteworthy drivers—a factor that contributes to its

projection of a luscious and bountiful soundstage. Another feature that helps the Five deliver such spacious sound—and sets it apart from most other speakers in the Triton line—is its four side-mounted, sub-bass radiators that are designed to deliver subwoofer bass without the need to employ an active sub. They're also positioned close to the floor to maximize their low-end impact. (More on the bass to come.) At the other end of the frequency spectrum, the Five's tweeter features what the company calls a High Velocity Ribbon Driver (kin the Heil air-motion transformer) designed to pressurize the air rather than pushing it back and forth to provide superior impedance matching. Meanwhile, the two 6" mid/bass drivers are made from a formulated polypropylene cone material combined with a unique apical glue-bonding technique. Throw in nonparallel walls, a sleek front, and what is a decidedly elegant black finish (on the review pair submitted to me), and you have a winning loudspeaker.

Once again, though, I have to confess that, as with some of the more economically priced equipment that's been in for review lately, I wasn't quite sure what to expect from these Triton Fives. The last time I listened extensively to a speaker in this price range was when I owned the Snell E/IV well over a decade ago. The Snells provided me with plenty of listening pleasure, and I recall them fondly to this day. But they had limitations that became more obvious as time went on. At the time, the Snells, a Conrad-Johnson preamplifier and amplifier, and a Linn turntable were at the extreme of what I could afford—and were what amounted to my audio gateway drug leading to the Magnepan 3.7 and then the 20.1 loudspeaker, Classé amplifiers, and so on. So listening to the Fives not only brought me full circle, but also provided a chance to see how much

## EQUIPMENT REVIEW - GoldenEar Triton Five

progress has been made in loudspeaker design in what amounts to an entry-level-high-end full-range transducer.

What did I notice first? The Triton's coherence was evident, and its treble capabilities and integration were striking. Every time I go to listen to a live orchestra I'm reminded of the degree to which audiophiles often seek out what they view as an airy, extended treble, which is fine and dandy, but it can get confused with an artificially sparkly sound. That's not what the Five produces. If anything, the overall texture landed somewhere on the darker side, particularly in the treble region. On a wonderful Carlos Kleiber live recording of the Vienna Philharmonic playing Strauss waltzes, for example, I was struck by the suppleness of the strings on "Accelerations." I was consistently impressed by the smoothness and silkiness of the Triton's tweeter; there was no etch, no glare, no trace of the digital nasties.

Soundstaging was also surprisingly focused. On the Kleiber recording, bass drum whacks were clearly defined in the rear of the hall with plenty of air surrounding flutes and the various other sections of the orchestra. Another example: The recent Anderson & Roe piano duo CD *The Art of Bach*, released by Steinway & Sons, features creative and innovative arrangements that delve into Bach's compositions in new ways. Once again, soundstaging was spot-on. The two pianos were precisely delineated, making it easy not only to follow where they were positioned relative to one another, but also to distinguish their intricate counterpoint.

The Triton Fives boast an excellent jump factor—they're quite fast. I've become

increasingly aware that speed is crucial to dynamics. It isn't just the sheer wattage of an amplifier, but also the overall transient response of the entire system that can add to or detract from verisimilitude. For instance, I was somewhat taken aback by the sheer propulsive energy and whack of the Fives on the CD *Count Basie Remembered* [Nagel Heyer Records] by The New York Allstars, which was recorded live in Hamburg before an enthusiastic audience. It certainly sounded all-star. On the cut "Swingin' the Blues," the band simply exploded out of these transducers. Joe Acione's drumming came through brilliantly as did a lusty trombone solo by Dan Barrett, both delivered through the Triton Fives with snap and precision.

What about the bass? It proved to be these Tritons' weakest point. I'm not saying the low

end was anemic, just that it's not quite as good as the mids and highs, which are stellar. The Tritons go fairly deep but their bass response isn't—to borrow a marvelous term recently used by my TAS colleague Neil Gader in reviewing Kharma loudspeakers—saturnine. But this really shouldn't come as a surprise. Bass is the most expensive (and often, the toughest) part of any loudspeaker to reproduce accurately. While the mids are creamy and full, and the treble region extremely accurate—you can hear performers talking or singing with great clarity—deep bass is just a little bit murky by comparison.

Still, when you contemplate everything that this loudspeaker does do well—gorgeously prismatic tonal color, dynamic alacrity, and a beautifully lissome treble—then it becomes hard to quibble about the Fives. Ultimately, among its other attributes, the Five's ability to convey a direct emotional connection with the music is what makes it such an engaging product. On Christian McBride's album *Out Here*, the Tritons conveyed the soulfulness of the song "I Have Dreamed" in a simply mesmerizing way. The cymbal seemed to float into the ether, while the piano swells rolled on and on.

With its knack for playing a wide gamut of music convincingly, the Fives offer a tremendous amount of performance for the price. After my foray into Led Zep territory, Sandy Gross was worried that I might prematurely terminate my listening sessions by destroying the speakers—or sink into pure headbanging. Not a chance. I enjoyed hour after hour of satisfying music. I know that these speakers will appeal to a lot of audiophiles, but I can't help hoping that they

will also entice anyone (like me all those years ago) who might be looking for a reasonably priced first speaker. In sum, Sandy Gross has hit another homerun. For anyone considering a loudspeaker under \$10,000, the Triton Five isn't just an option. It's a must-audition. *tas*

### SPECS & PRICING

**Driver complement:** Two 6" high-definition cast-basket mid/bass drivers, four 8" planar sub-bass radiators; one HVFR (high-velocity folded ribbon) tweeter

**Frequency response:** 26Hz-35kHz

**Sensitivity:** 90dB

**Nominal impedance:** 8 ohms

**Dimensions:** 8 1/8" (rear) x 12 3/8" x 44 1/4"

**Weight:** 40 lbs.

**Price:** \$1998/pr.

#### GOLDENEAR TECHNOLOGY

P.O. Box 141

Stevenson, MD 21153

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goldenear.com

#### ASSOCIATED EQUIPMENT

dCS Vivaldi CD/SACD playback system, Continuum Caliburn turntable with two Cobra tonearms, Lyra Atlas and Miyajima mono Zero cartridges, Ypsilon VPS-100 phonostage, PST-100 Mk 2 preamplifier, and SET 100 monoblock amplifiers, Transparent Opus and Nordost Odin cabling, and Stillpoints Ultra 5 isolation footers

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# Monitor Audio Silver 10

## Easy Price, Good Sound

Spencer Holbert

I love to fantasize about exotic, ultra-expensive audio gear. Who doesn't? But what I love more is when I have to opportunity to review components and speakers I can actually afford—and more importantly, that my peers can afford. Most of my friends are in their late twenties—I'm twenty-seven, full disclosure—so showing off components that cost more than a year's worth of rent is equivalent to taking them for a ride in a Ferrari. Yes, they revel in the sound, but it's unattainable sound in their current financial circumstances. When I received the three-way floorstanding Monitor Audio Silver 10s for review, I was really excited—and worried—about evaluating a \$2500 speaker. Would they perform well enough to remind my friends that high-quality sound is attainable, even on their tight budgets, or would the sound fall short and discourage them? Fortunately, the Silver 10s are more than adequate; they are one of the best \$2500-and-under full-range floorstanders I've heard since the Revel F12.

### Don't Worry, It's High End

When I first started playing in the audiophile world, I couldn't help but compare my system to the components in *The Absolute Sound*, which I've been reading since I was thirteen. Even though by all standards I had one of the best systems of anyone my age, I worried about how much aural information I was missing. "If only I could afford more" was what I usually thought. It took me a while to realize that careful evaluation, setup, and matching weren't compromises—they were the high-end path to sonic glory. I stress this because it's easy to see a price and make assumptions about a product's quality. Trust me, the Monitor Audio Silver 10s are high-performance loudspeakers, and \$2500 isn't a compromise.

Setup was rather easy. After attaching the bottom plinth to the speakers, into which adjustable feet are threaded, I set

the speakers in the same spot in which I'd placed the Endeavor Audio E-3s (reviewed in our last issue). I don't know if it's because the Silver 10s are dual-ported bass-reflex designs, but they overloaded my room when placed close to the rear walls. One port is found in the typical location of most bass-reflex speakers—a couple inches above the binding posts—and the other is found halfway up the cabinet. This meant pulling the speakers almost five feet from the rear wall before they calmed down enough to maintain tight bass. I listen to a lot of jazz, so I'm rather picky about upright bass reproduction, and a speaker's ability to keep the low frequencies from reverberating or becoming muddled and boomy. If your main listening space limits how far you can move a speaker from the rear wall, make sure you have at least three feet of breathing room for the Silver 10s,

or a room with a cubic volume above 3500 to allow the bass to dissipate. If you have a small room and can't keep these away from the rear wall, you're going to have too much low end.

But I said setup was easy, right? It was. After I moved the Silver 10s away from the rear wall and set them 9.5 feet apart, I toed them in about 10 degrees and adjusted the feet...and that's it. I played around with a few other setups, but the more I tweaked, the more I wanted to go back to the first setting. Maybe it was just blind luck, but I think it has more to do with Monitor Audio's design philosophy, which seems to be a set-it-and-forget-it mentality (all of its speakers are also part of multichannel lines, so the home-theater enthusiast is kept in mind). The sweet spot was sufficiently wide to sound uniform whether I sat forward or back, leaned left or right

## EQUIPMENT REVIEW - Monitor Audio Silver 10

in my chair. Having to remain in a single position to ensure that imaging doesn't shift can be very tedious, and I loved that the Silver 10s were forgiving.

My friends and I like all kinds of music, so a full-range loudspeaker is a natural choice. This is where the Silver 10s competent low-end extension was a major plus. Whether classical or rap, jazz or rock, or anything in between, the Silver 10s provided plenty of respectably controlled bass. They were really impressive when listening to Rebecca Pidgeon's rendition of "Ain't No Sunshine" on Chesky Records' 96/24 *The World's Greatest Audiophile Vocal Recordings*. The upright bass stayed taut and punchy, just to the left of Pidgeon's voice, and sounded eerily like a real bass in the room. My college roommate played upright bass professionally, and many nights were spent playing along with our favorite jazz recordings.

I had an urge to play Nils Lofgren's live version of "Keith Don't Go," which has unfortunately become one of those overplayed audio-show staples, but is a really good top-end tester. Those high harmonics and the rapid plucking can be rather fatiguing with some speakers that lean to the bright side, and while the Silver 10s skew slightly bright, I listened to this song on repeat for almost 45 minutes after a day of listening to other music and my ears were never fatigued. Next came Stevie Ray Vaughan's "Texas Flood," which is another song that can be plenty fatiguing; even after the Lofgren torture test, SRV was as pleasing as can be. But, if you have components that already emphasize the highs, you will want to listen to these speakers at home to make sure they won't be too bright.

Then came Ludovico Einaudi's "Experience," and analysis of the soundstage width, depth, and imaging. Imaging was tight and detailed, though images were a little too aligned down the center. Changing toe-in solved this issue somewhat, yet image detail started to fade away a tiny bit. Since I'm more interested in image detail versus soundstage separation and width, I left the Silver 10s with the original ten-degree toe-in.

The Silver 10s are really great speakers, especially for the price, but there will be necessary compromises between ultra-

wide soundstaging and imaging that might be a little stacked up in the center. They did, however, produce a surprisingly deep soundstage that reached far into the music. The harp that is so often shrouded by violins on the Einaudi track remained audible, and there were no issues with instruments sliding across the soundstage. The piano stayed positioned to the right, with the notes flowing toward my listening position, rather than toward the floor. This "image sliding" is a curious phenomenon that seems to affect some speakers, but not others. I've heard sliding on all types of speakers, even the ultra-expensive. You've probably heard this yourself. Instruments seem to move across the soundstage, generally dipping toward the floor, and then return to their original position. Over the years, I've come to prefer speakers that do not exhibit this effect of an instrument moving in a spatially unnatural way, back and forth across the soundstage as if they were sliding a few feet, and then snapping back into place. This could probably be called a type of smear, though it is more of a time or phase issue than an imaging distortion. The Monitor Audio Silver 10s were surprisingly accurate in this regard.

Monitor Audio recommends 80-200W for amplification, but most of my listening occurred in the 20-50W range. The Silver 10s can be driven to 105dB SPL with about 40W. My recommendation would be 50W or more, with a minimum of 25W for tube fans. If you like to rock out at really high SPLs, the Silver 10s can handle a lot of juice.

Overall, the Silver 10s are a lot better than their "typical box" look would suggest: great voicing, solid bass when properly distanced from the rear walls, an engaging soundstage, and an ability to sound great with a wide range of music. Really, what more could you want from an affordable speaker? And while \$2500 isn't pocket change, it's an attainable goal for most everyone serious about audio, including my cash-strapped friends. This is great, because the Monitor Audio Silver 10s have renewed their faith in high-end audio, and mine as well. I see a new speaker purchase in their sonic future. **tas**

## SPECS & PRICING

**Driver complement:** Dual C-CAM RST long-throw 8" woofers, one C-CAM 4" midrange, one C-CAM gold dome tweeter

**Frequency response:** 30Hz-35kHz

**Sensitivity:** 90dB 1W/1m

**Nominal impedance:** 4 ohms

**Max SPL:** 117.8dB

**Recommended power:** 80-200W

**Bass alignment:** Bass-reflex, twin port

**Crossover:** 550Hz, 2.7kHz

**Dimensions:** 41" x 9" x 14"

**Weight:** 57 lbs.

**Price:** \$2500

### MONITOR AUDIO

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L1W 3X10

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### ASSOCIATED EQUIPMENT

**Analog:** VPI Scout 1.1; Rega P1, RP3, P5; Acoustic Signature Wow XL; Funk Firm Flamenca; Ortofon 2M Black; Pro-Ject Tube Box II

**Digital:** Rotel RDD-15100; TEAC UD-501; Bluesound Vault; Music Hall 25.2; iMac, iPad Air; Asus RT-N66U gigabit router; Drobo 5N 16TB NAS storage; Audirvana; Amarra; Pure Music

**Preamp/Amps/Integrations:** Classe CP-1000; Rogers High Fidelity EHF-200 Mk2; Arcam FMJ A19; TEAC AI-501DA; Stein Music Stateline Amp2; Harman Kardon A500

**Cables:** Nordost; WireWorld; Wywires; Audioquest



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# OUR TOP PICKS LOUDSPEAKERS



## Infinity Primus P363

**\$400**

This remarkable speaker is lower than budget-priced for a nearly full-range floorstander. It is almost down at the price level (after discounting) of typical miniature speakers for computer use. But in many respects it competes with the best dynamic speakers available. With its anodized aluminum drivers, distortion is all but vanishingly low. Its off-axis behavior is absolutely exemplary for any price level. And its frequency response is surprisingly smooth and flat. The balance is slightly “home theater,” with a vigorous midbass and a small midrange recession relative to a smooth but slightly elevated treble. But a bit of minor EQ tweaking will produce a sound that is very close to exactly neutral. All this at this price point is not just impressive. It is the dawn of a new era, says REG.

[infinityspeakers.com](http://infinityspeakers.com) (250)



## KEF X300A

**\$800**

Take KEF’s brilliant Uni-Q coincident, add Class AB bi-amplification, and slip in a 24-bit/96kHz USB DAC, and you’ve got a recipe for desktop distinction. This diminutive two-way, bass-reflex design is pacey, with a jump factor that should get your trackball and paperweights dancing. The X300A also has an image stability and pinpoint focus that are only approached by single-driver speakers. Whether you’re a computer enthusiast or an Old Guard high-ender, you will find it hard to resist KEF’s perky little plug-in.

[kef.com](http://kef.com) (238)



## GoldenEar Triton Five

**\$1995**

Legendary speaker-manufacturer Sandy Gross’s latest offering, the \$999 GoldenEar Triton Five floorstander features noteworthy drivers—four side-mounted, sub-bass radiators designed to deliver subwoofer bass without the need to employ an active sub; Golden Ear’s High Velocity Ribbon Driver; and two 6” mid/bass drivers made from a formulated polypropylene cone material, all housed in a beautifully finished enclosure with nonparallel walls. Reviewer Jacob Heilbrunn thought the Fives offered a tremendous amount of performance for the price, generating hour after hour of satisfying playback regardless of genre. Greatly appealing to many audiophiles on a budget, the Triton Fives will also entice anyone who might be looking for a reasonably priced first speaker. “In sum,” JHb concluded, “The Triton Five isn’t just an option. It’s a must-audition.”

[goldenear.com](http://goldenear.com) (reviewed in this issue)



## Tannoy Revolution XT 8F

**\$2600**

The Tannoy XT line represents a significant overhaul of its Revolution series. The trapezoidal cabinet shape has been retained, but the internals feature sweeping changes. The top-of-the-line 8F can be best characterized as a two-and-a-half-way. Its 8-inch coaxial woofer is allowed to work into the bass while being augmented below 250Hz by an 8-inch woofer. The star attraction is the new coaxial driver, said to be a fresh interpretation of Tannoy’s point-source drive-unit philosophy. The end result of Tannoy’s engineering innovation is a superb midrange. Reviewer Dick Olsher certainly could not detect any obvious midband coloration. The 8F was Robert Harley’s top discovery at the 2015 Consumer Electronics Show. DO was in total agreement with his assessment: “The Tannoy offers a virtuoso midrange that is competitive with speakers approaching \$10k retail.”

[tannoy.com](http://tannoy.com) (full review forthcoming)

[www.theabsolutesound.com](http://www.theabsolutesound.com)

# OUR TOP PICKS LOUDSPEAKERS



## Magnepan .7 \$1395

The latest (and greatest) “mini-Maggie,” this modestly sized, 2-way, line-source floorstander uses all quasi-ribbon drivers (as opposed to the mix of quasi-ribbon and planar-magnetic in the MMG). The result is a superior blend between tweeter and mid/bass, with much better power-and-bass-range speed, low-level resolution, color, and extension. (Indeed, much better speed, low-level resolution, and color overall.) Though the .7 benefits on some (chiefly large-scale) music from the addition of a subwoofer, reviewer JM thought that, all by its lonesome, it was shockingly realistic on acoustic instruments (and equally swell on a good deal of rock), reproducing an ambient soundstage so markedly different than the sound of the room the speakers were auditioned in that it transported her. JV completely agreed. In his opinion (and that of Ms. Mullins), the new .7 is the best option in a reasonably priced high-end loudspeaker. Like all Maggies, the .7s do require some power to drive.  
[magnepan.com](http://magnepan.com) (250)



## 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](http://kef.com) (231)



## PSB X2T \$1299

Luckily for listeners (particularly those who are just getting started or who might not have the deepest pockets), PSB does its homework. The Canadian manufacturer has created a transducer of incredible value for an incredibly reasonable price—and, incredibly enough, it also sounds great. In appearance, this four-driver three-way is anything but flashy: a slim, compact, three-foot-tall, dual-front-ported, quasi-D’Appolito floorstander, with an MDF enclosure that comes in any finish you want as long as it’s black ash. But what the X2T lacks in eye-catching looks, it more than makes up for in ear-pleasing sound. Its primary strengths lie in the power range and the bass, where it can really turn heads. This little speaker delivers surprisingly dense tone color and hefty, extended low end—an unexpected feature in such a package at such a price point. Its soundstage may not be the deepest around, but in almost all cases the imaging of singers, instruments, and players is impressive, even precise, offering high sonic verisimilitude. In short, the X2Ts live up to PSB’s marketing message: “real sound for real people.”  
[psbspeakers.com](http://psbspeakers.com) (253)



## Audience ClairAudient 1+1 \$1795

When Steven Stone reviewed the single-full-range-driver Audience “The One” speakers, he was convinced that they were the best nearfield monitors he’d ever heard. His time with the larger Audience 1+1 speakers has led him to place the 1+1 above the “The One” at the top of his own personal “best” nearfield loudspeaker list. Just like “The One” speakers, the Audience 1+1 creates a three-dimensional soundstage that allows you to listen deeply into the nuances of a mix or a live performance.  
[audience-av.com](http://audience-av.com) (246)



# Subwoofers

# JL Audio e112 Subwoofer

## Hippocratic Oath

Robert Harley



I've been a fan of JL Audio's subwoofers since their debut at a CEDIA show about ten years ago. At that time this company, which had already redefined bass performance in high-end car audio, was making its first foray into the home-audio market. I went into the demo a skeptic: a car-stereo company introducing home-theater subwoofers? What could possibly go right? My trepidation was magnified when on the way into the demo room I was handed a pair of earplugs. I braced myself for a blast of rap at 110dB and chest-crushing, one-note bass. And then the demo began—with Bill Evans' lilting Waltz For Debby.

JL's Fathom f113—the product being demonstrated—didn't sound like a subwoofer at all. Instead, it gently reinforced the bottom end, reproducing Scott LeFaro's exquisite bass work with astonishing nuance and delicacy. The Fathom's prodigious bone-shaking capabilities were demonstrated later on, but JL Audio had made its point about the company's aesthetic and about the sub's musical prowess. I ended up reviewing a pair of Fathom f113s, and found that they offered stunning performance in a stereo music system as well as in a serious home theater.

JL Audio recently introduced its much-lower-priced E-Sub line, the \$1500 e110 (reviewed by Jonathan Valin in Issue 244) and the \$1900 e112 reviewed here. The differences between the two units are driver size (10" vs. 12") and amplifier power (1200W vs. 1500W). The e112 includes an integral, fourth-order, line-level crossover (unlike the crossoverless Fathom), with controls on the top panel—a welcome change from difficult-to-reach rear-mounted controls. Once the adjustments are set, the knobs and switches disappear behind a magnetically attached cover. The whole package is very elegant.

The metal front baffle is essentially an extended mounting flange of the 12" woofer, bolted to the MDF enclosure. JL Audio made its name by developing advanced proprietary woofer technologies (it holds 24 patents on raw-woofer design plus 12 more in enclosures, amplification,

etc.), and those technologies have been distilled down into the e112's woofer. The 12" driver features a cast-aluminum frame, dual spiders, a large voice coil, and is capable of a whopping 3" excursion.

I wanted to hear a pair of e112s with the Raidho X-1, thinking that this combination could be a giant-killer, delivering JL's bass performance with the Raidho's spectacular midrange and treble. I had recently set up a pair of JL's e110 subwoofers for a friend, mating them to the Joseph Audio Pearls. (He had bought both products on my recommendation.) The combination proved to be exceptional, with excellent integration between the two subwoofers and the Pearls.

The first thing I did after adding the e112s to my system was to evaluate the subwoofer's crossover. I listened carefully for audible artifacts overlaying the midrange and treble with the e112's crossover in the X-1's signal path. If the JL sub introduced the kinds of distortions common to many crossovers, the system would be a non-starter. These distortions typically include added grain, treble hardness, a flattening of the soundstage, compression of dynamic contrasts, coloration of instrumental timbres, loss of fine detail, and a reduction in transparency. When you think about it, an active crossover should be designed and built to the same standards as a high-end preamp. Most are not.

I was pleasantly surprised by how little the e112's crossover changed midrange and treble performance. Many high-end preamps aren't this transparent. To give you an idea of how good the e112's crossover is, I'll tell you about my experience with changing the five-meter runs of interconnects that ran from the preamp's output to the e112's input, and then from the e112's output to the power amplifier inputs. The only long

RCA-terminated interconnects I had on hand were decade-old AudioQuest Amazons. Midway through the review I replaced the Amazons with AudioQuest's new Fire interconnects (review to come). The improvement rendered by the upgraded interconnects was more sonically significant than the effect of the e112's crossover. Keep in mind I'm using exceedingly high-resolution sources and world-class electronics, which leave the e112's crossover nowhere to hide. In short, you don't have to worry about the e112's crossover mucking up the sound of the main speakers. That, in itself, is remarkable in a \$1900 subwoofer.

The qualities that have made previous JL Audio's subwoofers exceptional—lack of bloat and overhang, coupled with tremendous power and authority—were evident in the new, more affordable e112. The pair of e112s was quick and agile, reproducing transient information with no smearing of leading-edge attacks, plus very fast

## SPECS & PRICING

- Driver: One 12"
- Integral amplifier power: 1500W
- Crossover: Line-level, variable frequency, fourth-order
- Phase control: Continuously variable
- Dimensions: 15.5" x 16.23" x 18.39"
- Weight: 75.3 lbs.
- Price: \$1900 (black ash); \$2100 (piano black)

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## EQUIPMENT REVIEW - JL Audio e112 Subwoofer

# Building A Giant-Killer?

As you'll read in the review of the Raidho X-1 elsewhere in this issue, this little speaker offers world-class midrange and treble performance courtesy of Raidho's spectacular ceramic-cone mid/woofer and proprietary ribbon tweeter. Hearing the X-1 at the Newport show last year led me to speculate about creating a potentially "giant-killing" system that mated the X-1 to a high-quality subwoofer, such as the e112. The X-1 would be relieved of reproducing the bass, and you'd get the best of both worlds: Raidho's superb ribbon and the articulate, tuneful, extended, and powerful bottom end for which JL Audio is known. The package of X-1s (\$6400), their stands (\$900), and a pair of JL Audio e112 woofers (\$1900 each) rings up at \$11,100. Is this a better path than buying a similarly priced full-range loudspeaker?

A satellite-subwoofer system offers some compelling advantages over a full-range loudspeaker. First, subwoofers tend to be housed in somewhat utilitarian cabinets, at least compared with the lavish build and finish of many full-sized loudspeakers. This difference alone confers significant cost savings. Second, separating the bass reproducer from the midrange/treble reproducer allows you to position the subwoofer for best integration in the room without worrying about imaging. Conversely, the satellites can be positioned for optimal imaging without concern for their bass performance. Third, a subwoofer allows you to adjust the bass level, a feature that's simply not available in a full-range speaker. To sum up, the sat-sub system potentially delivers better sound for a given budget, allows you to fine-tune the bass level, and gives you more placement flexibility. A pair of small speakers in a room with a subwoofer placed out of the way is also less intrusive.

But there's no free lunch. In a full-range speaker the transition from the woofer to the midrange is engineered by the same designer; there's no hit-or-miss, as there is with disparate subwoofers and satellites made by different manufacturers. In addition, a subwoofer requires a line-level crossover in the signal path and two runs of long interconnects. A less-than-stellar

crossover can destroy the purity of the midrange and treble, making the whole idea a non-starter.

There's no substitute for hands-on experience, so after listening to the X-1s on their own (driven by Soudation electronics or the Devialet 200/400 I reviewed in Issue 250), I added a pair of JL Audio e112 subwoofers. The Devialet can be configured to high-pass filter the signal at its speaker terminals, and to low-pass filter the line-level signal from an RCA jack. I was thus able to bypass the JL's internal crossover for comparison.

Adding the JL Audio subs transformed the system, and not just in the bass. Filtering frequencies below 100Hz from the X-1s allowed them to sound much more coherent and uncolored in the midrange. Dynamic range also improved, as did the ability to play loudly without strain. The bass congestion that plagues all small speakers when they are pushed too hard disappeared, increasing midrange clarity and opening up the dynamic expression.

Ultimately, however, I thought that the X-1 wasn't the best loudspeaker for creating a mythical "giant-killer" by augmenting it with a subwoofer. The X-1's 4" mid/woofer just wasn't up to the task of reproducing the power range from about 100-300Hz with the same dynamic impact that it provided above 300Hz, and it certainly couldn't keep up with a 12" woofer in this regard. Although on much music the blend between sat and sub was seamless, more challenging cuts revealed a discontinuity in dynamic performance.

The X-1 is the best small speaker I've heard, and JL Audio's e112 is a terrific subwoofer (and a spectacular bargain), but they were not an ideal pairing. If you want Raidho's amazing midrange and treble performance and extended bass, you'll need to buy one of its fuller-range speakers (admittedly very expensive), or mate the e112s to Raidho's C-1.1 or D-1, which have larger mid/woofers. Jonathan Valin will report on the D-1 and JL Audio's flagship Gotham in an upcoming issue. **RH**

decays. As a result, the subs didn't dilute pace and rhythm, as many subs do. Ray Brown's bass playing, on everything from his *Soular Energy*, to Duke Ellington's *Duke's Big 4*, to Bill Evans' *Quintessence*, was reproduced with its driving swing intact.

Kickdrum was startling in its impact and depth, and organ pedal points pressurized the room in the way that only subwoofers can. The e112 goes low, plays loudly, and does both at the same time without any sense of strain or compression of dynamic peaks. Adding the subs also made the soundstage bigger and more expansive (many spatial cues are carried by very low frequency information).

As you'll read in the sidebar, filtering bass from the X-1s also conferred big gains in dynamic contrasts, midrange clarity, and the ability to play loudly without congestion in the midbass.

Finally, if you're thinking of adding a subwoofer to your system, I highly recommend that you buy two or more. Two subwoofers drive the room more uniformly than one. Moreover, each subwoofer works only half as hard for a given sound-pressure level, increasing dynamic headroom and lowering distortion.

## Conclusion

The JL Audio e112 seems to have sworn the Hippocratic Oath: First, do no harm. The e112 follows this dictum in two ways. First, its integral crossover is extremely clean and transparent. Second, this sub doesn't call attention to itself by weighing down the music with a bloated rendering of the bottom end. These qualities alone would make the e112 a standout. But this subwoofer takes excellent performance up several notches, reproducing the dynamic, textural, and tonal nuances in acoustic or electric bass playing. Despite "light on its feet" agility, the e112 also delivers tremendous bottom-end authority. It's this combination of finesse and impact that makes the e112 such a stand-out in a crowded field—and at an eminently affordable price. **tas**

# JL Audio E-Sub e110 Subwoofer

Old Dog, New Trick

Jonathan Valin



**I**t 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), sturdy 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 *Sounddoctor Test CD V 2.6.1*, available (for \$18) on-line at <http://www.sounddoctor.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 Sounddoctor 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 Sounddoctor 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 Sounddoctor 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



## EQUIPMENT REVIEW - JL Audio E-Sub e110 Subwoofer

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 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 Soundocor 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 Soundocor 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 Soundocor 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 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 OdB.) 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

## 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

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## EQUIPMENT REVIEW - JL Audio E-Sub e110 Subwoofer

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 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

## EQUIPMENT REVIEW - JL Audio E-Sub e110 Subwoofer

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

## 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

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# REL S/5 Subwoofer

You Complete Me

Neil Gader



**I**f REL Acoustics, the highly regarded subwoofer manufacturer, pulled out of the high-end marketplace tomorrow, never again to manufacture another unit, its place in the audio pantheon would forever be assured. REL has offered superb build-quality and high standards of bass reproduction since the company was founded in 1990. Thankfully for bass fans everywhere, nothing has changed in its latest venture, the S/5, which may be the best-performing midpriced sub REL has offered in its vaunted history. The S/5 goes about its tasks so matter-of-factly, effortlessly, and invisibly that it seems to become another attractive fixture in the room—until you pull it from the system. Then you understand what *authentic* low bass brings to the party. You also begin to understand the meaning of...addiction.

The REL S/5 is the kingpin of the freshly minted S Series, a line second only to the big Gibraltar subs in the REL lineup. Tipping the scale at seventy pounds, the S/5 is not small, but it isn't a real-estate hog, either. The S Series enclosures are visually lavish and lavishly inert. Sporting 1 1/8"-thick cabinet walls, my gloss-black sample was superb in fit and finish. The solid T-304 stainless steel grab handles are first cast, then micro-machined, and finally polished in a six-stage process. The polished aluminum trim pieces—such as the footers—elegantly accent its dark good looks.

Inside the S/5 is a new forward-firing 12" alloy-cone woofer. According to John Hunter, REL's Woofer-in-Chief, this driver's excursion has been increased to a full two inches, an improvement of a ♯". He also points out that the cone's moving mass has been reduced almost 60 percent by his reckoning, and that it is "self-quieting," which is to say, it is so non-resonant that it stops as quickly as it starts. Additionally, there's a downward-firing 12" passive driver with a unique carbon diaphragm that is similarly stiff and lightweight. REL says that the S/5 uses a simple filter-type that's quite fast—with about eight milliseconds in group delay—to eliminate the passage of unwanted higher frequencies to the REL driver. Power is also superior to that of its predecessor, the discontinued R-528. The S/5 now uses a NextGen2 550W switching amplifier that can generate up to 873W on hard transients.

Per tradition, REL subs do not use high-pass filters—the main speakers run full-range, full-time. REL's view is that high-passing the sub/sat looks good on paper, as it allows the main speakers to perform with less stress and more dynamism. But REL also believes that high-pass

filtration creates more problems than it solves. Why? Because the main speakers are designed and voiced to operate within a specific range of frequencies, and by cleaving away a portion of that output via a high-pass crossover you are essentially refashioning the speaker into a different, even unpredictable unit never contemplated by its designer. That's why—at least under their breath—many designers don't actively embrace third-party subs, high-pass or not. Subwoofers from the same brand are another story. They have purposefully designed drivers and low- and high-pass crossovers to pair with designated models (Revel, among others, comes immediately to mind as a specialist in these matters). In any case, no high-pass filtering for the S/5.

The back panel houses a phase toggle and rotary settings for the low-frequency effects (LFE) level and for volume, plus the tiniest 39-step increments for adjusting the crossover over the range of 30-120Hz. There are dual low-level RCA inputs, plus an LFE input, but the high-level input is and has always been REL's preferred means of installation. A lengthy Neutrik connector is provided for this purpose. It carries within its jacket four wires for connection to an amplifier's speaker taps.

REL suggests starting with corner placement, usually on a room diagonal. This not only maximizes room gain but also allows "for the most linear true low bass wavelaunch." The setup manual REL provides is quite comprehensive (without being intimidating) about optimizing placement. In my experience, dialing in an REL is a matter of a few easygoing minutes rather than hours of hand-wringing. My advice: Bring a friend for fine adjustments. (Because of the added expense, I hesitate to mention that if

## EQUIPMENT REVIEW - REL S/5 Subwoofer

you have a “problem” room, setup is easier with two subs, as they work together to smooth and flatten overall room response, and thereby become less of a sonic presence. This was an experience that I enjoyed first-hand with a pair of S/5s, but that’s a story for another time.)

### Mood Elevator

There are two sets of criteria that I use to evaluate subwoofers. There’s overall bass quality (extension and musicality), and then there’s integration (the subwoofer’s ability to blend with the main stereo speakers). Net: Does it remain true to the character and voice of the satellites?

In the tight confines of my listening room, the S/5 wasn’t even breathing hard as it extended response into the middle twenty-cycle range. It did so without calling attention to itself—no overhang, perceived box coloration or, to use the sonic slang, “slowness” in its response. In all honesty the S/5 will go even lower, but my room struggled to support 25Hz without the doors rattling and the space over-pressurizing. The S/5 makes short work of large-scale orchestral pieces laden with timpani and bass drum. Every decaying flutter off the skin of these instruments is presented concisely and cleanly, and often in overwhelming detail. Small-scale, low-level cues don’t escape the S/5, either. Towards the end of Jackson Browne’s “Colors of the Sun” from *For Everyman*, there’s a repeated piano and drum motif that resolves into a deepening bass note that seems to ripple, sustain, and expand as if suspended in space. Each repetition of the motif is heavier and more resonant than the last, until the track begins a long fade. The

bass notes hardly exist at all without the help of the S/5. Similarly, during Yes’ “It Can Happen” from *90125*, there’s a recurring bass line where the bassist slides his finger down the string, the pitch plunging as if tossed off a cliff. Most speakers by themselves can’t reproduce the full weight of these descending notes convincingly. The S/5 can.

What makes its performance special, however, is not its obvious power, extension, and dynamic headroom. These exist to degrees that can overpower most medium-sized rooms. It’s its clarity and focus that really impress. Credit is owed to the sub/sat transition, which is so seamless that it becomes anyone’s guess where the REL leaves off and the sats takeover. For me, this is where the believability factor kicks in. For example, when drummer Russ Kunkel plays some tom-tom fills during Carole King’s “Home Again” on *Tapestry*, the drum-skin detail and tuning, and the resonant decay, reveal themselves in full bloom, images locked into position without a hint of the S/5 in the sonic picture. This was also true of the kickdrum positioned centerstage during Holly Cole’s “Take Me Home.” The weight of the impact didn’t pull towards the corner position where the S/5 was sitting—it remained focused dead center within the soundspace. And this wasn’t just the case with the REL augmenting my compact ATC SCM20s, either. Even a speaker like the gorgeous Kharma Elegance S7 Signature floorstander, certainly no sluggard in midbass response and speed, benefitted richly from the ministrations of the S/5.

Less obviously, the S/5 enhances the mood of a performance in the way it conveys sweeping

and subtle landscapes of tonal color and timbre, gradients of shadow and light. The S/5 establishes the musical context for what is to come. For example, without the opening 30Hz organ pedal point that introduces Strauss’ *Thus Sprach Zarathustra*, or the deeply ominous synth note that kicks off Dire Straits’ epic “Telegraph Road,” listening to these pieces would be like listening to a Shakespearean sonnet with the opening quatrain lopped off. On the tight, crisp bass intro to Holly Cole’s cover of “I Can See Clearly” from *Temptation*, the REL captures the optimistic bounce and jauntiness of the instrument-character that’s pivotal to the upbeat emotion of the song. Similarly, from the opening bar onward, the forward placement of Ray Brown’s standup bass immediately signals listeners that the album *Soular Energy* is about the bass player as frontman, not backing musician.

Of equal importance is the ambient information that the REL reproduces. This baby can move a lot of air. Take a familiar piece like “Lux Aeterna” from the Rutter Requiem. The hall sound becomes a more active player in the performance when the S/5 is in the system. You can hear the air filling with sound around the musicians and chorus, and then hear this ambience even more clearly when the organist hits the lowest pedal points. And when the organist abruptly stops and the instrument goes silent, there is a sense of air rapidly escaping from the venue, like a balloon suddenly deflating.

A couple of tips to keep in mind: Subs do not operate in isolation. Only well-engineered main speakers with fairly neutral low-end response

will excel with subwoofers. Sats with a sucked-out lower midrange and upper bass will sound a little bass-light and dynamically lean. And attempting to mask such a tonal deficit by raising the output and crossover point of the S/5 will only smear midrange detail and create a noxious midbass bump that further decreases the sense of sub/sat integration that, after all, is the desired effect. Also, with smaller compact monitors, care should be exercised in gain-matching the more dynamically limited satellite with the much higher dynamic limits of the sub.

What about value? Put it this way, if you consider that you can easily spend a \$2500 on a couple of power cords, then the real value of the S/5 comes into crystalline focus.

From time to time I meet audiophiles who

## SPECS & PRICING

Type: Front-firing subwoofer, with downward-firing passive radiator

Drivers: 12" woofer, 12" passive

Frequency response: 21Hz -6dB

Power: 550W

Dimensions: 17.5" x 18" x 20"

Weight: 70 lbs.

Price: \$2500

### REL ACOUSTICS NORTH AMERICA

800 Addison St.  
Berkeley, CA 94710  
(510) 990-6005  
rel.net

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[www.theabsolutesound.com](http://www.theabsolutesound.com)

## EQUIPMENT REVIEW - REL S/5 Subwoofer

continue to insist that subwoofers are the bane of their audio existence. I don't know what sort of deep-rooted, sub-bass trauma they were exposed to in their earliest high-end years, but I'm here to tell you that the only drama I experienced during my time with the REL S/5 was the emotion that its evenly weighted balance and full-range musicality brought to the fore. (Plus the separation anxiety I'm anticipating when REL calls for its return.)

In both subtle and not so subtle ways the REL S/5 completed every speaker system it partnered with. Ultimately, it's up to every audiophile to ask himself whether he wants the whole musical picture—the entirety of the soundscape. If your answer to that question is an unqualified yes, then consider yourself warned: Don't even think of plugging in the S/5 if you ever expect to use that outlet again. An exceptional performer in any class. **tas**

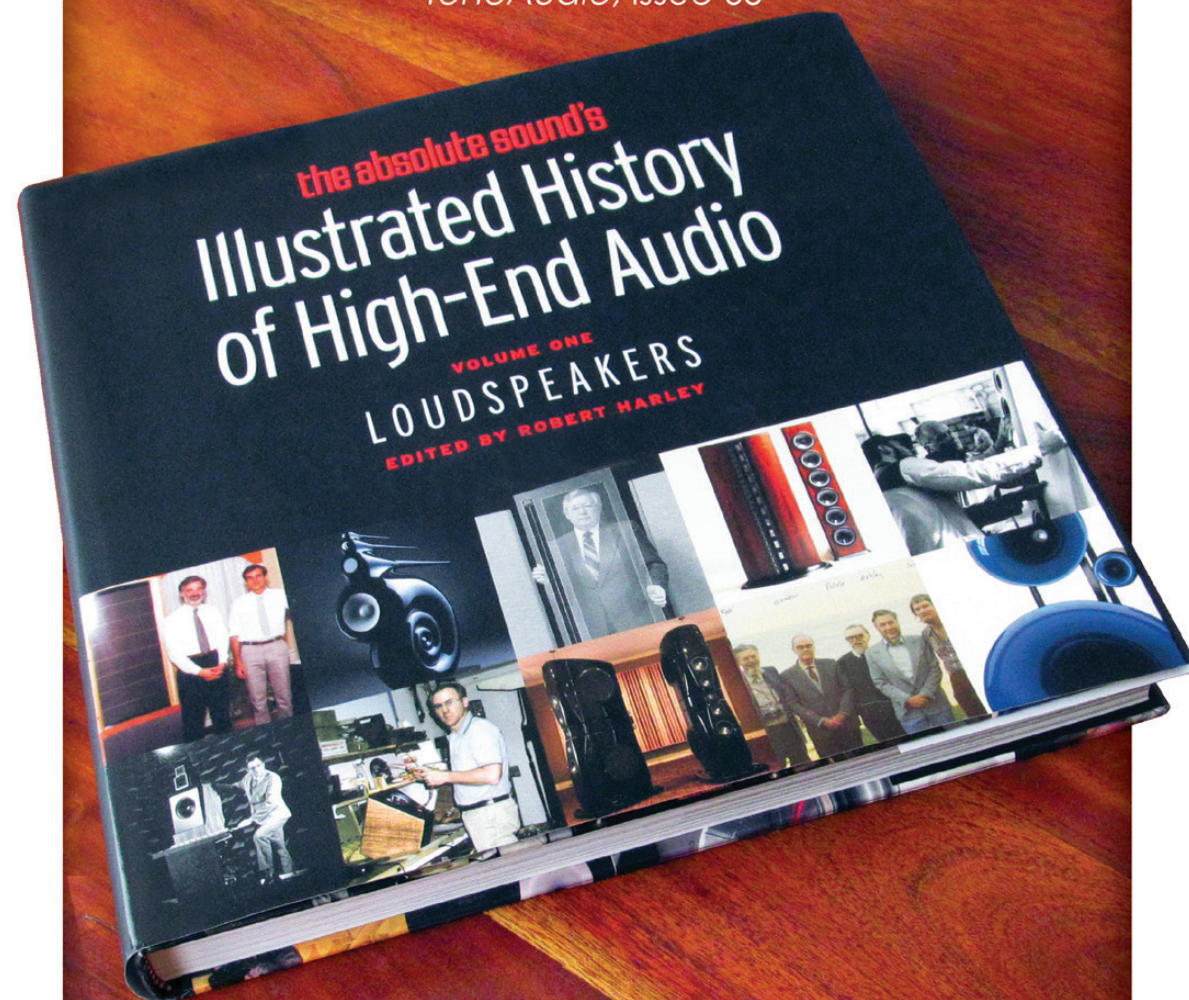


## REL Wireless? Hello, Longbow!

Longbow is REL's wireless solution, available in specific models like the S Series. It was originally developed for the REL Habitat1—a 4.5"-thick, on-wall subwoofer. To keep up with the emerging—and growing—wireless trend in consumer electronics, Longbow has been designed to eliminate the look of cables and to address situations where a lengthy cable-run becomes an issue. Longbow wireless allows you to transmit wide-bandwidth signals (20Hz–20kHz) via the REL's high-level Neutrik connection. And, should you wish to use a REL sub in a home-cinema setup, it will also simultaneously send a more limited-bandwidth, .1-channel signal (250Hz and below). Unlike Bluetooth-based systems, Longbow does not compress, resulting in minimal delay. I'm hopeful that I'll be able to report on Longbow in a forthcoming issue. Price: \$299. **NG**

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*ToneAudio, Issue 65*



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## OUR TOP PICKS SUBWOOFERS



### JL Audio e110/e112

\$1500/\$1900

Before he got the hefty little e110 with 10" driver (the e112 comes with a 12" woofer), JV was anything but a fan of subwoofers, which always seemed to take more away in midrange transparency, tone color, and resolution than they paid back in bass-range extension, detail, and power. Crossed over at the right frequency—which is easy to do with the instructions that JL Audio provides and the unit's manifold built-in controls—the e110 is the very first sub he's heard that doesn't screw up the sound of the main speaker. Rather it seemed to extend that sound into the bottom octaves, producing the highest low-level resolution of bass timbres and textures from any transducer of his experience. Paired with something like a Raidho D-1 stand-mount the e110 will give you everything (save for overall impact) that you pay the big, big money for in a massive multiway floorstander, and it will do so for a mere \$1500.

[jlaudio.com](http://jlaudio.com) (244)



### REL S/5

\$2500

The extraordinary thing about REL's latest effort is that it buries once and for all the idea that only small subs can excel off the line, and are less sonically detectable than their larger, more explosive, more ponderous cousins. Fact is the S5 is big—a 12" woofer with companion 12" downward-firing passive radiator and 500 Class D watts to provide the fireworks. Its bass extension is terrifyingly deep, yet it has the delicacy and dexterity to become one with the music, from the deepest fundamentals on up, and to do so invisibly, without affecting the character and transparency of even the most highly resolved system.

[rel.net](http://rel.net) (252)

## VENOM PS8 POWER DISTRIBUTOR VENOM DEFENDER



### DEFINING A NEW PARADIGM IN POWER DISTRIBUTION AND PROTECTION!

Media systems and *NEW GENERATION* home electronics demand something more than a cheap computer power-strip but without the complexity, size and expense of a high-end power conditioner! The VENOM PS8 and DEFENDER deliver an unprecedented level of power and protection at a surprisingly affordable price.

#### VENOM PS8

An eight-outlet tour-de-force of custom parts engineering aimed at maximizing any home-entertainment system's high-current potential and performance capability! Finally, a no-compromise high-current power-distributor at an affordable price!

- 20-Amp Rated – (full continuous power)
- 8 Cryogenic Grade Outlets
- Dual 12-gauge Internal Wiring – (9-gauge aggregate)
- OFE Alloy-101 Cryogenic Conductors
- IEC C19 Inlet – (20-Amp rated)
- Carling Hydraulic Electromagnetic Breaker – (superior high-current performance)
- Internal Vibration Dampening
- Massive all steel construction – (designed for durability)
- Brushed Stainless Steel Appearance – Stunningly Beautiful!

#### VENOM DEFENDER

The VENOM DEFENDER is a unique "pocket power conditioner" that was designed to provide noise reduction and surge protection to the VENOM PS8. And it can be used as a standalone solution for remotely located single components. It plugs directly into the AC duplex eliminating the need for a large power conditioner and the associated power cabling.

- Advanced MPDA Noise Filters
- 22,000 Amps of Surge Protection
- Internal Fault Protection
- L.E.D. Status Indicator





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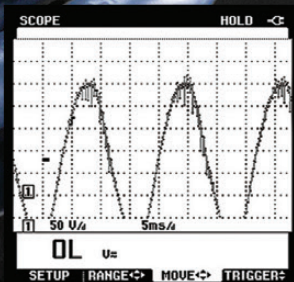




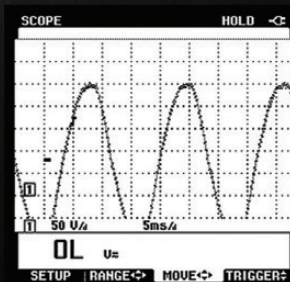
# VENOM DIGITAL

## Box-less Power Conditioner Delivers Measurable Noise Reduction!

The VENOM DIGITAL power cord is an easy to route, affordable power cord that measurably reduces power-line noise – *without* the expense or complication of a power conditioner.



NOISE WITH A STANDARD POWER CABLE



NOISE ELIMINATED WITH THE VENOM DIGITAL POWER CABLE

# VENOM USB

## The Finest in Science and Performance at an *Affordable Price!*

Don't be fooled by the reasonable price of Shunyata's VENOM USB cable. Shunyata Designer Caelin Gabriel spared no expense in creating a product that offered performance comparable with the most expensive USB cables on the market, then priced it to offer the finest value in the business.



# VENOM USB

1.5  
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ULTRA USB CABLE FOR MUSIC SYSTEMS



"..offers performance that rivals some of the most respected high-priced offerings, but at a price that will not be intimidating to the computer audiophile."  
~ Steve Plaskin, Audio-Stream



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,

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 sine wave. Any break or open contact in the electrical chain represents a *loss* that can affect system performance."

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

How Dedicated Are You?

Neil Gader

**M**y 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.

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

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

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



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 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 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 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 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**

### SPECS & PRICING

<b>Venom PS8</b>	<b>SHUNYATA</b>
Number of outlets: 8	<b>RESEARCH</b>
Price: \$695	26273 Twelve Trees
<b>Defender</b>	Lane, Ste D
Price: \$195	Poulsbo, WA 98370
<b>Venom HC Power Cord</b>	(360) 598-9935
Price: \$295/1.75m	shunyata.com

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## EQUIPMENT REVIEW - Oppo PM-1 Headphones

# 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 humidor-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**

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# Dynamic Design AnnaLyric PC-1 Power Cord

## Worthy Upgrade

Neil Gader

**S**ince 2000, the Chicago-based cable company Dynamic Design has offered three levels of power cord and cable products—the mid-priced Lotus Series, the premium Heritage Series, and the lofty Nebula series (see my review in Issue 245). Now, to accommodate first-time users (and upgraders bumping up against a budget) Dynamic Design has introduced the AnnaLyric PC-1, which checks in at a modest \$400. (Dynamic Design uses direct-only sales to keep costs down.)

The AnnaLyric PC-1 uses a PEEK jacket (a semi-crystalline, high-temperature thermoplastic not unlike Teflon). Inside are eleven-gauge stranded bi-metal conductors, plus Dynamic Design's own Multi-Layer Insulation System and multiple shields. These technologies are similar to the Dynamic Design Lotus AE15 power cord and intended to lower EMI/RFI. Termination quality appears to be excellent, and the brass connectors are heavy-gauge.

Sonically, a good many of DD's strengths have migrated over to the PC-1 pretty much intact. It easily betters most original equipment cables with finer dynamic gradations, stronger, more focused images, and a weightier overall balance. Imaging performance is very stable, and timbres

have some of the dark richness that I admired in the Lotus and Heritage models, though the PC-1's overall character is just a little lighter in color. This said, bass is still solid with a nice balance of pitch and control.

The PC-1 isn't additive in the aggressive sense of edge detail or etchiness. Rather, there are only minor sonic subtractions compared to its more elite siblings. For instance, backgrounds are not as inky black as those of my reference cords, and the complexities of soundstage depth and general spatiality are modestly reduced. As I listened to Britten's *Serenade*, for example, the singer and accompanying lute inhabited the soundspace but not with the full breadth or immersiveness that I get with the pricier stuff.

Overall the AnnaLyric is a no-brainer bargain and joins the Shunyata Venom HC as a personal fave. It's a strong effort that I would place high on my list of worthy upgrades. tas

### DYNAMIC DESIGN CORPORATION

[dynamicdesignnav.com](http://dynamicdesignnav.com)

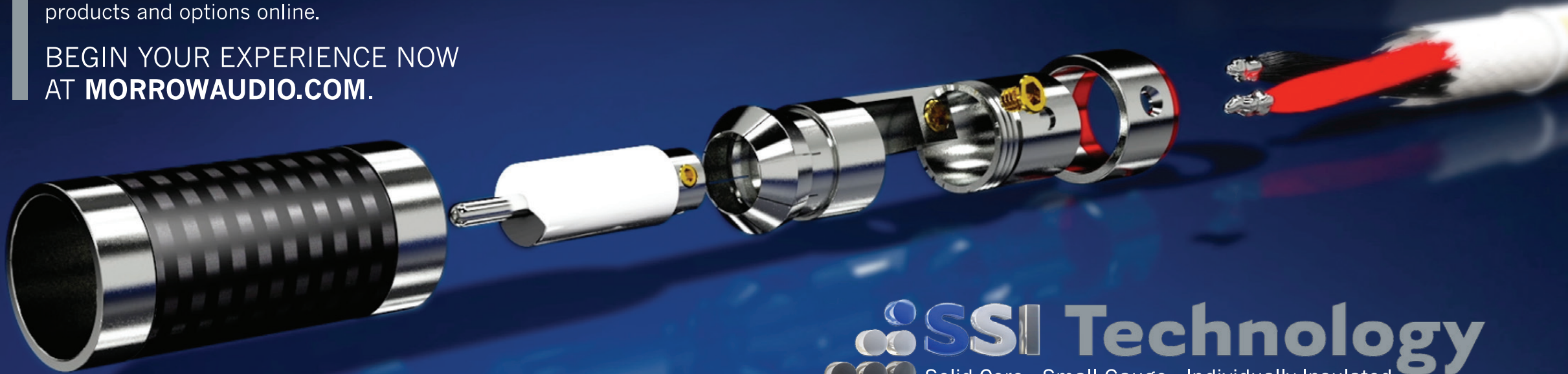
**Price:** \$400/5 ft. (also available in 15- and 20-amp configurations in standard metric lengths)



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# 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](http://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](http://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](http://nordost.com) (236)

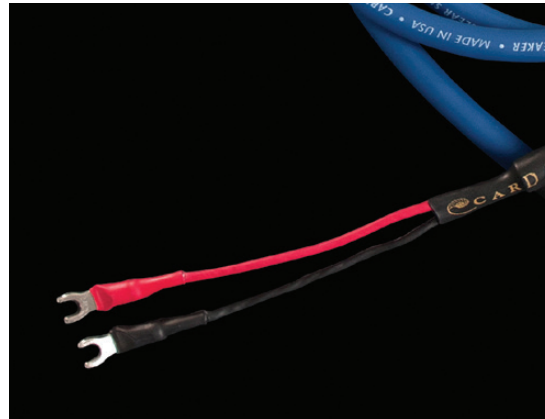
# OUR TOP PICKS CABLES, POWER PRODUCTS, & OTHER ESSENTIALS



## AudioQuest Wind \$1995 1m pair (RCA or XLR)

Although not entry-level priced, AudioQuest's Wind interconnect nonetheless represents a terrific value. This interconnect features all of AudioQuest's top technologies, and competes with top-tier models at a less-than-stratospheric price. Wind has very little sonic effect on the signals passing through it, and consequently, preserves the music's dynamic verve, spatial dimensionality, and timbral purity. It's detailed and vivid, but not in an analytical way. If you want a cable that softens transients and removes a bit of excessive zip from your system, this isn't it. Dynamics are sensational, in part because of the extremely quiet background. With a quick and taut rendering, the bass is also exceptional.

[audioquest.com](http://audioquest.com) (254)



## 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](http://cardas.com) (236)



## 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 percent 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](http://moon-audio.com) (244)



## 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.

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