STEREO • MUSIC

the absolute sound®

BUYER'S GUIDE TO HIGH-END ELECTRONICS

Contents

Departments

Integrated Amps

Power Amps

Reference Level Electronics

Phonostages

Preamps

Headphone Amps

Editors' Choice


PASS
"Moderation is a fatal thing. Nothing succeeds like excess."
Oscar Wilde.
Xs 300
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BUYER'S GUIDE TO HIGH-END ELECTRONICS

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

creative director ..... Torquil Dewar
art director ..... Shelley Lai

webmaster..... Garrett Whitten

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

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

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

advertising reps ..... Cheryl Smith
(512) 891-7775

Scott Constantine
(609) 275-9594

Marvin Lewis
MTM Sales
(718) 225-8803

To sign up for Buyer's Guides alerts, click here

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

Click here to go to the previous page.

FROM THE Editor

Welcome to the 2014 edition of *The Absolute Sound Buyer's Guide to High-End Electronics*. Electronics—amps, preamps, integrated amplifiers, phonostages, and headphone amps—are the workhorses of our high-end systems. In this *Buyer's Guide*, you'll discover which components stand out from the pack—which products are most likely to provide you with many thousands of hours of musical enjoyment from entry-level to reference-level.

With so many items to choose from on the Web and in the marketplace, it can be a daunting task to narrow down your next electronics purchase. The editorial staff and expert writers at *The Absolute Sound* have taken the guesswork and the tedium out of the process. We've culled through all the products we've reviewed over the past few years, and narrowed the list down to our consensus picks of the very best components for every budget. Perusing the 32 full-length reviews in this *Buyer's Guide* will allow you to make an informed decision when it comes to your next high-end purchase, confident that we've done the heavy lifting for you.

In addition to equipment reviews, you will also find familiar features from *The Absolute Sound* within the pages of this *Buyer's Guide*, such as sneak previews of interesting new products in *On The Horizon* and an especially useful excerpt from Robert Harley's *The Complete Guide to High-End Audio* (Fourth Edition), which explains how best to match your amplifier to your system and speakers.

We hope you will consider this buyer's guide exactly that—a guide to your next purchase that will help make this your best-sounding year yet.

Happy listening!

Spencer Holbert

ON THE HORIZON

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Neil Gader

Audio Research GS150
The GS150 stereo power amplifier from Audio Research utilizes the new KT150 output tube to produce 150 watts per channel. The GS150 is part of the new G Series of components, which offers legendary Audio Research performance in a new design aesthetic. As with the other products in the new G Series, the styling of the GS150 takes cues from past products and reinterprets them with a clean, modern look. The large, beautiful front-panel meter provides power output and AC current monitoring. Custom capacitors, transformers, internal wiring, and numerous other design features continue the tradition of high performance playback. Wide bandwidth and low distortion add to detail and accuracy without compromising the central focus on musicality. **Price: $20,000. audioresearch.com**

PREVIOUS PAGE NEXT PAGE

AURALiC TAURUS MKII Balanced, Class A Headphone Amp
Named after the constellation Taurus, most visible in the northern hemisphere's winter sky, AURALiC's TAURUS MKII Balanced, Class A headphone amplifier was designed with a unique four-way output that lets users easily configure the amplifier in standard or balanced modes by simply pressing a font-panel button. Both modes are compatible with the 6.35mm jack all dynamic headphones use, and enable headphones with 4-pin balanced connections to benefit from fully balanced operation with enhanced performance. AURALiC packed the TAURUS MKII's compact chassis with several patented technologies. For example: AURALiC's patented ORFEO Class A output module, inspired by the Neve 8078 analog console, empowers the TAURUS MKII with sufficient driving capability to deliver 1000 to 4500 milliwatts, extracting maximum performance from every headphone to which it is connected. **Price: $1899. auralic.com**

Boulder 2160 Stereo Amplifier
The 2160 is a 600W, fully-balanced, Class A stereo amp capable of huge dynamic swings and the most delicate finesse. A solid-state design it takes advantage of Boulder's latest microprocessor-controlled bias-adjustment and protection circuits for the improved fidelity and reliability. It is also the most recent implementation of Boulder's latest, fully-discrete, modular gain stage, the 99H2, which features surface-mount technology and is a variation of the gain stage designed for the reference 3000 Series amplifiers. Eighty output devices (40 per channel) and 48 distributed output filter caps make for the instantaneous transient response and high damping necessary for ideal grip and control of any loudspeaker during demanding music and film soundtracks. Low-level detail is also improved due to a reduced noise floor, allowing softer and more gentle passages to be passed with all of the fluidity and emotion originally intended by the artist. **Price: $52,000. boulder.com**

Celsus Sound Partner P1
Celsus Sound, Inc., is a new company created by the founder of NuForce, Jason Lim. The Partner P1 is the most advanced and comprehensive portable high-res-audio companion. It features a high-performance headphone amp with over 115dB signal-noise ratio. The USB DAC, utilizing the class-leading ES9018K2M DAC from ESS, can decode up to 128x DSD and 384kHz PCM audio. A built-in Wi-Fi network also allows the Partner P1 to be used as a media streamer capable of PCM 24-bit/192kHz streaming. Two digital outputs (coaxial and TosLink SPDIF) and one 3.5mm analog output allow Partner P1 to connect to other devices. The P1 fully supports Windows, Mac, Android (OTG) and iOS (camera adapter). Shipping Nov 1, 2014. **Price: $695**

ON THE HORIZON

Cocktail Audio X30
Professional video equipment manufacturer Novatron, Inc., has created Cocktail Audio, a new brand aimed at music lovers seeking modern music-system solutions. Cocktail Audio's first model is the X30. Like a Swiss Army knife, the X30 is single-box solution incorporating an integrated amplifier (with color display screen), a UPnP-compliant network streamer capable of decoding 24-bit/192kHz files at native resolution, and a music server that can store up to 4TB of music or images via its internal hard-drive or SSD storage. The X30 can rip your CD or vinyl collection, drive your headphones, serve as a preamplifier, play your local FM radio stations, store your photo images, and link to an external display device. A comprehensive browser-based app can be accessed on your computer, mobile phone, or tablet/iPad. **Price: $1695. cocktailaudio.com**

Constellation Audio Inspiration Series
Descended from their flagship siblings, the Reference and Performance Series, the new Constellation Audio Inspiration Series components offer Constellation Audio sound at a more affordable price. Currently available and shipping are the stereo preamplifier called PREAMP 1.0, the stereo power amplifier called STEREO 1.0, and the monaural power amplifiers called MONO 1.0. The preamp shares similar circuit topology with the Performance Series Virgo II and Reference Series Altair II preamps, albeit in a single chassis, while the amplifiers share a common design with and use the same power transistors as the Performance Series Centaur and Reference Series Hercules II power amplifiers. Power is 200Wpc for STEREO 1.0 and 400W for each MONO 1.0. **Prices: $9000 for PREAMP 1.0, $10,000 for STEREO 1.0, and $20,000/pr. for MONO 1.0. constellationaudio.com**

MBL Noble Line
At this year's CES in Las Vegas MBL introduced its highly anticipated, redesigned Noble Line. The new designs feature state-of-the-art sound, unique user-friendly controls, and diverse technical innovations and groundbreaking features, such as digital inputs that accept signals up to 24-bit/192kHz and DSD, second-generation MBL "L.A.S.A." amplifier technology (MBL LASA 2.0), and MBL SmartLink communication between MBL electronics as well as with external control systems. The new MBL Noble Line consists of a CD-DSD-DAC (N31), stereo power amplifier (N21), and integrated amplifier (N51). The line will later expand to include a preamplifier (N11) and mono power amplifier (N15). All Noble Line components will be available in several different color combinations, with the first products scheduled to be shipped by the end of 2014. **Prices:** From **$18,000** up to **$26,000. mbl-northamerica.com**

ON THE HORIZON

NuPrime DAC-10H and ST-10
The NuPrime DAC-10H is the world's first fully integrated digital headphone amplifier offering PCM 384k and DSD256 decoding. Its balanced headphone amplifier is capable of driving headphones in either balanced or single-ended configuration and can be used with up to two dynamic headphones. With five digital and two analog stereo inputs, DAC-10H is a full-featured DAC and preamp for a high-end audiophile system. It delivers the purest, most natural sound modern audio technology can provide, while also providing the widest support for the latest high-resolution music formats. The NuPrime ST-10 is a new Class D stereo amplifier with incredibly high switching-frequency at 70kHz offering definitively smooth and detailed sound quality. **Price: DAC-10H, $1795; ST-10 $1495. nuprimeaudio.com**

Pass Labs Point 8 Series Power Amplifiers
Pass Labs celebrates its 23rd year by offering "the best amplifiers we've ever made." Its new nine-model Point 8 Series, X.8 and XA.8, operate "higher" into Class A than ever before and bridge the gap between measured performance and subjective experience. Seven years in the making, the Point 8 Series demonstrates Pass Labs' belief that the best products must be carefully adjusted until their components operate in complete harmony—and then subjectively fine-tuned. Not limited to measurements alone, the amplifiers' state-of-the-art engineering is put through an extensive, rigorous listening process using six different sound systems to deliver a summation of Pass' expertise in designing amplifiers, while elegantly expressing Pass Labs' philosophy of more amplifier, more progress, and more music. **Price: From $6500 for theXA30.8 to $40,000/pr. for the XA200.8. passlabs.com**

Rogue Audio Pharaoh
First introduced at this year's CES, Rogue Audio's new Pharaoh integrated amplifier is a hybrid design that mates a tube preamplifier (a pair of 12AU7 tubes configured in a mu-follower topology) with a MOSFET power amp section. With 185Wpc that doubles into 4 ohms, the Pharaoh provides the smoothness of tubes with the slam of solid-state. And with no output tubes to bias, this cool-running amplifier avoids the maintenance normally associated with tube amps. This feature-rich integrated includes an mm/mc phono with adjustable loading, three line-level RCA inputs, and a balanced input. Plus, there's a tube headphone circuit, home-theater bypass, processor loop, and metal remote. **Price: $3495. rogueaudio.com**

ON THE HORIZON

Rowland Model 125 Stereo Amplifier
The Model 125 sports a crisp and compact chassis, but with 125Wpc stereo and 500W per channel in bridged mono it's never at a loss for power. The Model 125's precision-machined chassis provides exceptional thermal heat transfer/dissipation, RFI/EMI shielding, and resonance control, and minimizes microphonically induced vibrations from any source. The inherent cancellation effects of a balanced topology greatly reduce distortion and noise. The use of lead-free, low-temperature-coefficient, surface-mount components results in significantly smaller loop areas, and reduced circuit capacitance and inductance, and introduces less noise than conventional leaded components. Input and output wires are Teflon-insulated for low dielectric energy storage. The transformer-coupled input circuitry provides universal component compatibility and virtually eliminates ground-loop noise and RFI/EMI. A highly efficient, compact, DC switch-mode power supply provides optimum voltage regulation for all circuits and operating conditions. **Price: $2950.**
jeffrowlandgroup.com

Ypsilon Phaethon Integrated Amplifier
The Phaethon is a unique product in many respects. It uses a number of the technical solutions developed in the Ypsilon Aelius monoblock amplifier and PST100mk2 preamplifier in a compact and elegant design. Phaethon is a hybrid line-level amplifier with only three active gain stages, two of them with low-noise tubes operating in single-ended Class A for the input and driver stages. It uses a transformer attenuator built in-house, embedded in the preamplifier section in a novel post-attenuation technique. There are separate power supplies for the tube and output stage utilizing five power-supply inductors for low noise filtering. Power output is 110Wpc into 8 ohms, with three RCA inputs and one XLR. Weight is a prodigious 77 pounds. A full-function remote and large-character LCD screen for intelligibility from a distance are also featured. **Price: $24,800.**
ypsilonelectronics.com

PREVIOUS PAGE NEXT PAGE

How Much Amplifier Power Do You Need?

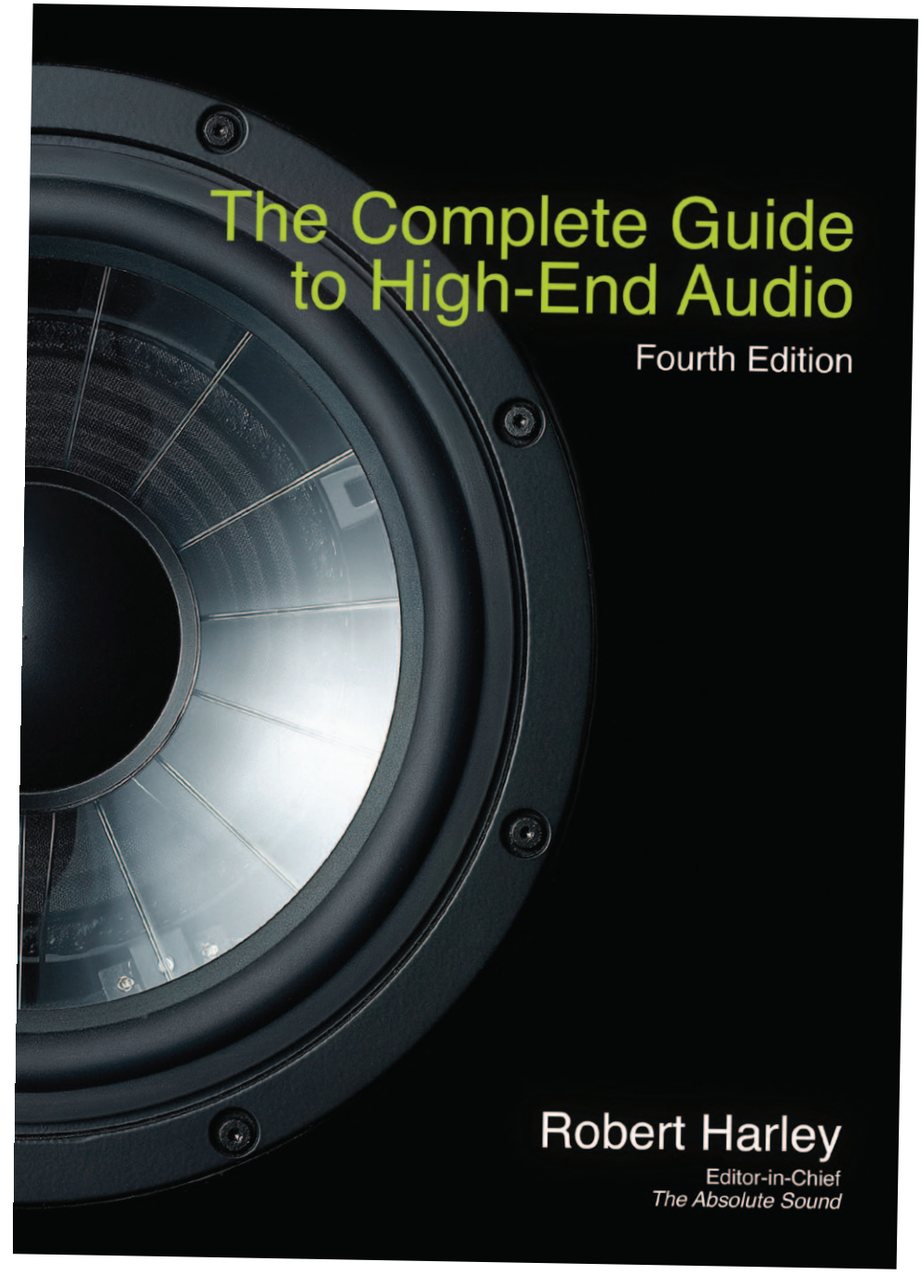
How much power you need is the first question to answer when shopping for a power amplifier or integrated amplifier. Power output, measured in watts into a specified loudspeaker impedance, varies from about 20Wpc in a very small integrated amplifier to about 1000Wpc in the largest monoblocks. Most high-end power amplifiers put out between 80 and 250Wpc. Choosing a range of amplifier power output that's appropriate for your loudspeakers, listening tastes, room, and budget is essential to getting the best sound for your money. If the amplifier is underpowered for your needs, you'll never hear the system at its full potential. The sound will be constricted and fatiguing, will lack dynamics, and the music will have a sense of strain on climaxes. Conversely, if you spend too much of your budget on a bigger amplifier than you need, you may be shortchanging other components. Choosing just the right amplifier power is of paramount importance.

The amount of power needed varies greatly according to loudspeaker sensitivity, loudspeaker impedance, room size, room acoustics, and how loudly you like to play music. Loudspeaker sensitivity specifies how high a sound-pressure level (SPL) the loudspeaker will produce when driven by a certain power input, and is, by far, the biggest determining factor in choosing an appropriate power output. A typical sensitivity specification will read "88dB SPL, 1W/1m" (often shortened to "88dB/W/m"). This means that the loudspeaker will produce an SPL of 88 decibels (dB) with one watt of input power when measured at a distance of one meter. (The decibel is explained in detail in Appendix A, "Sound and Hearing.") Although 88dB is a moderate listening volume, a closer look at how power relates to listening level reveals that we need much more than 1W for music playback.

Each 3dB increase in sound-pressure level requires a doubling of amplifier output power. Thus, a loudspeaker with a sensitivity of 88dB at 1W would produce 91dB with 2W, 94dB with 4W, 97dB with 8W, and so on. For this loudspeaker to produce musical peaks of 109dB, we would need an amplifier with 128W of output power.

Now, say we had a loudspeaker rated at 91dB at 1W/1m—only 3dB more sensitive than the first loudspeaker. We can quickly see that we would need only half the amplifier power (64W) to produce the same volume of 109dB SPL. A loudspeaker with a sensitivity of 94dB would need just 32W to produce the same volume. A speaker with higher sensitivity can simply convert more of the amplifier's power into sound.

This relationship between amplifier power output and loudspeaker sensitivity was inadvertently illustrated in an unusual demonstration more than 65 years ago. In 1948, loudspeaker pioneer Paul Klipsch conducted a demonstration of live vs. reproduced sound with a symphony orchestra and his Klipschorn loudspeakers. His



Book Excerpt: How Much Amplifier Power Do You Need?

amplifier power: 5W to 30W (accounts differ). The Klipschorns are so sensitive (an astounding 104dB/W/m) that they will produce very high volumes with very little amplifier power. Klipsch was attempting to show that his loudspeakers could closely mimic the tonal quality and loudness of a full symphony orchestra.

The other end of the speaker-sensitivity spectrum was illustrated by a demonstration I attended of an exotic new loudspeaker. During the demo, the music was so quiet that I could barely hear it. I looked at the power amplifiers—300Wpc monsters with large power meters—and was astonished to see that the power meters were nearly constantly pegged at full power. This unusual speaker converted only a minuscule amount of the amplifier's output power into sound.

The importance of loudspeaker sensitivity is also demonstrated by today's 3Wpc single-ended-triode amplifiers, which can produce moderately loud listening levels through high-sensitivity speakers. These examples of huge variations in sound-pressure level and amplifier power illustrate how loudspeaker sensitivity greatly affects how big an amplifier you need. Even a small difference in loudspeaker sensitivity—2dB, say—changes your amplifier power requirements.

What to Look For when Comparing Power Ratings

When comparing amplifier power ratings, make sure the specified power is continuous or RMS rather than peak. Some manufacturers will claim a power output of 200W, for example, but not specify whether that power output is available only during transient musical events such as drum beats, or if the amplifier can deliver that power continuously into a given load. RMS stands for "root mean square," a mathematical calculation expressing the effective, or average, power output. These days, however, very few amplifiers are specified by peak power.

Another way manufacturers exaggerate power ratings is by not specifying the power bandwidth. This term describes the frequency range over which a power amplifier can deliver the power output specified. A power amplifier delivering 200W only at 1kHz is far less powerful than one that can deliver 200W over the full audio bandwidth of 20Hz–20kHz, the general range of human hearing. You'll often see mass-market audio/video receivers with power-output ratings specified only at 1kHz, or from 50Hz to 20kHz. Further, stereo power amplifiers can deliver more power when only one channel is driven—look for the words "both channels driven." The maximum power output should also be specified at a certain maximum level of distortion.

You can see the potential for misleading claims of power-amplifier output. At one time, the abuses were so bad that the Federal Trade Commission (FTC) stepped in to regulate power claims—the only example of an audio specification being regulated by a governmental body. The FTC mandate for power ratings requires that the power rated be continuous (not peak), that the load impedance and bandwidth be specified, and that the total harmonic distortion (THD) be given at full power and measured over the audioband. You may see a power specification that reads "50Wpc continuous (or RMS) power into 8 ohms, both channels driven, 20Hz–20kHz, with less than 0.1% THD." A power specification including all these conditions is called an "FTC power rating." Some manufacturers no longer adhere to the FTC-mandated power ratings, figuring that the issue has blown over and is no longer enforced. You see fudged power ratings for mass-market A/V receivers that must now power five or seven loudspeakers rather than two, and in single-ended-triode amplifiers that can't meet the FTC's stringent requirements for power-output specifications.

If you're amplifier-shopping for low-impedance loudspeakers, look at the power-output specifications into 4 ohms. Make sure you see the words or in the power rating, and that the bandwidth and distortion are specified. These figures don't tell us what we need to know about the amplifier's musical qualities, but they at least indicate good technical performance.

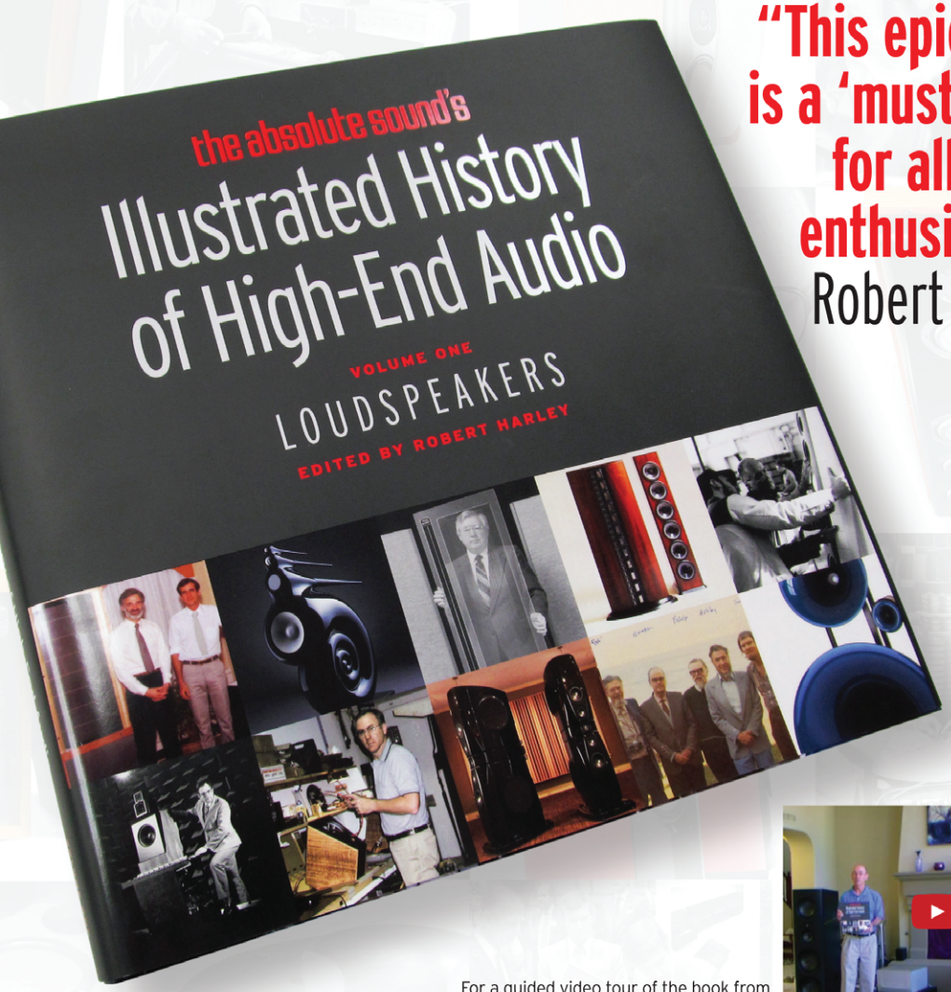
Why Amplifier Power Isn't Everything

We've seen how loudspeaker sensitivity greatly affects how much amplifier power you need, and how power amplifiers with the same power rating into 8 ohms can differ radically in their abilities to drive loudspeakers. Now let's look at some other factors influencing how much amplifier power you need.

The first is room size. The bigger the room, the more amplifier power you'll need. A rough guide suggests that quadrupling the room volume requires a doubling of amplifier power to achieve the same sound-pressure level. How acoustically absorptive or reflective your listening room is will also affect the best size of amplifier for your system. If we put the same-sensitivity loudspeakers in two rooms of the same size, one room acoustically dead (absorptive) and the other acoustically live (reflective), we would need roughly double the amplifier power to achieve the same sound-pressure level in the dead room as in the live room.

Finally, how loudly you listen to music greatly affects how much amplifier power you need. Chamber music played softly requires much less amplifier power than rock or orchestral music played loudly.

We can see that a low-sensitivity loudspeaker, driven by orchestral music in the large, acoustically dead room of someone who likes high playback levels, may require many times the amplifier power needed by someone listening to chamber music at moderate listening levels through high-sensitivity loudspeakers in a small, live room. A 20Wpc amplifier may satisfy the second listener; the first listener may need 750Wpc.



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EQUIPMENT REVIEWS

Integrated Amps

Primare I32

Scandinavian for "Sock It to Me"

Neil Gader

I'll bet we all remember what our parents asked us before we went out to play on a Saturday afternoon. The fateful question was, "Did you finish your homework?" How this question applies to the digital wing of the high-end is just as fateful. As competitive and fast-moving as this segment is, pity the product that is brought out to play without having done its homework. After spending a lengthy period road-testing the new Primare I32 integrated amplifier, I can say without reservation that beyond its power, looks, and user flexibility, the Primare has done its homework and may even deserve some extra credit.

For those less familiar with this Scandinavian firm, Primare's lineage can be traced to the stunning 900 Series and 200 Series products of Danish industrial designer Bo Christensen from the 1980s. More recently Primare has teamed with Xena Audio of Sweden—known for its Copeland and QLN brands—to bring together the talents of Primare's Bent Nielsen and Xena's Lars Pedersen. The final piece of the puzzle was filled in the late 1990s with the addition of brilliant engineer Bjorn Holmqvist.

Still, it's been something of an on again/off again love story between the U.S. and Primare. Gaining a secure foothold in the American market can be a tortuous road for even the canniest foreign electronics manufacturer. Economic variables, marketing savvy, timing, or just dumb luck can make or break a company's fortunes on this side of the pond. However, with the leadership of a new and highly experienced distributor in Kevin Wolff of Vana Ltd., my instinct tells me that Primare is here to stay on this go-round.

The I32 is a 120Wpc integrated amplifier, a rating that nearly doubles into 4 ohms with 230Wpc. Output power is achieved via twin proprietary Ultra Fast Power Device (UFPD) power modules, a Class D technology which has a consistent 26dB feedback-loop gain across the entire audio range and is stable way beyond the audio band like traditional linear, non-switching amps. In Primare's words, "The UFPD amplifier actively adapts the loop gain to keep the total loop stable during start-up, clipping, and current limiting. It senses the changes to the filter output and applies the correct amount of feedback to compensate. [It] allows for several more dBs of constant loop gain across the audio band." The claimed result is lower noise, lower output impedance, and lower harmonic distortion. Because it's load independent it's able to accurately drive even difficult speakers. The thermal efficiency of these designs is well documented, but many users will be pleased by their eco-friendly standby mode of just 0.2 W.

The I32 revisits the low-profile, small-footprint form-factor of earlier Primare models. It exudes quality and craftsmanship. It's elegant to the touch—control buttons and aluminum knobs for volume and input selection have a nicely weighted feel. The OLED screen is very sharp (Apple-Retina-display-like in clarity). The smart screen illuminates brightly when an operation is selected and then dims to a softer light. A numerical value for the current volume setting is always visible but increases in size and brightness when volume is changed. Operationally it's a dream, and menu navigation, the hobgoblin of complex "hub-style" integrated amplifiers, is comprehensive and intuitive. All inputs can be renamed and enabled/disabled and their outputs optimized.

EQUIPMENT REVIEW - Primare I32

MMGood

Speaking of inputs, the I32 is available in two versions—the traditional integrated amp with analog inputs or with the MM30 multimedia-upgrade-module that transforms the I32 into a digital media central. With its 24-bit/192kHz DAC board it offers network streaming via Ethernet or wireless, plus Internet radio and gapless audio playback. The more common digital inputs haven't been put out to pasture either; they include SPDIF, TosLink, plus USB-A and -B inputs (asynchronous for low jitter). Since the MM30 is compatible with UPnP controls like PlugPlayer or Asset UPnP, integrating the panoply of UPnP devices from PC/Mac/NAS to various iDevices or USB thumb drives is (with some patience) a relatively simple procedure. Consistent with Primare's design philosophy, the digital and analog signal paths within the Primare have their own dedicated ground planes—a design feature that preserves the purity of analog signals. Similarly the electronics package in the front-panel display is electrically isolated from the chassis, and there's extensive use of ribbon connectors and surface-mount circuitry for low noise.

The Primare tablet app (a free iTunes download) is graphically solid and is a good organizer of imported album metadata. But it could be easier to navigate. I'd like to see a more sensitive volume indicator, and ideally a way to input network settings from the app rather than entering alphanumeric characters via the front panel. As this review was going to press I was informed by the distributor that a newer, more refined app is in the works that should address these issues including source-selection, volume, and renaming functions. Lastly, this new application will also notify the owner of future software updates.

I had to go a long way back to recall the first Primare integrated I reviewed. It was the $1250, 70Wpc I20 in Issue 143. It was a very good amp for the time, but time marches on. The I32 is an entirely different animal sonically. Where the I20 seemed to place a lid over the treble, darkening the sonic landscape and tamping down harmonic detail, the I32 is vastly more open and expressive. Tonally it's superbly balanced across the audio spectrum. Images are allowed to spread as effortlessly as their timbral character allows. While there is still a hint of residual dryness on top, any impression of constriction, of harmonic and ambient compression, is largely absent.

This is not an amp that merely scratches the surface of musical reproduction. Even in some of the most popular of pop releases, there are levels of texture and dimension that only need a good amp like the I32 to be heard. Just listen to "Going Home," the first track from Leonard Cohen's latest album Old Ideas, if you want to hear what I'm describing. Musical transients are snapped off smartly with the clean report of a starter's pistol. And more generally, the bright, crisp edges that are heard from small percussion instruments like a tambourine, an orchestral triangle, or a set of bar chimes are resolved as purely as by any amp I've heard at or near this range. As I listened to versions of the Eagles second album Desperado (an original British Asylum LP and the terrific HDtracks 24-bit/192kHz download) I was hearing a wonderfully articulate musical conversation taking place between the banjo, Dobro, and bass guitar during "Twenty-One." Cymbal crashes seemed lifted into the soundspace on a cushion and then decayed naturally, as opposed to sounding thickened and abruptly clipped off. The band's trademark harmonies still remain admirable, but it's the reproduction of the superb balance of voices that producer Glyn Johns attained during "Saturday Night" that makes using the I32 so rewarding. Its "insider" resolution is so good that harmonies can be followed as a single collective voice or as a chorus of discrete voices brimming with unique inflections and character.

I customarily associate the retrieval of these low-level harmonies with classic Class AB designs, not Class D—a result that further supports my belief that, next to cone-driver box-loudspeaker technology, the components that have made the greatest leaps in sound quality are Class D amps. As many recall, the early returns for switching technology were lackluster. Although they featured exceptionally well-defined bass, many designs were highly load-dependent—harmonic distortion might increase and select frequencies and dynamics could be constricted depending on the load. Recent designs, like MBL's LASA technology found in its Corona amplifier, have largely solved these issues. And now I would count Primare among the success stories as well. The shaded top end and the glaze that often smeared transparency were not part of the I32 personality. What I did hear in spades were pristinely clean backgrounds and an atmosphere devoid of any suggestion of electronic hash or grain. For example, during the lightest pianissimos from a solo piano, individual notes can sometimes sound as if they are being projected with a vestigial veil of sonic texture that lightly smudges the transient and clings to the note like a spider web. The I32 was simply spotless in this regard—not a hint of noise affecting Laurel Masse's a cappella vocals on Feather & Bone [Premonition] in the vast acoustic of the Troy Savings Bank Music Hall. As if emerging from the blackness of space, there was simply her articulation of a note and the long, unbroken, reverberant decay of that note saturating the venue.

The I32 resolves mid-to-upper bass pitches very well. The signatures of orchestral instruments like doublebass and bassoon, and percussion instruments such as bass drums and tympani, are unmistakably lifelike from opening transient to the outpouring of reverberant bloom. They fill every acoustic corner of a space rather than sounding overly tightened and harmonically strangled. Ultimately the I32 can't fully grapple with music's deepest timbres and

SPECS & PRICING

Power output: 120Wpc (230Wpc into 4 ohms)
Inputs: three RCA, two XLR; MM30 inputs
Dimensions: 16.9" x 16.5" x 4.2"
Weight: 22 lbs.
Control: 12V trigger, RS232
Price: $4499 with MM30 installed; $2999 in black or titanium; MM30 (as upgrade), $1999

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most sledgehammer dynamics. A true avalanche of low-frequency percussion and dynamics will reveal the differences between the I32 and a clean-up hitter like the mbl Corona C21 stereo amp (Issue 228). Take for example Copland's Fanfare For The Common Man [Reference]. The I32 can't quite match the big MBL's weightiness and dynamic energy. Its grip loosens slightly trying to reproduce the full duration of the note's resonance. Like a hammer striking a nail, the I32 won't drive that nail as deeply as the Corona does, so some parts of the floor-rumbling reverberations are slightly subdued.

Turning to the Hatfields and McCoys of digital media—Ethernet vs. USB—I concluded that they performed in a near dead heat. Which is to say both are very, very strong, especially whenever I turned to high-resolution material. Every time I felt myself wavering, leaning to one camp or the other, I'd have another listen and find myself leaning in the other direction. Worth mentioning was that over Ethernet there was a very short lag when changing song selections on the fly. Then again I was informed by others very knowledgeable in this field that there are many potential logjams in the world of networking that can't be directly ascribed to the Primare—even the choice of routers could be a culprit. (In the interests of full disclosure, I used a Netgear GS605.) To my mind USB remains the most straightforward configuration, but I can appreciate the allure of the networked system for multiple users. So for me the jury is still out. But for the digitally progressive, future-proofing your investment with the MM30 is a no-brainer decision. That's how I'd take delivery of an I32 without question.

At this point I'm not even going to try to restrain my enthusiasm for the Primare I32 integrated amp. It's one of the most successful implementations of Class D I've yet heard and it's a strikingly good deal. All the more so when fully equipped with the MM30 media module. I've tested a lot of integrated amps in this segment and on balance you'll have to go a long way to match the I32. Primare's done its homework and the I32 is ready to come out and play. tas

PREVIOUS PAGE NEXT PAGE

NAD D 3020

Reinventing a Classic

Neil Gader

In NAD lore, "3020" are hallowed numerals. The long-ago integrated amplifier that bore that designation might have been a barebones affair, but it marked a departure from the budget norm when it first debuted in 1980. Built solidly, without extraneous signal-robbing bells and whistles, the 3020 offered musical truth in its tonal balance, lack of coloration, and dynamism in spite of its conservative 20Wpc specification. Music lovers responded en masse; more than one million 3020s have been sold—an astounding number for a high-end product.

Now, the 3020 is back with a "D" prefix for clarification. A capital "D." As compared with the all-analog original, the new D 3020 is a digital animal designed primarily for computer/USB sources. Power output is a solid 30Wpc thanks to NAD's ultra-compact Class D topology. True to NAD tradition the amp's power rating is deceptive in that it can output bursts up to 100W (into 4 ohms) during dynamic peaks. In digital connectivity, it offers aptX Bluetooth music streaming—an efficient alternative to Wi-Fi—plus a USB input that plays back computer-based music in up to 24-bit/96kHz resolution, and operates in asynchronous mode to ensure low jitter.

Nothing can prepare you for just how compact the D 3020 is when you first encounter it up close and personal. Truly a design for our times, it's improbably small and portable with a vertical form factor that lends it the visual profile of a network router. And I hasten to add, portable enough to be drafted into service as a headphone amp. Note that where space requires, it can also be positioned horizontally.

A top-panel touch control powers the D 3020 on, and the vertical front panel of inputs and volume indicators blinks to life for a few seconds. The gradations of the large volume control are indicated in 20dB numerical steps, the display fading or intensifying as the user makes changes. The look is nifty but I didn't get much of a sense of precision as I navigated up and down—only a rough idea of where the volume was actually set.

The back panel hosts a trio of digital inputs which includes USB, SPDIF, and TosLink plus a subwoofer output and a single, lonely analog input. Additionally there's a bass-equalization toggle and a multi-purpose auxiliary input that can be used either as a headphone jack from a MacBook Pro or, with the supplied TosLink mini-adapter, as an extra optical input. In a nod toward energy efficiency, when the amp doesn't sense a signal for about fifteen minutes it reverts back to a 0.5W standby mode.

Operationally I've only got a couple of nitpicks. The lack of a mute button seems a weird oversight. Also the iPod-style IR remote is all flat-black, including the navigation buttons. The only way to see what you're doing is to angle the remote so that it catches a glint of light to illuminate the markers. Most of us will memorize the six key buttons (on/off, volume +/-, and source select arrows), but really!

Sourcing my hard-drive-based music collection via USB was a snap; however, I was more impressed by how easy it was to get Bluetooth (BT) up and running—an area where I've occasionally run into snags in the past. Here, I simply selected Bluetooth from my Mac's System Preferences and made certain BT sharing was selected

EQUIPMENT REVIEW - NAD D 3020

within the Sharing submenu. This made the D 3020 discoverable as a device. A simple click to connect and, after opening iTunes, I was instantly listening to one of my own "stations" on iTunes Radio. While the sonics of Bluetooth are more geared to convenience than to our inner audio connoisseur, I'd be lying if I didn't admit that it sounded darn good—not as open and dynamically sophisticated as the high-res USB connection but far better than I remembered from previous BT experiences.

Speaking of sonic performance, the D 3020 for all its humble appearance is pure NAD. It's firmly midrange-centered in its balance and never over-reaches in the sense of growing shrill on top or tubby on the bottom. Yes, it's lighter in overall sound due to some bottom-octave attenuation, but the D3020 retains an essential presence, a midrange integrity, that sculpts the body of a performance and makes it live in the listening space. It also maintains a solid grip in the midbass, resolving Lee Sklar's mellow bass lines with good pace and precision during James Taylor's "Fire and Rain" [Warner]. Its response softens and loses definition only slightly when confronted with hard-charging electric bass pulses or the double-kick-drum rhythm figures flying off the feet of Metallica's Lars Ulrich.

Vocals tended to sound a bit dry at times, an issue that affected female singers a little more than male ones. But multiple vocal images were generally very good. For example, during Jackson Browne's "Colors of the Sun" [Asylum] the D 3020 reproduced a significant amount of the detail and interplay between the vocals of Browne and Don Henley.

While the specs and form factor of the D3020 suggest that it is ideally suited for desktop duty, I wanted to throw a wrench in the gears by giving the NAD a real shake-down with a highly esteemed compact loudspeaker, the Franco Serblin Accordo, a two-way compact of impeccable craftsmanship and provenance, and one of the last speakers authored by Serblin, who passed on in 2013. At 87dB the Accordo's a medium-sensitivity loudspeaker with midrange and top-end response that are truly world-class. The D3020 never hiccupped at the challenge.

One of the liveliest recordings I have is the electrifying Jacques Loussier Trio playing The Best of Play Bach—a smile-inducing collection of jazz/classical bon-bons. The D 3020 handled the dynamics and harmonic and ambient density of this recording quite faithfully. There was some dynamic constriction and low-frequency pitch instability at moments, but overall performance from a sub-$1k 30Wpc amp has rarely been more impressive. And I admired the grip of this amp once again when confronted with the midbass tom-toms during Blood, Sweat & Tears' "More and More" [Columbia]. Though piano timbre during "Sometimes in Winter" was a little cool, there was still a suggestion of the felt on the hammers damping the strings.

Perhaps the biggest surprise I encountered during my listening sessions was the quality and smoothness of the amp's top end. This was a region where the Accordo tweeter would easily expose deficiencies, but the D 3020 met the challenge. As I listened to pianist Janne Mertanen play the Chopin Nocturnes [Alba], transient speed and harmonic openness were truly enthralling. Although there was a little bit of a ceiling over the performance—at least compared with pricier, wider-band amps that operate with more dynamic headroom—the D 3020 had little else to apologize for.

Although I'm an infrequent headphone user, whenever I don my AKG K501 cans (still terrific after all these years) I am always impressed by the gorgeous midrange tonality and intimacy these 120-ohm 'phones produce. As a headphone amp, the D 3020 does its job noiselessly and is musically satisfying. The tonal characteristics that make it so appealing with conventional loudspeakers translate fully to the more intimate world of earspeakers. Frankly I haven't ever appreciated headphone listening as much I did during the time I spent with the D 3020.

If computer audio is your primary source for music, and Blue Tooth capability is a must, then the D 3020 makes a compelling argument. The other argument is, hello, its price tag of $499, making it by most standards a small miracle of packaging and portability, and with few exceptions a delight to use and listen to. Too small for you? NAD has you covered with a bigger cousin in the new D 7050—a streaming integrated with more power, advanced topologies, plus AirPlay wireless at $999. For many, however, the D 3020 will be just what the digital doctor ordered. Faithful to the original 3020 but totally dialed in to our times. tas

SPECS & PRICING

Power output: 30Wpc into 8 ohms
Inputs: Three digital (USB, SPDIF, TosLink); one analog
Dimensions: 2.3" x 7.5" x 8.7"
Weight: 4.6 lbs.
Price: $499

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633 Granite Court
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Audio Research Corporation VSi60

Outstanding Transparency

Wayne Garcia

Longtime readers of these pages will recall my enthusiasm for the integrated amplifier. Although most integrateds do not reach the sonic heights of the finest separate components, I still love them for their space-saving chassis, uncomplicated hook-ups, and what is generally their very good value (surely Buddhism must have a word for such virtues).

At $5000 Audio Research's VSi60 more than nicely fulfills this basic checklist. At 50Wpc it may not be the most powerful of competitors, but 50 watts strike me as a somewhat conservative rating of this unit's output power, and, in any case, as with any amp/speaker combo, a wisely considered pairing should avoid any mismatch (more on this to follow).

Oh, did I mention that the VSi60 is a tube-driven unit? Well, it is. But as those familiar with contemporary ARC gear already know, there is no added vacuum-tube fat or golden glow in these designs. Part of this is simply because the traditional sonic differences once found between solid-state (cool, dark) and tubes (warm, rich) have been diminishing; in part because Audio Research has a long history of making unusually neutral devices. The Vi60 is also a hybrid model, sporting a passive, microprocessor-controlled linestage, a JFET input (for low noise) coupled with a pair of 6H30 driver tubes. As with other ARC designs, KT120 output tubes are employed, in this case, two per channel.

At a mere 14" x 8" x 16" and 35 pounds, the Vi60 also presents no serious domestic challenges. It's handsome in a simple, utilitarian way (an optional tube cage is available for those with small kids or pets), comes with either a black or silver faceplate, and—like the SP17 preamp—sports a row of pushbuttons across the bottom right of its front panel, mirrored by a string of green LEDs to indicate volume level and input-selection. 'Round back are separate connectors for 4- and 8-ohm speakers, and a quintet of line-level inputs. Save for the remote control, that's it when it comes to I/Os and controls.

All that's left to describe is the sound, which is pretty damn wonderful.

During my day job as a wine merchant I often draw analogies between fine wines and high-end audio components. Beyond delivering pleasures both sensory and intellectual, both of these

pursuits, at their finest, should be transparent. Wine, of course, should channel the place that it came from—that often misunderstood word terroir—while our audio systems should bring us as close as possible to the recorded event.

This is a great strength of the Vi60. Over the course of the months in which I've enjoyed the review sample, I never felt as if the Vi60 were imposing its own voice on the music; rather it was always in service to it. Now, this doesn't mean that the Vi60 doesn't have its own sonic signature—in a nutshell, pristine, grain-free, open, detailed, dynamically nimble—but this integrated's overall qualities convey a very close link to each recording's provenance.

Without actually having been present at the sessions we still sense the acoustic signature of, say, Columbia's famed 30th St. studio (aka "The Church") where, among a string of other famous recordings, Miles Davis and company laid down Kind of Blue, or London's Kingsway Hall, where so many great classical recordings were made, or, closer to home in my case, Davies Hall, where I've actually attended some concerts and Tilson Thomas and the SF Orchestra recorded their fine Mahler cycle.

In each case, the Vi60 effortlessly rendered the feeling, the ambience, of each venue, hence acting as something of the proverbial time machine in which we the listeners feel as if we've been transported to the musical event.

Another thing that will strike you about the Vi60—and which I believe contributes mightily to this sense of transparency—is the silence from which the music emerges (this is another hallmark of today's best gear). And here the lowest-level details, say the subtlest fingerwork heard in Chris Thile's brilliant mandolin renderings of Bach's Sonatas and Partitas, Vol. I, flicker through due to the design's lack of electronic hash or grain.

Balanced is another word I would use to describe the Vi60. Across the band this is a very coherent unit, lighter than it is heavy or dark, with no evident tonal peaks or valleys. Like autumn sunlight in a forest, there's something especially illuminating about the way this design let's us "peer" into a recording. This, again, contributes to that time-machine feeling. But what I'm aiming to describe is something slightly more complex than that—the way, for instance, in which Sinatra integrates with the orchestra in MoFi's superb recording Only The Lonely, or Wilco layers electronic noise and synths with their instruments in A Ghost is Born [Nonesuch], or Thelonious Monk and his septet seem so very there in Analogue Productions' knockout 45rpm release of Monk's Music. Yes, it's a tonal thing, but it's also dynamic balance and coherence and a uniform sense of "rightness" that make the Vi60 sing so beautifully.

Although the Vi60 is a hybrid, and veers toward a lighter presentation, it does bring with it that sense of "bloom" that tube lovers adore. So when Coltrane blasts into his tenor solo on "Well, You Needn't," or Sinatra mimics a train whistle in "Blues in The Night," or the San Francisco brass and wind players break into a waltz in their Mahler cycle, the air in our rooms expands and contracts, breathes, as does the music itself. This is, again, a part of the whole that makes the Vi60 so musically satisfying.

The only issue I would take with ARC's own description of the Vi60 is its claim that the amp has the "ability to drive power-hungry, low-impedance loudspeakers." Granted, my current reference is the Magnepan 1.7, one of the most notoriously demanding of all speakers. Still, my room is small, and though I rarely listen at, uh, what might be deemed excessive levels (not really the Maggie's forte anyway), here is the one area in which the Vi60 managed not to fully satisfy.

This was this case with obvious tracks, such as "Babe I'm Gonna Leave You" from Classic Records' reissue of Led Zeppelin. Now, mind you, the many virtues of this design were also on display. The lush overtones of Jimmy Page's plucked jumbo acoustic guitar, Robert Plant's more subdued vocals (yes, he has such moments), the immensely reverberant studio space. But when the song soars into hard blues/rock mode, the Vi60 could take it to 8 or 9, but that last bit of oomph was more than the amp was capable of. It's not a matter of harsh clipping, because, of course, the Maggies have their own limitations, but rather more like a locomotive whose fuel source has run low limiting top speed—here limiting the impact of Bonham's drumming, Plant's vocal wailing, and Page's stinging licks. The Vi60 simply cannot manage the final push to free-flowing, glorious rock excess.

Before dismissing this observation as that of a prolonged adolescent, classical music lovers should note that larger works with demanding dynamic extremes—Stravinsky ballet scores, the above mentioned Mahler symphonies, Wagner operas (whose histrionics make Robert Plant look like a toddler)—may result in a similar desire for just a wee bit more juice.

This is not a fault of the Vi60, but like I said at the outset, a matter of proper amp/speaker matching. There are plenty of transducers out there, such as Esoteric's superb MG-10, that I imagine would be a match made in heaven with this amp. The Maggie 1.7, not so much.

Otherwise, what can I say that I haven't already? Although for most of us $5000 remains a fair chunk of change, when you add up the Vi60's list of outstanding qualities I would say this is one of the high end's strongest values. tas

SPECS & PRICING

Power output: 50Wpc
Tube complement: Two matched KT120 pairs, two 6H30s
Inputs: CD, Tuner, Video, SE1, and SE2
Output taps: 8 ohms and 4 ohms
Dimensions: 14" x 8" x 16"
Weight: 34.8 lbs.
Price: $5000

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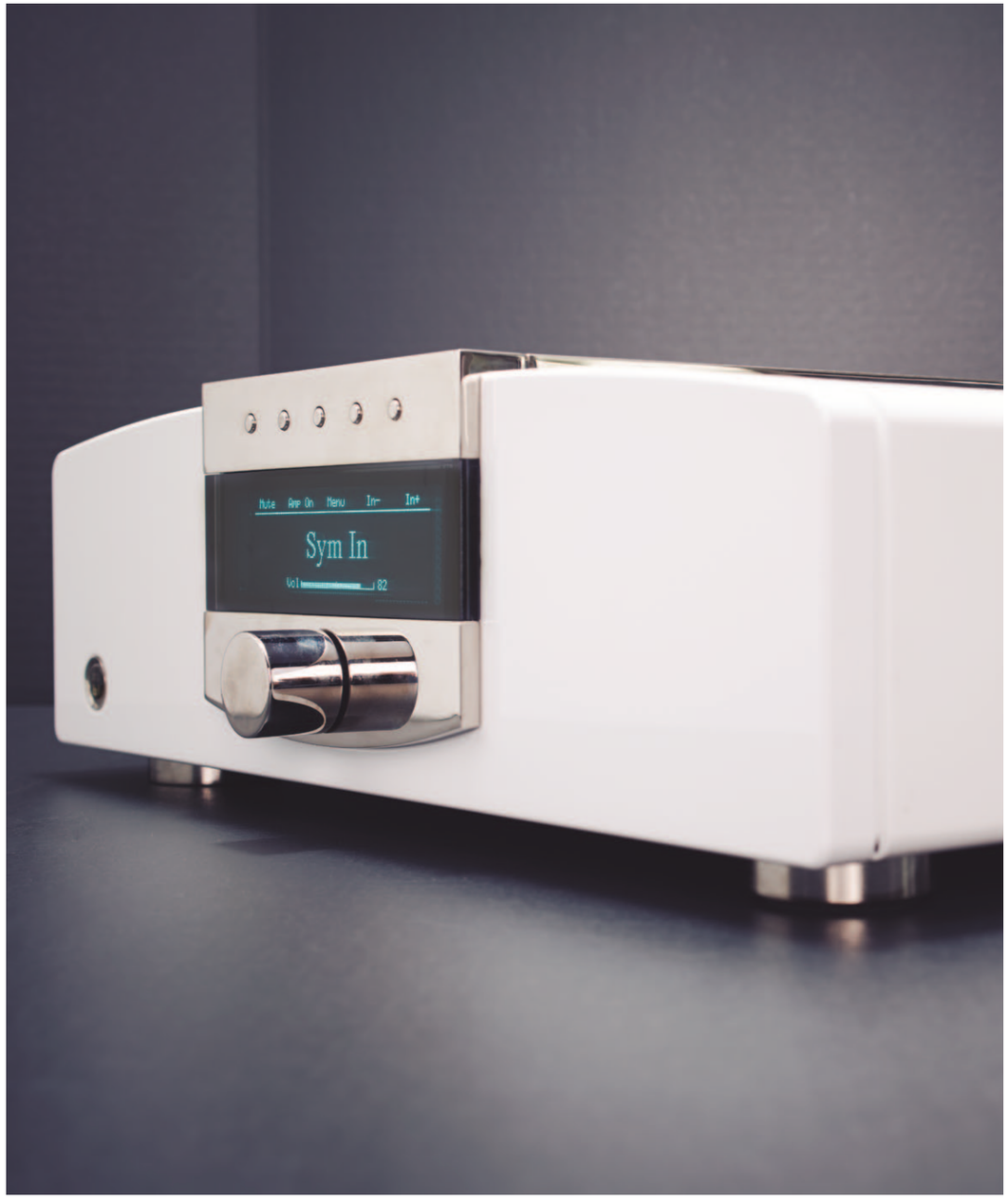

MBL Corona C51

Power and Grace

Neil Gader

MBL's Corona Series electronics made a cameo appearance in my review in Issue 228 of the MBL 120 Radialstrahler, the breathtaking three-way compact. Regretfully, because I was running short on space, I could only touch on the general strengths of the C11 preamp, C21 stereo amplifier, and C31 CD player (The CD31 was a 2013 Golden Ear recipient, Issue 235). Nonetheless I was mightily impressed with how well Corona performed under the ultra-high-resolution scrutiny of the Radialstrahler—a speaker that doesn't suffer fools lightly and has been known to unceremoniously show the door to any component it finds lacking. (And sadly I have to report my health insurance doesn't cover the withdrawal symptoms I've endured since the MBL 120s departed.) Long story short, when I was offered a second opportunity with a Corona amp—in this instance the newly released C51 integrated—I grabbed it.

A quick refresher: Corona is, technically speaking, MBL's entry-level series. "Entry level" is an expression I use guardedly since every product by this Berlin-based firm is built to a level that most components only aspire to in their electronic dreams. Corona was also much more than a replacement for the aging Classic line (circa 2006). MBL began with a clean sheet of paper in visual design, software implementation, and technical innovation. With the release of the $11,100 C51, Corona is now a complete six-component range that also includes the C31 CD transport/DAC, C61 tuner, C11 preamp, C21 stereo amplifier, and C15 monoblock (500W into 4 ohms).

EQUIPMENT REVIEW - MBL Corona C51

To my eye, Corona screams elegance—almost Japanese in its graceful, uncluttered simplicity. The top-panel roofline inclines slightly toward its center, merging in a heavy plated panel that waterfalls into the C15's polished front-panel display, which is lit in a brilliant fluorescent blue. On top, the MBL's crest nests in a soft "corona" of light that doubles as a top-mounted dimmer for the front-panel display. There are no saw-tooth heatsinks, protrusions, or hard edges to mar the flowing, symmetrical lines of its chassis. So singular is the Corona profile that my own friends, comfortable in the presence of fancy electronics, would invariably cast their approving eyes on the Corona gear and ask, "Wow, what is that?" And tactilely the C51 immerses you in the experience of owning a fine audio instrument. It may not matter to everyone how a knob turns or a button releases, or how deep the luster of a chrome accent appears, but it does to me. The C51 may not be ultra-expensive, but it makes you feel rich with every look and touch.

Corona amplifiers, like the C51, are solid-state, and designed around LASA technology (for Linear Analog Switching Amplifier), an advanced implementation of switch-mode Class D topology and the brainchild of chief designer Jürgen Reis (see Sidebar). The C51 outputs a healthy 180Wpc into 8 ohms and 300Wpc into 4 ohms—specs that are identical to those of the C21 stereo amplifier I'd encountered previously. The C51's preamp stage uses a sophisticated analog volume control operable via a motorized potentiometer. Front-panel functions are reserved for small soft-touch buttons; the only resident knob is the volume control. All other functions are shuttled off to the remote control. Connectivity is excellent. The back panel is roomy and well laid out; its RCA and XLR jacks are widely spaced. An optional phonostage is available at extra cost ($1710). Firmware updating is accessible via a standard SD slot on the back panel.

In my first go-round with the C11 preamp, I complained that the front-panel volume indicator was too small, virtually useless for fine volume adjustments from any real distance. I'd like to think that MBL took to heart my earlier criticism because that issue has been solved on the C51. Now when a volume change is requested, the software boldly increases the size of the numerical display for a few seconds. MBL, my eyeballs thank you.

Over the years I've heard all the elitist pro and con arguments about the integrated amplifier. That they are ho-hum, one-chassis compromises, with average parts-quality and puffed-up power specs, while separates, on the other hand, are technological showcases and super-sexy. Or, that integrated amps should be considered only in the interests of saving space and saving money—a recipe for sissies, not real audiophiles—while only dedicated separates take you down the true path to sonic nirvana. Fiddlesticks. Modern integrated amps are models of the efficient use of space. Plus, by combining preamp and amp sections, an entire bank of circuitry is eliminated along with the need for a pair of interconnects and the sonic influence that brings to bear. While it's true that the tighter packaging can lead to thermal issues and EMI/RFI concerns, cutting-edge designs like the C51 have answered these Old School reservations.

MBL's Reis is a die-hard analog guy (and an all-around nice guy, at that), but he's never ducked a challenge. His stated goal for Corona was for it to match the qualities of the fine, traditional linear amplifiers MBL has been producing for years. In sonics, you can throw away every concern you might have harbored about Class D. Most particularly, the C51 takes the frequency extremes and makes them its playground.

From the start, it's remarkably quiet, with a deep velvet-black background, ideal for musical images to spring from (a quality that is unmistakably MBL). Its midrange is rich in color and texture, with vocals especially seeming to carry a few extra ounces of weight and air. It has some vestigial, almost brooding warmth and bloom in the bottom octaves, reminiscent of MBL's Reference line amps, though the C51 in

SPECS & PRICING

Power: 180Wpc into 8 ohms (300Wpc into 4 ohms)
Inputs: Five RCA, one XLR
Outputs: Two RCA
Dimensions: 17.7" x 5.7" x 17.5"
Weight: 50.7 lbs.
Price: $11,100 in standard finishes; palinux or gold, $1500; side panels in piano finish, $942; center section in piano finish $285; phono module, $1710; balanced input, $610

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comparison has a slightly lighter character. Though still armed with deep dynamic reserves and powerful bass slam, it's more cruiserweight than heavyweight. Bass response is classic "define and control." The C51 articulates with ease the cascade of tympani across the back of the stage during Copland's Fanfare for the Common Man [Reference Recordings]. It may not be as resonantly expansive in the bottom octave as, for example, the Vitus Audio RI-100, but it is still extremely satisfying in its vise-like grip on the funamentals of string bass, tympani, and organ. It is also instructive to note that in the many months I've had the C51 on hand it never gave me the feeling that it was squelching dynamics, or otherwise close to reaching the limits of its power output, regardless of the speaker system it was driving.

Its top end is top-notch—airily extended with none of early Class D's constriction and cloaking of the treble. Reis' version is open, airy, and sweet where appropriate, and highly charged and aggressive when called upon. And frankly it has to be; Radialstrahler tweeters are cruelly revealing of mediocre electronics. When I played Arturo Delmoni's Solo Violin Works [JMR Records], the C51 sang with an open, unconstricted voice. It captured the speed, sweetness, and even, at times, sinewy aggression of an instrument famous for filling the world's largest halls, unamplified.

A brief bias alert: My gauge for treble resolution and freedom from distortion is piano. It's a sound I understand well. I play the instrument a bit and refer to it constantly. When I play I'm reminded of the complexity of color and texture that one can hear with every strike of the hammers—a sound interwoven of wood, felt, and steel from the softest pianissimos to the grandest fortissimos. When I put on my reviewer's hat, some of my favorite recorded passages are Evgeny Kissin's reading of Glinka's The Lark [RCA], and for something completely different, the piano solo during jazz songstress' Holly Cole's rendition of "I Can See Clearly" [Alert]. I've played these tracks countless times, and they never fail to elicit differences from every component. Consider the passage in The Lark where a series of high-pitched trills is struck so firmly and rapidly that the overlapping harmonics create a bell-like ringing effect—at least, they do ideally. With uncanny agility, the C51 reproduces the individual notes of this cue without any smearing, even as the entire sequence becomes enveloped in a mist of ringing harmonics. Similarly, the transient bursts of aggressive bowing and resultant treble harmonics from Anne-Sophie Mutter's violin during Tchaikovsky's Violin Concerto [DG] revealed a top end that was not only smooth, extended, and grain-free, but dancing with a level of transient life that tickled the senses.

Although the C51 will happily oblige, reality in audio reproduction is not about being driven back in a listening chair by the report of a bass drum or achieving Black Sabbath levels in a den. My listening bias veers consistently in the direction of lower-level

MBL's Unique Twist on the Switching Amplifier: LASA

Flexibility figures big in the Corona family of components. All are equipped with the MBL Smart Link protocol to centralize various functions. When co-joined via Ethernet cabling (owner-supplied), Smart Link enables simultaneous display dimming for all linked components plus control of inputs. For example, the input buttons on the remote control could simultaneously change inputs on the C51 as well as select inputs for CD/SPDIF/Optical/USB aboard the C31 CD transport/DAC. Additionally, menu-driven front-panel controls allow personalization of input names according to user preference, and unused inputs can be deactivated. A single push of a button will also sequentially power on or off the Corona family—when powering down, the display playfully wishes the user "good-bye," even though I kind of hoped for an "*auf Wiedersehen*." **Standby power consumption is in the environmentally friendly range below 1VA.**

Corona represents MBL's and Jürgen Reis' reinvention of the Class D or switching output stage. Anchored by a robust linear (non-switch-mode) power supply, a toroidal transformer features electrostatic shielding to prevent stray coupling to the ground potential of the circuit. It virtually eliminates stray currents between Corona Line devices providing a quiet environment for the use of unbalanced RCA wiring. The transformer also features a magnetic mu-metal outer shell to protect the circuit from magnetic interference.

The secret sauce, however, is the LASA technology. According to Reis, LASA technology overcomes a series of key hurdles that impede typical switching amps. He points out that **traditional Class D tends to be load-dependant, so that it will literally sound different depending upon the impedance shifts it encounters with a specific loudspeaker. (All loudspeakers have impedance variations with frequency, some dramatic.)**

The LASA switching technology mimics the low output impedance of a linear output stage, with the same high damping factor (low output resistance) at high frequencies that typical Class D designs normally only enjoy at low ones, plus the same low harmonic distortion values across the entire frequency bandwidth. To paraphrase, "The result is that frequency response will not change with load and THD will not vary with frequency." The takeaway is that the "speaker load will not affect the LASA amp and the LASA amp won't attenuate the loudspeaker's frequency response." In fact, Reis points out that the only similarity MBL claims with contemporary Class D is low heat radiation.

And Reis continues to explore the boundaries of LASA technology. At this year's CES, MBL introduced the rejiggered Noble Line, which uses an even more advanced LASA 2.0 technology. In my CES report in Issue 242 I wrote that according to Reis, LASA 2.0 is now capable of driving complex impedances and phase-angle swings, and delivering more current than ever before. And power output is up, as well. This represents a stunning shift away from traditional Class AB designs and underscores MBL's increasing confidence and commitment to its unique LASA/Class D topology.

PREVIOUS PAGE NEXT PAGE

EQUIPMENT REVIEW - MBL Corona C51

transparency, resolving power, and soundstage replication. And this is where the C51 proves its mettle. It has the touch of the classicist in the import it places on the finest inner details. An example is pianist Valentina Lisitsa performing a selection of Beethoven, Schumann, and Liszt [Naxos]. There's a passage where Ms. Lisitsa plays a repetitive, upper-octave melodic line that has always had a brief indiscernible artifact hanging over a note that just precedes a pause. It is an anomaly that, had the recording been on a vinyl LP, would have sounded like mistracking. In any event, I'd end up cocking my head to one side in frustration and asking myself, "What is that?" The C51 had the answer—Ms. Lisitsa was taking a breath on the beat—a quick inhalation, probably unconscious, that alighted on that one note. Revelations like this occurred consistently throughout my listening sessions with all sorts of familiar material. Even bad edits in the recording studio revealed themselves more prominently.

When a company produces what is arguably the premiere omnidirectional loudspeaker in the world, as MBL does with its Radialstrahler range, it doesn't take a big leap to assume it knows a little something about measuring acoustic space. I think the main issue that listening to the C51 provoked in me was the way it integrated individual criteria—frequency, imaging, dynamics, transients—weaving them together into a seamless tapestry of reproduced sound. Every image found a home within the full context of the recording. At a concert, we experience this context first, the entirety of the performance with our eyes as well as our ears. But back at home we tend to focus on the more granular. We begin breaking down the recording into component pieces. Some of this is provoked by the recording process itself, but another part of it goes to an amp's resolution and transparency—its retrieval power, if you will.

The C51 has the ability to take all the carved up segments from a recording and reattach them in a way that makes the result indistinguishable from the original. Many times I've listened to the intro to Audra McDonald's "Lay Down Your Head" [Nonesuch] for the delicate opening harp figure and the chamber group that joins in shortly thereafter, but only a handful of amps, including the C51, allow me to hear the entirety of the immersive space and image relationships that this recording offers. Even on a typical pop recording like Leonard Cohen's "Going Home" [Sony Music], I could hear the angelic backing chorus as it wafted through the black acoustic space beside Cohen's dark baritone and mingled with a calliope-like whistle, a vamping piano pad, and a tick of percussive accent in a way that shamed the multitrack artifice of many of today's other recording studios.

At the end of the day, it really doesn't matter what kind of prism you use to judge the C51. It has more power reserves than the majority of audiophiles will ever need. It's impeccably proportioned and lavishly appointed. Its musicality, needless to say, is first-rate. Separates may continue to hold sway at the more esoteric levels of the high end, but I'd gladly put the mbl C51 head-to-head with any of them. And let's see who owes whom an apology. Corona may be entry-level for MBL, but it's one world-class, sexy beast in my book. tas

Rogers High Fidelity EHF-200 Mk2

A Class A Integrated With Power

Spencer Holbert

Remember *Home Improvement*, that 90s TV show with Tim Allen? Every time Tim Taylor—the tool-obsessed family man that Allen played—got a new tool or did something right, he would make guttural, "manly" grunting noises of approval. I'm not sure how to spell those noises, but any quick YouTube search will bring up an episode, and you can hear them for yourself. Another of his favorite catchphrases was "more power!" I bring this up because I'm much the same way when it comes to hi-fi gear: Put me in a room with some great-sounding equipment, and you'll likely hear low-octave grunts of approval.

When I first heard Rogers High Fidelity's (not to be confused with the British loudspeaker manufacturer Rogers) EHF-200 Mk2 integrated tube amp at CES 2014, I was spellbound—I knew I just had to hear more of it—and when a review sample arrived at my house, it was like Christmas. I hooked everything up, flipped the power switch, and watched the beautiful tubes come to life—and yes, grunted with such force that my significant other thought I'd gone crazy.

Roger Gibboni, the founder and leading force behind Rogers High Fidelity, has built a magnificent integrated amp, and given the better than 20 years he spent designing for NASA and the Department of Defense, he has unique insight into what it takes to build ultra-precise electronics.

More Power!

The EHF-200 Mk2 ships standard with KT150 tubes (which do not have issues with microphonics), and outputs a staggering 112W in ultralinear and 80W in triode mode. Both modes run in Class A, and the integrated is a dual-mono design. I'm pretty sure this makes the EHF-200 Mk2 one of the most powerful Class A integrated tube amps on the market. There are other integrateds that scrape the 100W marker, but they use eight KT120s, whereas the EHF-200 Mk2 uses only four KT150s to achieve its massive 112W rating.

With all that power, the EHF-200 Mk2 has enough juice to drive even those low-sensitivity planar-magnetic speakers everyone loves. And while it's perfectly capable of handling speakers with impedances of 2–32 ohms (please e-mail me if you have a 32-ohm speaker!), the EHF-200 Mk2 is designed specifically for 4-ohm loads that take advantage of the amp's optimized damping factor.

I tested the integrated with the new $6k Endeavor E3s (review forthcoming), which are 4-ohm, 88dB, three-way floorstanders from California, kicking things off with a 24-bit/96kHz version of Leonard Bernstein conducting *Le sacre du printemps* with the New York Philharmonic—and whoa! The fourth movement, "Spring Rounds," is always my favorite, because that's when the orchestra really gets going: Gigantic drum thwacks shudder the walls, and the hi-fi system is really put to the test. This is also the point at which Parisian music lovers began to riot at the ballet's 1913 premiere. I didn't riot in my listening room, but the dynamics were simply incredible, and all the while the meter on the front of the EHF-200 Mk2 barely budged. So I did what Tim Taylor would do—I gave it more power!

The second time around, the meter stayed in the 20–40W range, and this is where the integrated really shined. Those earth-shattering drum thwacks stayed taut, punching me in the chest with lifelike force; the sudden punctuation of French horns almost made me jump out of my seat, while the dissonant strings kept me riveted. (Though I gave it even more power on the third listen—and here the drums started to lose their tautness—this produced levels far louder than anyone would ever want to listen at.) To put this plainly, the EHF-200 Mk2 dispelled the old notion that tube amps are lacking in the bass department; this is a tube integrated that has no problem hanging with the solid-state boys in the bottom octaves.

I wanted to push the bass even further with *ISAM*, an experimental ambient album from Brazilian musician Amon Tobin. On the opening track, "Journeyman," the bass ripped from deep in the soundstage, hovered in mid air, and retreated left and right, all the while staying

EQUIPMENT REVIEW - Rogers High Fidelity EHF-200 Mk2

tight and crisp without regressing into a blob of annoying boominess. This is the kind of tautness and drive for which large solid-state amps are lauded, and yet the EHF-200 Mk2 handled this intense music with grace. The bass once again stayed well controlled until the volume was pushed to a level too loud for comfort.

On a Higher Note

Tight bass and lots of power are pointless if an amp doesn't sound good throughout the entire audio spectrum. To demonstrate the sweet highs and breathtaking mids of this integrated, I put on a recording of alt-classical composer and pianist Ludovico Einaudi, whose latest *In a Time Lapse* could very well change your musical life. Recorded in a remote monastery near Verona, Italy, this haunting introspective can send goosebumps down your arms. It can also do wonders for your spirit. Play the third track "Life" on a decent system, and you'll feel the weight of the world lift from your shoulders; play it through the EHF-200 Mk2, and be prepared to transcend the physical constraints of your listening room—the soundscape is no longer something you listen to, but rather something that washes over you and envelopes your entire being. It was impossible for me to stay in reviewer mode as the increasingly ethereal strings and light taps of the xylophone joined the piano. However, it's the track "Experience" that shows how well this integrated resolves a complex soundstage of separately positioned violins, cello, harpsichord, and distant snare drum alongside Einaudi's piano. Listen to the far off reverberation of the brushes on the snare, the light plucks of the harp behind the piano, the pathos of the violins (played separately and in unison), and you'll find these disparate instruments within the monastery form a sonic landscape of considerable emotional power.

As for resolution, listen to "Imidiwan Ma Tenam," an amazing fusion of Blues and North African Tuareg music from independence-fighters-turned-musicians Tinariwen, and on most systems you will hear a "noise" that sounds like there might be something wrong with your speakers. With the EHF-200 Mk2, that sound morphs from a strange rattle into the sound of a calabash—a gourd instrument with a net of beads that is similar to the shekere or metal cabasa. This is where I took advantage of the integrated's convenient triode/ultralinear switch, which allows on-the-fly comparison between the two modes. In ultralinear, the soundstage is more forward, more in your lap and more encompassing, while in triode mode the soundstage pulls back to a deeper, silkier presentation. Triode mode really shines—unsurprisingly—on solo vocal and solo instrumental, taking my breath on Philip Glass' *Solo Piano*. The EHF-200 Mk2 conveyed the haunting sonority of "Metamorphosis One-Five" with such alacrity, such involvement, that I was whisked away down a stream of sonic bliss and forgot entirely that I was reviewing a piece of stereo gear.

The Last Integrated You Will Ever Own?

It's difficult to find fault with such an amazing piece of audio equipment—and for me the EHF-200 Mk2's "faults" are more like the "situational preferences" of some individuals; nevertheless the should be noted. At almost 12" tall, the EHF-200 Mk2 won't fit in many racks, because you'd need at least another two inches of clearance to allow for proper ventilation. Remember, this is a full Class A integrated, and it runs very, very hot. Even if you have a rack that can accommodate its tall output transformer and power supplies, the immense amount of heat will render the shelf above unusable—unless you want to fry an egg on it. Best to use an amp stand and leave this baby out in the open.

Like most equipment, the EHF-200 Mk2 likes to be nice and hot before it performs its best. No need to leave it on all day, but there is an appreciable improvement in sound quality after an hour of warm-up versus the one-minute recommendation of the manufacturer. Compound this warm-up time with the "always-on" nature of Class-A design, and the typical listener will need to replace the KT150s every couple years. (Current prices for four matched tubes is roughly $400.) Luckily, everything is auto-biased, so installing new tubes is a breeze, and if you prefer KT120s the integrated outputs the same power (despite the higher plate dissipation of the KT150s).

Fans of balanced inputs are out of luck here: The EHF-200 Mk2 employs four unbalanced inputs, three on the rear panel and one on the front. It comes with a beautiful, heavy-duty remote, but the remote only controls volume—that's it. This wasn't an issue for me because I listen to one source at a time, but for those who like to switch sources or mute via a remote, such severely limited controls might be annoying. However, you're in luck if that's a deal breaker: This integrated features preamp input if you want to use it as an amp only (and with all that power, it easily fills this role), and also has a preamp output if you'd like to add a powered subwoofer.

But here's something that may counterbalance any of these "drawbacks": Rogers High Fidelity provides a lifetime warranty on all of its products. It's even transferrable if the sale to a third party is conducted through one of Rogers' authorized dealers, meaning the value of this integrated will stay high if for some crazy reason you ever wish to part with it. Such a warranty says a lot about the quality of this 100% hand-made, American-built integrated from Warwick, New York. If you ever have the chance to meet Roger, you'll immediately know that this lifetime warranty isn't just a marketing ploy, but rather the result of his incredible attention to detail and passion to build the absolute best audio gear possible. He's one of the most affable people I've met, and this

SPECS & PRICING

Tube complement: Two EF86; two 12AX7; four KT150
Power output: 112Wpc RMS ultralinear; 80Wpc triode
Frequency response: 20Hz–20kHz with less than 0.1% THD
Gain: 40dB
Input: Four unbalanced; one preamp input
Output: One 4-ohm subwoofer out
Power cable: Rogers Quiet Cable included
Dimensions: 17" x 11.5" x 14"
Weight: 60 lbs.
Price: $15,000

ROGERS HIGH FIDELITY
52 Kain Road
Warwick, NY 10990
(845) 987-7744
rogershighfidelity.com

EQUIPMENT REVIEW - Rogers High Fidelity EHF-200 Mk2

is something that you want when purchasing a piece of audio equipment at this level. Not only does he have a graduate degree in electrical engineering, he also has one in business, so you'll get no run-around from him, only the very best customer service.

Final Thoughts

I'm sure I will hear from readers about the merits of various other integrateds, but the EHF-200 Mk2 is certainly one of the best and most powerful integrated tube amps on the market. Sure, there are integrateds that perform better in one aspect or the other (boutique SET amps come to mind), but as a consumer I want to be able to drive any speaker out there with the best possible sound, not just a limited few. I want an integrated with the power to rock out, the finesse to reproduce Philip Glass or Yo-Yo Ma, the oomph and control to handle demanding ambient electronic, the resolve to recreate the New York Philharmonic as clearly as possible, and the subtlety to turn a rattle into a calabash. The EHF-200 Mk2 does all of these things, and will do it for the rest of your listening life.

Until another integrated comes along that can do all of these things while staying musically true, the Rogers High Fidelity EHF-200 Mk2 will remain the integrated amp to which I compare all others—it is a standard-setting achievement. tas

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 integrateds 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% 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 integrateds, low-end handling was equal to or slightly better, so no worries here.

I don't want you to give you the wrong 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

EQUIPMENT REVIEW - Arcam FMJ A19 and airDAC

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, 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

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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Hegel H80

High Performance, Reasonable Price

Kirk Midtskog

Hegel Music Systems has been on a roll. Since my review of the H100 integrated amplifier in September 2010, the Norwegian company has released three DACs, a preamp, a headphone amp/DAC, a power amp, and two integrateds, as well as updating a power amp already in the line. Hegel strikes me as a company driven by original engineering aimed at offering 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." Elsewhere in TAS, Associate Editor Neil Gader 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 hew toward understated cosmetics, as if to say, "We let the music do the talking." The 75Wpc, solid-state H80 integrated amplifier with onboard 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 small supplied 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 and only 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—input and volume. In a departure from other Hegel integrateds, 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 integrateds—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 power rating. While I realize that an amp's nominal output figure doesn't necessary tell the whole story when it comes to its ability to drive real-world speakers, I really wasn't quite prepared for the sense of power the H80 can deliver—even while driving the 85dB-sensitivity, 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" [Elecktra] 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 own system: H100, H200, H300 integrateds, and 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 realize 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 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 it were a bit hampered in rhythmic timing. 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 any associated leanness or "presence region" emphasis, which wear 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 but 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 hi-hat to ride cymbal at about the 3:24 mark. The clangy sheen of Novak's ride cymbal came through but did not become strident. Essentially, what you forgo by opting for the H80 over a H200, H300, or one of Hegel's pre/power combos amounts to some omissions of overall resolution, power reserves, and rendering of depth rather than intruding 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 per se. 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 just as much has 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 resolution 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, and, apparently, also greatly reduces crossover 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 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 (and Holter's straightforward 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

Power output: 75Wpc
Inputs: Analog, two RCA, one XLR; digital, two SPDIF, two optical (both types 24/192), and one USB (24/96)
Outputs: One of the RCA inputs configurable as HT by-pass (power amp in), speaker terminals
Dimensions: 16.93" x 3.94" x 13.80"
Weight: 26.4 lbs.
Price: $2000 (RC8 remote control upgrade, $180)

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EQUIPMENT REVIEWS

Power Amps

Rogue Audio Hydra

Class D with a Difference

Garrett Hongo

When TAS editor Robert Harley proposed I review the new $2995 Rogue Hydra, a hybrid stereo amp with Class D output stage and tube input, I must admit, being mainly a tube amp guy, I felt a twinge of trepidation. Some six years ago I auditioned a pair of highly vaunted Class D monoblocks at the urging of a dealer friend who himself owned them. The sound I got on my favorite music—a lot of Renaissance choral, opera, and classical orchestral—was like a hard rain of microscopic nails. The amps went back within a couple of days. Then, a few years later, I house-sat a friend's place in SoCal. He had an audio system with a tube preamp and a different, newer pair of Class D monos, also vaunted, but that system also felt edgy on my music. I resorted to playing mostly smooth jazz and soft rock the week or so I was at his place.

But Class D has since come a long way. That this particular Class D amp was designed by Mark O'Brien of Rogue Audio also certainly grabbed my attention. O'Brien is an engineer with great ears and a lot of experience manufacturing very fine tube gear at reasonable prices. "If he's doing it...," I thought, and accepted the assignment with what's fair to say was a "cautious optimism."

The Hydra is a "completely different kind of Class D amp," in the words of O'Brien, who's studied Class D topologies and come up with a circuit unlike anything previously used in consumer stereo (see sidebar interview). It's not simply a tube circuit placed in front of a Class D output section, but an integration of a double-triode ECC82 (12AU7) tube section into the amplifier that, he says, combines the best of both solid-state and tube technologies and results in a smooth and natural sound that normally only tubes can provide. In his circuit, which he calls "tubeD," O'Brien claims there is none of the dreaded edginess, grain, or etched sound of Class D amplification in the past. And I gotta say that, much to my delight, I pretty much agree with him. No, the Hydra doesn't sound like a classic tube amp or even like modern ones made by the likes of Audio Research or VAC, but it also isn't a creature that spits and hisses and bites your ears like those first Class D amps I heard back when. Fast, powerful, and resolving, the Hydra reproduces instrumental tones and timbres with accuracy and texture, has good spectral balance, and gave me lots of real and revelatory listening pleasure. It doesn't get hot, it never faltered or caused any problems during the review period, and it was easy to use. Besides all that, it's energy efficient and relatively "green" in terms of power consumption.

Setup and Operation

The Hydra is rated at 100Wpc at 8 ohms and 200Wpc at 4 ohms. My review unit came in black (silver is also available) and was a snap to set up. The casework is powder-coated steel with rounded edges. I'd say the overall look is utilitarian with a touch of class. The Hydra came fully tested, burned in, and auditioned with a three-year limited warranty (6 months on tubes). The seven-page owner's manual explained all operations clearly and succinctly.

The layout at the back has a power switch, an EIC power inlet, knurled gold-plated-brass binding posts (solid and easy to use), and both balanced and single-ended (RCA) inputs. I used only the RCAs. On the front, the Hydra has a faceplate of machined aluminum and a brushed aluminum Standby/Power-On button that's recessed into a small circular area with a trio of LED lights around it that indicate Standby (left), On (top), and Error (right). The Error LED comes on if the outputs are shorted or there is an over-current situation such as a faulty crossover in the speakers. (That never happened during the review period.) Once the amp is powered on, indicated by a backlit blue LED, it soft-starts the tube circuit and sends current to the power supplies. It's fully operational in seconds. Little or no warm-up is required.

With the Hydra sitting on a stand in front of my main audio rack rather than on its bottom shelf, I needed interconnects a little longer than my reference 1m Siltech 330i ICs in order to make the distance to the preamp easily. I swapped in a 1.5m pair of Cardas Clear ICs at first, going from preamp to amp, keeping all my other Siltech ICs in, plus one pair of Shunyata Python ICs in the DAC-to-preamp run. That sound turned out to be a bit harsh—tipped up and

edgy, sibilant on female vocals, chesty on some males. So I switched to a new pair of Audience Au24SE ICs. Immediately, there were big gains in naturalness and ease. The new Audience cables sounded so good, in fact, I ended up going all Audience Au24SE in the system. The result was a wonderfully pleasing sound, speedy but somehow relaxed with a touch of warmth. I think the new ultra-low-mass, high-purity, cryo-treated tellurium-copper headshells on the Au24SEs are a serious upgrade over the older "e" style connectors, increasing speed and resolution to a startling degree. These new cables were a perfect complement to the Rogue Hydra amp. For speaker wires, I stuck with my reference Siltech 330L cables and jumpers. For a power cord, I used a Siltech Ruby Hill II rather than the stock cord.

I also experimented with a couple of different linestages, searching for a good complement to the Hydra. With my reference deHavilland Mercury 3, itself a tubed unit that works perfectly with my tube monoblocks, I thought the system sounded thin and wiry. I quickly switched to the Lamm LL2.1, another tubed linestage, which, with its inherently more full-bodied sound, was a perfect match with the Hydra.

O'Brien mentioned rolling a different pair of ECC82 (12AU7) into the amp's input section. Stock are Tungsram shortplates or JJ longplates (mine came with Tungsram) and though I've lots of 12AU7s around, including Mullard longplates, which are the current darlings, I thought the amp sounded very good stock. In the end, however, I did roll in a pair of new issue Shuguang Psvane 12AU7-Ts, just for giggles.

For most of the review period, I used Von Schweikert VR-44 Aktive speakers (90dB/8ohm), my new reference. But these speakers have powered woofers, with a 300W plate amp in each woofer cabinet that takes the audio signal from the system amplifier and boosts it. So, to test the Hydra's bass and slam, I also used my previous reference, a pair of Von Schweikert VR-5 HSE passive speakers (93dB/6-ohm).

Listening with Powered Speakers

I played mostly digital music while I had the Hydra in my system—CDs, rips, and downloads. I let it run in for about 100 hours before I took any notes, but, to tell the truth, I didn't hear much change in sound (once I switched over to the Audience ICs). It also seemed to accomplish its basic sound on first powering on—no warm up! On rock, jazz, and world music, the Hydra's sound was immediate and lively. It did pretty well (with some caveats) on orchestral, choral, and even operatic music too. And, besides its transient speed and dynamic power, I'd say its main characteristics are a pure and satisfying midrange, a fine tonal saturation on piano and woodwinds, and great slam and sparkle on electric blues and rock.

The Hydra excelled at the presentation of the female voice. Renée Fleming's "Quando me'n vo" from her eponymous Decca CD had a shimmering, liquid quality to her high notes and the inner tone of her chest voice was rich and full of body. "Under the Boardwalk" by Ricky Lee Jones from *Girl at her Volcano* (iTunes LossLess) demonstrated a rich complexity of rhythmic ensemble work—marimbas, vibraphones, congas, and percussion—but it was Jones's sinuous, wailing voice that took over the tune, harmonizing in duet with a soul tenor's in the choruses, bouncy and full of sass and musical personality in the verses. I also liked how the amp was able to render Chrissy Hynde's chameleon-like transformations in her vocal—going from a dry, husky chest-voice into nasal, then wiry, finally to strident wails on "Chill Factor" and "Back on the Chain Gang" from the Pretenders live *The Isle of View* CD [Warner Brothers]. But, for my money, most impressive was the rich, dark, sinuous-as-a-violin vocal of Sarah Vaughan on "In a Sentimental Mood" from her *Duke Ellington Songbook, Vol. I* [Pablo]. There was a superb integration of her vocal with the tapestry of the band (mostly veterans from Count Basie), and I felt chills on the refrain as she slid into melismas during her incomparable jazz roulades. And her ornaments—a hesitation staccato of phrasing, her swooping flats, and skittering accelerandos—oh my! The Hydra tracked her every filigree.

The Hydra performed equally well on male vocals and rhythmically complex music like that on "Saludo Compay" from Eliades Ochoa y El Quarteto Patria's *Sublime Illusion* (iTunes LossLess). The track features a slinky guitar intro with a brass chorus backing it. There are multiple percussion instruments including a shaker, cowbell, and congas. And underneath them all is a bass quatro that's percussively plucked. The Hydra rendered all these as well as Ochoa's soaring vaquero vocals with ease and perfect timing, distinguishing each instrument's natural timbre from the rest, giving air and space to the choral voices in call and response with Ochoa's gritty lead. My strongest impression, though, had to do with the amp's ability to render a lifelike presence to the music and maintain control over all its elements. This Cuban music had verve and drive, and the system's bass and timing were awfully tight. Yet, I knew that the VR-44 Aktive speakers could have had a lot to do with that

By far the most difficult music for the Hydra to render well was orchestral, particularly the sound of violins or "massed strings" as they are called in audio. I eschew solid-state amps and preamps for the most part (aside from the exceptional Herron Audio M1 monos), because, even if they don't turn violins glassy or edgy, these devices tend to obscure vibrato and other performance details having to do with the micro-dynamics of phrasing. They also lose the main reasons we crave violin sound—for their sweet highs, their bountiful harmonics. In this, the Hydra was not completely exempt. I can't say the sound was bad, per se, just not glorious—a bit pedestrian. On *Vivaldi: Eleven Concertos* [Sony], performed by the baroque ensemble Tafelmusik, violins were more incisive than sweet on Concerto for Strings in G Minor. And, although there was no glassiness or glare, there was also no richness of harmonics and, to my ears, string sound thereby seemed stripped. I wondered whether Hydra's sound might be improved by swapping out its stock 12AU7 tubes.

Yet, even without changing tubes, the hybrid amp still had its grand moments. For example, in the second movement of Brahms' First Symphony, performed by the Budapest Festival Orchestra conducted by Iván Fischer (iTunes, Apple LossLess), the Hydra produced a string sound that captured the natural and distinct

PREVIOUS PAGE NEXT PAGE

EQUIPMENT REVIEW - Rogue Audio Hydra

timbres of the instruments. Cellos swelled with the violas and doublebasses, creating a marvelous foundation for the violins. From the opening bars of the movement, I heard great air and sweetness to the orchestra as a whole, a brilliant and clearly rendered oboe, and a pleasing lightness to the violins, which never turned glassy. Sure, compared to a Class A tube amp, the Hydra's string sound was a little over-polished and under-detailed—but it was never "electronic." The Rogue amp properly reproduced the warmth of the main theme as it traversed the orchestra and ended up being sweetly sung in the brief solos of the concertmaster's violin.

Listening with Passive Speakers

All of the above was noted with the Hydra and the VR-44 Aktive speakers. What would it be like with a pair of unpowered, passive speakers? To find out, I had to pull the VR-44s out of my system and swap in the older VR-5 HSE speakers.

What did I hear? Well, first, a warmer, perhaps richer, but also a more veiled sound. The VR-5 HSEs aren't the transparency and resolution meisters that the new VR-44s are. But this assisted the Hydra in sounding more bounteous in the mids, less penetrating and less forward (though that forwardness was thrilling). In a way, the Hydra sounded more balanced throughout the frequency range on the VR-5 HSEs. There was less sparkle, less snap, but Benny Goodman's clarinet on "Mean to Me" from *Stealin' Apples* sounded woodier, a touch warmer, and much less piquant (a quality I liked, by the way). Piano notes were less defined and startling in attack and decay, sounding more rounded.

But I changed speakers better to listen for the amp's natural bass, slam, and foundational contributions without the assist of the VR-44s booster amps. And I was not disappointed. My big test for this sort of thing isn't head-banger rock, but Igor Stravinsky's *The Rite of Spring* as performed by the Kirov Orchestra under Valery Gergiev [Philips]. After the Introduction with sweet oboes, mellow bassoons, and airy flute parts, "Dances of the Young Girls" begins as the strings play repeated forte eighth notes with strong irregular accents, and I heard both power and speed in the amp. Then, when the passage culminates in fanfares, a drum roll, and a powerful bass drum strike that slams and then reverberates into a slow decay, I felt the Hydra did quite wonderfully. It rendered each preliminary strike as an individual sonic event, and then delivered the final drum whack with thundering authority. Later in the piece, there are even more thrilling drum strikes in combination with full orchestral crescendos. In these passages, the Hydra gave the brass and horns finely expressive tonal colors, the strings and woodwinds a sweet warmth, with speed of impact and great slam to the drums. The Rogue passed my test with flying colors on bass, current demand, and easeful orchestral scaling.

What about swapping out the stock 12AU7 tubes? Well, just before the end of the review period, I broke down and replaced the stock Tungsram tubes with a pair of Shuguang Psvane 12AU7-T tubes I'd gotten from Grant Fidelity. Though these aren't the NOS tubes preferred by so many, I've come to value them for their availability, reliability, and very good sound. And, at $83/pair for "better" and $99/pair for "best," their prices are relatively reasonable. With the Psvane tubes in, there were obvious and immediate gains in depth, openness, dimensionality, and sweetness. String sound was more real and open, with greater body. But violins, on the same *Vivaldi: Eleven Concertos* CD I'd played before, still lacked a certain tonal richness, the startling bounty of harmonics I am accustomed to hearing with my reference deHavilland tube electronics. On other recordings, particularly small-ensemble acoustic jazz and vocal music, there were noticeable upticks in depth, image definition, and smoothness. On balance, I'd say the Shuguang Psvane tubes are a definite upgrade over the stock tubes, affording the Rogue amp more of a "triode-type" sound overall, giving it more spectral balance through the frequency range and less top-end emphasis.

Yet, I heard no loss of jump factor with the Psvane tubes in. The Hydra absolutely cranked with slam, sparkle, and superb bass definition on electric blues, studio hip-hop, and rock. On "Milkcow's Calf Blues" by Eric Clapton from his *Sessions for Robert J* CD [Reprise], Clapton's electric slide screamed along as the rhythm section locked in to the beat with real weight and momentum. Electric bass can sound one-note on some systems, but the Hydra and VR-5 HSE combo let me hear the taut and articulate travel of Nathan East's precision playing as he laid down the funk. In "Let's Get Retarded," that infamously politically incorrectly entitled track from *elephunk* [A&M] by the Black-Eyed Peas, the bass line was even tauter—so much so, I thought for a moment it was synth bass I was

SPECS & PRICING

Output power: 100Wpc into 8 ohms, 200Wpc into 4 ohms
Input impedance: 200k ohms
Frequency response: 10Hz–20kHz +/-1dB
THD: <0.1% typ., <1.0% at rated power
Input sensitivity: 1.0V RMS
Dimensions: 18" x 5.5" x 15"
Weight: 34 lbs.
Price: $2995

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ASSOCIATED EQUIPMENT
Digital sources: Cary 303/300 CD player, Apple iMac with Hegel HD25 DAC
Preamplifiers: Lamm LL2.1 and deHavilland Mercury 3
Power amplifiers: deHavilland KE50A monoblocks
Speakers: Von Schweikert Audio VR-44 Aktive, Von Schweikert VR-5 HSE
Speaker cables: Siltech 330L, 330L jumpers; Audience Au24e with Au24 jumpers
RCA Interconnects: Audience Au24SE, Siltech 330i, Cardas Clear
USB cable: Wireworld Silver Starlight
Power cords: Siltech Ruby Hill II, Siltech SPX-800, Cardas Golden Reference, Harmonix XDC Studio Master, Silent Source Signature
Power conditioner: Audience aR6-TSS2 with Audience Au24 PowerChord
Accessories: Box Furniture S5S five-shelf rack in sapele, HRS damping plates, edenSound FatBoy dampers

hearing. Listening more carefully, I recognized a familiar Family Stone figure worked into the otherwise stylistically monotonous bump on the bottom. And "Right Down the Line," from Bonnie Raitt's new *Slipstream* CD [Redwing Records], had a tuneful reggae-like bass with a pleasing, chest-thumping impact amidst the sweet snarl of Raitt's bottleneck sliding across the strings of her Stratocaster. It's also worth noting that the Hydra's powers of resolution easily sorted out instrumental lines and produced a consistently wide and deep soundstage with instruments and voices placed vividly within it. The Hydra's soundfield is sturdy and detailed.

At first, I didn't dare play choral voices with the Hydra in the system, but as I grew more and more pleased with its nimbleness and ability to produce fine tonal colors and render the differences in instrumental textures and vocal timbres, I broke down and gave it a go. I played a real "system-crusher" of a piece, Thomas Tallis' *Spem in alium* from the *Utiopia Triumphans* CD [Sony] of the Huelgas Ensemble directed by Paul Van Nevel. Tallis' composition is a forty-part motet but Van Nevel employed forty-three voices—eleven sopranos, six altos, fifteen tenors, and eleven basses. On a system with poor amplification, the voices cave in on themselves in a weltering mosh pit of audio hash without any differentiation among the choral parts. The sound is not only hard and edgy, it's glassy, full of time smear and distortion. But not so with the Rogue Hydra driving the VSA VR-5 HSE speakers. Voices were clear, sections distinct, the polyphonic vocal lines pulsing as called for by Tallis' magnificent music. Though I did hear an occasional touch of hardness here and there, these were rare and minor and the presentation was mainly clean and airy, the full choir sometimes cloudlike amidst a wide soundstage. It was an impressive feat for any amp, let alone one with a Class D output.

Conclusion

Rogue Audio's Mark O'Brien has really got something with his Hydra hybrid tubeD stereo amp. It delivers the sonic goods, is easy to use, and is seemingly bulletproof. Best of all, it produces sound of clarity, strength, and fine resolution in a consistently broad and vivid soundstage. Though I found some flaws in its presentation, mainly in orchestral string sound and limitations in clarity and smoothness to top-end extension, you can still tailor its presentation a bit by rolling input tubes. I think it a very worthy piece of electronics much superior to any Class D amp I've yet heard. In fact, I think it holds its own alongside most any amp at its price point, tube or solid-state. The slight upper-midrange forwardness I heard (with stock tubes) mainly added to its appeal, lending to piano, woodwinds, brass, and vocals a pleasing saturation of tonal colors and a kind of sweet authority I've not found the like of with any other piece of electronics. Add to all this its "green" efficiency and affordable price, and I think it's definitely a product that fills the needs of a lot of audio buyers out there. For anyone looking for a moderately priced, seriously good-sounding stereo amp, the Rogue Hydra could be just the answer. tas

PREVIOUS PAGE NEXT PAGE

AVM SA8

Power, Neutrality, and Poise

Anthony H. Cordesman

When I begin by saying the AVM SA8 stereo amplifier is a difficult product to review, it is not for the usual reasons. The AVM SA8 did not present any performance problems during several weeks of auditions in my reference system or in the systems of several of my friends. It never presented any problems in setup or operation either. Quite the contrary, it was easy to set up, performed flawlessly, and is one of the best-performing amplifiers I've had the privilege of reviewing, which, at $13,880, it damn well should be.

The problem was very different and says more about the limits of reviewing today's cutting-edge amplifiers than it does about the AVM SA8. The SA8 does have sonic character—every product does. But, like some of the best power amplifiers around, that sonic character is very limited. In fact, most of what you hear is the coloration of other components.

I did a lot of listening with this amplifier along with several other top amplifiers, and again and again I found that what initially appeared to be colorations in the amplifier were actually the product of colorations in the listening material, the front end, the speakers, the interconnects, and the speaker cables. In many, if not most systems, the sound character of the AVM SA8 would be overshadowed by this complex mix of colorations in the other components.

And yes, this is definitely a good thing in terms of the AVM SA8's performance. You want as neutral a power amp as you can get. As every experienced audiophile already knows, every component in your system—and here I include a given recording, a given listening room, and the placement of speakers and listening position therein—to some extent acts as a filter and an equalizer. You can't really solve this problem by using the coloration of one component to offset the coloration of another. No matter how well you try to blend components with different sound characters into a system, each different type of coloration comes at a cost. Something—bass, highs, dynamics, low-level detail, and natural musical life—is lost to some degree.

This scarcely is a reason not to seek synergy among your components. Every experienced audiophile knows that simply assembling gear that measures well does not produce the best possible sound. You have to listen, as well. It is also a fact that many audiophiles choose a colored system because they find it musically exciting, soothing, or suited to their taste in music.

At the same time, most audiophiles do want the most neutral and transparent sounding

Inside the SA8

AVM has been designing and manufacturing a wide range of audio products in Germany since 1986. In 2010 the company was bought by Udo Besser (formerly Burmester's general manager and co-owner) who brought to the company plans for modernizing the product range and expanding the markets for AVM's electronics around the world.

AVM products are built entirely in Germany and feature the traditional high level of German design, manufacturing, and workmanship. The SA8 reviewed here is a good example of the company's design approach. The SA8 is equipped with five independent power supplies, one for each channel's driver and one for each channel's output stage, and one to supply the input stage of both channels (the latter is also the standby supply). Unusually, each stage of the amplifier (input, driver, output) is fed from its own transformer. With a single transformer for both channels' input stage and separate left and right driver-stage supplies and output-stage supplies, the SA8's chassis hosts a whopping five toroidal transformers. This input-stage supply is fed from a 15VA transformer and filtered with 8000uF of filter capacitance. Additional capacitors next to the audio circuits bypass the supply. The driver stages for the left and right channels are each fed by their own 30VA toroidal transformers, and each output stage gets its own 1kVA transformer and 200,000uf bank of filter capacitance. Rather then use "soda can" filter capacitors in the output-stage supply, AVM has ganged twenty 10,000uF caps, a technique that its says lowers the supply's output impedance and can reportedly deliver current faster to the output transistors. In addition, each of the FET output transistors' supplies is bypassed with an additional cap right next to the transistor.

The input stage is built around a fast op-amp that has a 2MHz bandwidth. The bipolar driver stage reportedly relies on very little negative feedback. This stage is unusual in that it's built more like a miniature output stage than a traditional driver stage. This driver stage can deliver a whopping 1.5A to the gates of the output transistors over a 1MHz bandwidth. (This is equivalent to 20W driving an 8-ohm loudspeaker.) AVM overbuilt this driver stage to imbue it with the ability to instantly and totally control the output transistors. This is why the driver stages (left and right channels) each have their own power supplies fed from dedicated transformers.

Each output stage is built around 24 FETs, which is a massive number by any standard and which, in conjunction with the hefty power supply, allows the SA8 to double its output power as the impedance is halved (220Wpc into 8 ohms, 440Wpc into 4 ohms). This suggests, and Anthony Cordesman confirms, the SA8 will have no trouble driving even the most challenging loudspeaker load.

Incidentally, if you want more power, the amplifier is available as a twice-the-power monoblock, called the MA8.

Overall the SA8 is an impressive piece of amplifier engineering. I'm surprised that between the hefty construction, German manufacturing, and exquisite metalwork, it is priced so reasonably. **Robert Harley**

components possible. Warm and forgiving components come at a real cost. You give up detail and dynamics, transparency in the soundstage, and much of the life of music. If you reverse the process and choose electronics that emphasize upper-midrange energy and create artificial "detail," or that can't really deliver the lower midrange accurately or deliver deep bass into truly demanding loads, you get more detail at the cost of an emphasis that never occurs in real life: hardness and listening fatigue, and real problems with the timbre of piano, brass, woodwinds, soprano voice, and strings—particularly massed strings.

And, this is precisely why the neutral transparency of the AVM SA8 comes close to delivering the Golden Mean. The SA8 is the product of a German company I had not previously been aware of, but in talking to one of its lead designers it quickly became apparent that AVM is an audiophile firm that focuses on music and not specsmanship. This message comes across quite clearly on its Web site (avm-audio.com), as does AVM's attention to detail. AVM states that "we manufacture all AVM components in our own plant. For the few parts (such as pc-boards, front panels, transformers) that we cannot produce by ourselves we have reliable suppliers nearby, who have been working with us for years."

The SA8 also shows that AVM cares about visual aesthetics, and follows in the best traditions of German design. You get a beautifully styled amplifier in the form-follows-function modern tradition. It has a compact but highly useful front-panel display (which can be turned off by the remote), and an excellent array of rear input and output connections. At the same time, you discover its real "guts" the moment you try to pick it up. The manufacturer specifies that it weighs 42 kilograms or around 93 pounds, but try moving it and I promise it will feel a lot heavier.

What is far more important to you as an audiophile, however, is that the SA8 is one of the few amplifiers that really has the power to drive virtually any speaker load with minimum interaction. Its power is rated with extreme conservatism at 220 watts into 8 ohms, 450 watts into 4 ohms, and 650 watts into 2 ohms. Talking to AVM makes it clear that the SA8 can drive any real-world speaker load, including the nominal 1-ohm loads of the earliest Apogees (although this load might use enough power to trigger your circuit breakers unless you a have a dedicated 35 to 40 ampere line).

It also can deliver an immense amount of current. It is one of the few amps that I've seen that has a 16-ampere power cord, rather than the usual 10 amperes. It can deliver up to 60 volts at the speaker terminals enough amperage to deal with any demanding speaker load I know of, and it has a rated damping factor of over 1000.

If this begins to sound like more of a horsepower race than something of real value to most speaker owners, that simply is not the case. I've found again and again that the real reason for power in both watts and current is that it helps explain why an amp like the SA8 will be minimally affected by your speaker and speaker cable. This amplifier will not react to complex crossovers and impedance shifts. It will never damage your drivers with distortion at peak powers. It will handle virtually any peaks without altering dynamic detail, and it will provide about as tight and well defined a

PREVIOUS PAGE NEXT PAGE

sound out of your woofer as the speaker makes possible.

My listening tests showed that the practical meaning of the design features (see sidebar) is that the SA8 will not create any bass energy or warmth that isn't on the recording. It is not "romantic" as some lower-powered tube amplifiers are, although it does not run out of bass energy as some other more "detailed" amplifiers do. If you use the SA8 to play back a really good recording of electric guitar, truly demanding deep synthesizer bass, a complex symphony with demanding low end like Mahler's Third, or a sonic spectacular like Saint-Saëns' Third Symphony on a really good system with really good speakers, you'll be sold on the merits of control, detail, and truly lifelike dynamics over "romance" and "warmth."

I was just getting used to the new Wilson Alexia as one of my two reference speaker systems when the SA8 came in for review. Unlike my Legacy Aeris, it does not have powered woofers. Like most Wilsons, however, it has an amazing power-handling capability and the ability to resolve detail at high listening levels even with the most complex electronic music, symphonic spectaculars, operas, and rock. The SA8 was about as musically exciting as any amp I've used; its only rivals or superiors cost more than twice as much.

Moreover, after having a friend help me move SA8 around so I could hear it in different systems, I can assure you that it does not provide this power at the expense of low-level musical sound and detail or exhibit any other change in sonic character from the lowest threshold of musical information with the softest passages of voice and chamber music to levels that went well over 107dB. (If you want to go higher, I can assure you there was power to spare when I quit raising the volume control, but you'll have to damage your own ears.)

I also found that when I did try it out with different speakers and systems their owners also commented on the fact they were hearing the known colorations in their front ends, interconnects, speakers, and listening rooms rather than the SA8. They had the same reaction that I did: The music that goes through the SA8 is very easy to listen to, but SA8 itself is hard to hear.

As I've touched upon earlier, this is something every audiophile wants. Some of my friends with tube amplifiers have chosen them for the warmer nuances they provide in their system and several have chosen well, particularly in an era of overbright recordings. But even they agreed that the SA8 was always musical, always had good soundstage depth and width, and did an outstanding job of resolving detail. This is not the kind of amplifier where you have to single out some special feature on some specific recordings. It really does perform exceptionally at every level.

In fact, it did sufficiently well that I had to go out and deliberately try to something to fault. This got me into trying some combination of my various front-end EMM, Pass, and PS Audio electronics, interconnects, speakers, and speaker cables that would reveal a major problem. Even then, my search for flaws was largely a waste of time. Again and again, I was hearing the familiar limits and colorations of the reference components in my system

I was lucky enough to have access to a set of Transparent Audio Reference MM2 tuned to my specific components, and to both the Wilson Alexia loudspeakers and my reference Pass XA160.5 power amps. This tuning really paid off when I used the Pass power amps, but was less apparent with the SA8—again revealing how much the mix of interconnects, speaker cables, and given loads can affect the overall colorations in a system. The same was true of the sets of Kimber and AudioQuest cables I also use to test system interactions. These are all excellent cables, but they also have a familiar sonic character, and I found in case after case that I could hear the rest of the system better than I could the SA8.

So what can I criticize? Well let me turn to personal bias and prejudice. The Pass XA160.5s could not equal the SA8 in sheer power and dynamics—a sacrifice in performance I had heard earlier when I went from the Pass X600s to the XA160s. At the same time, I felt the Pass did a better and slightly more natural job of revealing the finer musical details, in reproducing the lowest level textures of strings and piano, and in capturing the subtler aspects of really good soprano voice recordings.

I also was beginning to review the new Pass Xs300s, and I felt they allowed me to get both the better musical subtleties of the XA160s and the power of the SA8s, although I never really drove either the SA8 or Xs300 power amps to the point where the higher power output of the SA8 might have made a difference. It should also note that the Xs300s are far higher priced.

I hope, however, that the limits to these judgments are clear. As a reviewer, I'm all too sensitive to the fact that letting my taste dominate my comments on the more subtle and complex aspects of sonic nuances does not really serve the reader's interest. I cannot possibly try all the combinations of front ends and cables that affect the sound, much less change my speakers and my listening room. When components get this good, it is far too easy to push the limits of judgments to the point where prejudice and personal taste dominate, rather than make judgments that the audiophile can count on in auditioning the component or is likely to hear when he puts that component in his system.

So, let me finish with the following summary comments, which are pretty close to the point where I began. The AVM SA8 is one of the best and most enjoyable amplifiers I've ever heard, and inspired hour after hour of listening. I had to work really hard to find anything I could even to begin to criticize in its sound. At the close, I was far more aware of my prejudices and the limits of my reference system than the limits of the SA8. This is a truly outstanding product even at a very demanding price. If you are at all into solid-state power amplifiers of any kind the SA8 is truly worth auditioning. Moreover, I really do believe that for most audiophiles, it is so clean and transparent that you will hear far more of the colorations in the rest of your system than you will those of the SA8. tas

SPECS & PRICING

Output power: 220W into 8 Ohms, 440W into 4 ohms
Dimensions: 17.1" x 9.8" x 16.5"
Weight: 92 lbs.
Price: $13,880

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Zesto Audio Bia 120

Bia-utiful!

Paul Seydor

When I first met George Counnas, President of Zesto Audio, the company had only one product, a splendid phonostage called the Andros (Issue 222). At the time, he told me a high-level preamplifier was on the way, but, when asked about a power amplifier, added he had neither interest nor plans for one. But when the Leto linestage turned out to be as splendid as the Andros, I figured it was only a matter of time before an amp came along. Counnas was refreshingly candid about his change of mind: "I needed it to round out the line." For all their pretentions to mixing and matching components, quite a number of audiophiles seem to like their electronics from the same manufacturer, preferably consistent in visual style. So here is the Bia 120 to make the Zesto duo a trio. I'll not indulge any suspense: Counnas is plainly a gifted designer who knows his way around circuits and sonics, and here hits the trifecta with this drop-dead gorgeous sounding amplifier.

Gorgeous looking, too. George's wife Carolyn carries over her signature styling from the Andros and Leto, and the Bia 120 features the same split-level chassis found throughout the line. With a graceful, wavelike pattern set in light silver aluminum bas-relief against black on the base, and the grand-piano-shaped (viewed from the top) upper chassis (housing the large toroidal transformer) with a curved polished-chrome fascia that reflects the softly glowing tubes, the amp makes a stunning impression. An elegant touch of visual rhythm is the repetition of the front-panel wave in the side vents on the upper chassis. As with its siblings, you'll want to keep the Bia 120 out in the open for all to see, which is mandated anyhow by how much heat it generates, which is considerable because it's 60Wpc in a push-pull output stage that completely eschews negative feedback and is operated in pure Class A.

Why Class A in a tube amp, which, after all, is not supposed to exhibit the typical solid-state notch when the signal crosses from positive to negative? "Unlike Class AB, where the A part is small and the B part happens only when the signal 'turns on' the tubes," says Counnas, "in Class A, the current is going through the output tubes and not waiting for the signal, which gives you a more dynamic sound because the tube is constantly charged; it's on all the time." Doesn't this shorten tube life? "Theoretically yes," he answered, "but not by all that much in the Bia because the tubes aren't being run that hard." As for the absence of negative feedback, this is a prejudice from the early years of solid-state, when negative feedback got a bad rap because ridiculously large amounts were applied to transistor amplifiers to achieve distortion figures with four and five zeroes to the right of the decimal point. Trouble was, while this led to impressively low measured figures of steady-state distortion, it didn't necessarily translate into good sound, especially when it was used in substandard circuits to overcome the severe limitations of the transistors themselves. Negative feedback is effective mostly when the basic circuit and parts are already of good or better quality, whereupon judiciously applied in small amounts it can improve performance. By the time Counnas finished designing the Bia's

circuit, he decided, based on measurements and listening evaluations, that he didn't need any. "All it did was reduce dynamic range while adding nothing sonically."

The Bia is a dual-mono design, with auto-bias and a large toroidal transformer. It features fully balanced and single-ended jacks and has heavy-duty binding posts with 4-, 8-, and 16-ohm taps. Owners of original Quads and very early LS3/5as (16 and 15 ohms, respectively) should take note: This is one of the lonely few modern tube amps that will match them optimally. Like all Zesto products, every Bia is broken in 50 hours before being boxed up, and is totally hand-made in the USA.

Counnas' goal was identical to that for his phono and linestages: a component that approached the neutrality of solid-state with the attractive "tonality of tubes." He succeeded spectacularly with the preamps and does so again here, though "approached" is the operative word, about which I'll have more to say anon. Cut from the same sonic cloth as previous Zesto products, the Bia's personality consists in a completely seductive musicality, free from the usual sorts of electronic colorations and artifacts, for a presentation that never, ever sounds electromechanical, instead drawing all attention to the music, which is reproduced in a wholly natural-sounding way. I simply never found myself thinking of reproduction as such or any of the typical audiophile categories—scintillating highs, slamming lows, liquid midrange, yak, yak, yak—rather about the music and music-making. Right now I'm listening to Valentina Lisitsa playing Liszt's *Totentanz* and wallowing in the waves of sheer sonority, the way her generous use of pedal never seems to obscure the lines and textures, the control of the dynamics from delicate whisper to barnstorming roar, and bass that is exceptionally solid, extended, articulate, and powerful, with no need—thank you very much—to append the usual "for a tube amp" qualification. No wonder Counnas, who seems to love Greek names, christened this after Bia, daughter of Zeus and Styx, and the personification of force and raw energy.

Counnas told me that one of his goals was that if critical listeners didn't know what they were listening to, they wouldn't know whether it was solid-state or tubes. There's certainly no hint of anything that some dyed-in-the-wool tube fanciers still don't like about solid-state (even though almost no modern transistor amps suggest any of the nasties of the early ones). At the same time, however, they just might be a little disappointed that the Bia equally betrays so little of old-fashioned tube character either. There is something so completely natural about this reproduction that I really do find myself at a loss for words to evoke it. To be sure, it's tactile, rounded, gloriously dimensional, and "continuous"; there's nothing edgy, sharp, or overly articulate about it; it's not "liquid" as such or excessively smoothed over (though it is extremely smooth); textures sound to me like the textures of real voices and instruments; there is zero impression of grain (I mean no evidence at all); transparency is not a concern; and detail is as detail should be, to be noticed but not zeroed in on. And it's got by far lower perceived distortion than any tube amplifier past or present with which I've got more than casual acquaintance. In fact, the only tube amps in my experience that may trump this one for overall neutrality are McIntosh's MC275, though take that "may" for all its worth, as it has been more than a few years since I reviewed those amps and my system was somewhat differently constituted then.

When it comes to dynamic range, the thing is wowie-zowie with a vengeance. I am gobsmacked by the prodigious levels Counnas gets out of these sixty watts, even Class A tube watts: I wish I could take all the audiophile cowboys who say Quad ESLs cannot play loud enough and force them to listen to the clear, clean, completely unstrained levels I've been enjoying daily with this combination. I played some piano recordings louder than they would be if the pianos were heard in real recitals, and certainly than I could listen to them comfortably, and neither the (very inefficient) 2805s nor the Bia evinced any strain that I could detect. The same is true for orchestral recordings, while voices have to be heard to believe (how refreshing not to hear sibilants unduly accentuated).

Imaging? Holographic. Moreover, there is something so preternaturally spacious about the reproduction it may constitute a subtle coloration, though if so, it's a very attractive one. Put on really well recorded orchestral music, like any of John Eargle's on Delos, for example, and the impression of size, scale, bloom, and vastness is spine-tingling indeed. The same is true for intimate music: I've been enjoying the Balcea's traversal of the Beethoven quartets, which are very naturally recorded with a good recital hall's row G-M perspective—close my eyes and the ensemble is simply there in the front of my room. This held for LP after CD after SACD after high-res download. A litany of examples would serve no purpose than to make the same points over and over again.

I used the Bia on my Quads, the lovely Harbeth Monitor 30.1s, the fabulous new MartinLogan Montis (review forthcoming), and it acquitted itself superbly on each. My experience with the Montis is limited, but I have long experience with my Quads, and can truthfully say I've never heard them sound better. This is the proverbial match made in heaven (and scarcely less so with the Harbeths).

Is the Bia perfect? Well, of course, nothing's perfect, but no matter what I threw at it, I couldn't make it sound anything less than beautiful. There may be some other amplifiers that can beat it out for sheer crunch and slam at the bottom, but I've no way of evaluating this

SPECS & PRICING

Power output: 60Wpc, 20Hz–50kHz +/-1dB
Speaker outputs: 4, 8, 16 ohms
THD: 0.22% at 1W output into 8 ohms
Gain: 23dB
Noise level: <0.2mV RMS into 8 ohms with input shorted
Tube complement: Matched quad set of four KT88s; four Gold Pin ECC82s (12AU7)

Dimensions: 17" x 20" x 10"
Weight: 66 lbs.
Warranty: 2 years amplifier, 6 mos. tubes
Price: $12,500

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because I don't own speakers with very large woofers that may need that kind of control. Current tastes run for more zing, zip, spit, and sizzle up top, though not mine, as I find these things inaccurate and often irritating—sounds the Bia seems incapable of generating. And yet, I know that there is something about the reproduction here that isn't truly accurate. The complete absence of any sort of negative feedback practically guarantees output impedance on the high side or, equivalently, a damping factor on the low, and this always has an adverse affect on flat frequency response into real-world loads, i.e., speakers. Despite listing a full set of specifications, the Bia's flyer does not state the figures for output impedance and damping factor, which, in my opinion, Counnas was remiss not to have measured and published.

But listening reveals the effects all the same. My favorite recorded performance of *Appalachian Spring* is Bernstein with the New York Philharmonic on Columbia. There are many sonic virtues to the reproduction, including powerful dynamics and a clear recording of great spaciousness. But it is multi-miked and notably bright, even fierce throughout the presence region and the highs. On most modern systems, which tend to have rising top ends, the sound can be fatiguing. On a truly flat system, the sound is tolerable, the violins not shrill, but not far off shrill, and in any case have way too much sheen and brilliance. (Every piece in this all-Copland collection is a great performance, but owing to the sonics, I rarely listen to more than one at time.) With the Bia, however, it's a whole other story. Though the reproduction is plainly bright, it is so smooth and polished, still brilliant, though now *silkily* brilliant, as to be not only very listenable but even rather wonderful (think of a somewhat overexposed photograph that you manage to correct in Photoshop or Lightroom). It's pretty hard to be a stickler for absolute accuracy when a component lets you enjoy one of your favorite recordings more than you ever have before.

I've already pointed out that the highs are never edgy or hard, which is good, but neither do you have the kind of crystalline ring, ultimate sparkle or tingle, or even the pleasing bite much high percussion can have. This extends to some other instruments too. Sonny Rollins' sax on *Way Out West* (SACD and vinyl reissue) is rendered with fabulous body and richness, and even the requisite bite and edge that his tone by design has, yet it still lacks the last degree of those latter qualities I hear from amplifiers that I know to be more literally accurate. I am told this is perfectly consistent behavior from an amplifier that has a highish output impedance. (Harbeth 30.1s have a more extended high-frequency response than either the Quads or the MartinLogans, so they and the Bia are really quite witchy together.)

I should not want to overstate any of this, as the Bia stays within what I would consider acceptable bounds of overall neutrality. But those who love rock and roll, some kinds of jazz or percussion, or any other music that depends for its full effect upon a certain degree of grunge, grit, and rasp would surely want to audition before buying. But, then, you'd have to be crazy to buy any tube amplifier before auditioning, because the spectral profile will always vary somewhat with speaker load in a way that it does not with most solid-state amps.

So where does that leave us? Can a component sound too beautiful? Is accuracy overrated? These aren't questions anyone can answer for anyone else, so personal is the decision. So many recordings are miked so close to the musicians as to sound at best unnatural and at worst aggressively awful (this is one reason why I still value tone controls, especially for the treble). A design like the Bia poses a real conundrum when it comes to the truth or beauty question. A very close friend of mine, an audiophile of four decades standing, used to love tube electronics and acquired quite a collection of them. Eventually, and in part for professional reasons, he sold them in favor of components that would form a true reference system that would tell him what recordings, including those he makes himself, actually sound like. I invited him over to hear the Bia—he is very familiar with the sound of my system—and his face broke into a smile within just a few minutes. "I can see right away why you've fallen in love with this thing; it's so damn beautiful, so luscious and...*velvety*. I was in love with sound like this for years, though of course in those days it was nowhere near as clean, low-distortion, or quiet as this, and with nothing of the bass reproduction." Well, there it is: I freely admit to having become quite besotted with the Bia.

Regular readers of mine will know that judged on the basis of performance alone, I do not find super-expensive electronics to be worth the prices asked for them. By this I don't mean that they're not good, merely that they do not in my judgment offer sufficient performance over their lower-priced counterparts to justify the stratospheric asking prices, and sometimes they offer no improvement at all—and we happen to be living in a time of unprecedentedly high performance in even budget-priced electronics. By comparison to the pricing of the most expensive electronics, which can cost as much as luxury automobiles, the Bia's $12,500 retail is positively modest; but it could be called a bargain only in the crazy world of high-end audio, where wire costs tens of thousands of dollars. By most people's standards, including mine, it's still very expensive (another four or five grand gets you an economy car!), and much more than I can justify paying for an amplifier, especially when there are so many available for much less that are more literally accurate.

That said, truth in reporting also requires me to add that the Bia is the only amplifier costing more than $10k that I've heard that I might actually consider buying for the sheer love of the way it makes almost every recording I have sound beautiful. It's not the only amplifier I would ever want to own, especially for reviewing purposes; but if I did own it, I know it would get a lot of use and never cease to be a favorite. This is the kind of design around which passionately enthusiastic cults form, and I can easily see its owners treasuring it like classic Marantz or McIntosh amps from the salad days of high-end audio. I certainly would. tas

Rotel RCD-1570, RC-1570 P7, and RB-1552 Mk II

Rotel Returns to its Roots

Alan Taffel

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

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

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

Rotel's new stack consists of three components that—aesthetically 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.

EQUIPMENT REVIEW - Rotel RCD-1570, RC-1570 P7, and RB-1552 Mk II

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

Stacked, these components look purposeful (especially in black), yet elegant (especially in silver) in the reassuring form-follows-function 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 *lilt* of the music is lost. But through the Rotel stack, all of these elements are fully present. Strings are properly rich, bass is weighty, and the piano possesses a lovely round tone. Microdynamics and tiny tempo variations come through clearly, allowing the listener to hear the give and take among the players. Strings may be a touch more strident than would be ideal, but that is a small trade-off—and small trade-offs are precisely what we hope for in affordable components.

This is all great news, but there is icing on this cake because the Rotel stack makes very few apologies even in *non*-essential categories. Point the laser to Mary Guathier's "Falling Out of Love" from *Mercy Now* and you will be amazed at not only the grittiness of her voice, but also the broad soundstage, well-placed images, and the rock-solid bass—all of which suck you right into her slithery world. Similarly, on the terrific Analogue Productions hybrid disc of Dave Brubeck's *Time Out,* the Rotels not only get the infectious timing and tonal characteristics of the instruments right; their tinkling top piano notes are also airily unrestrained. Again, this last element is not essential to fully digging the music here, but it goes a long way toward hinting at that "real" quality we high-enders seek.

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

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

SPECS & PRICING

RCD-1570 CD Player
Outputs: One pair RCA; one pair XLR; one coax digital RCA
Dimensions: 17" x 4" x 12 5/8"
Weight: 14.7 lbs.
Price: $999

RC-1570 Preamplifier/DAC
Inputs: Four RCA; one mm phono RCA; one XLR; two coax digital; two optical; two USB
S/N ratio: 110dB (line); 80dB (phono)
Frequency response: 10Hz–95kHz +/-3dB
Dimensions: 17" x 4" x 12 5/8"
Weight: 16 lbs.
Price: $999

RB-1552 Mk II Stereo Power Amplifier
Power output: 120Wpc into 8 ohms
S/N ratio: >120dB
Frequency response: 4Hz–100kHz
Inputs: One pair balanced (XLR); one pair single-ended (RCA)
Outputs: Two pairs per channel of binding posts
Power consumption: 400W
Dimensions: 17" x 5.25" x 13.4"
Weight: 31.6 lbs.
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Soulution 500 Series Electronics

Phenomenal

Jonathan Valin

The $26,000 Soulution 520 full-function preamplifier and $55,000-per-pair 501 monoblock amplifiers are terrific. Sweet in timbre, incredibly fast, and sensationally detailed from top to bottom, they match (or very nearly) the superlative Technical Brain EX and Constellation Performance gear in speed and resolution, although you might not guess this at first because (like their bigger, more expensive brothers, the Soulution 700 Series components) the 500s don't have the laser-like focus of Technical Brain or Constellation.

They are "bigger"-sounding than these others, and because they image slightly more diffusely (the difference is almost exactly like the difference between the imaging of a really good planar loudspeaker and a really good dynamic one) you may at first think they are going to be "politer," more laid-back, and less detailed than the competition. I say "at first" because as soon as a hard transient comes along—like those startlingly realistic violin (and piano) pizzicatos in the second movement of George Crumb's Four Nocturnes [Mainstream/Time] or the near-string-busting snap of Keb' Mo's National guitar on "Every Morning" from his eponymous first album [MoFi] or the tremendous bass drum thwack at the start of Poulenc's delightful Concerto for Two Pianos [Decca]—you'll know without question that "polite" and wanting in immediacy and detail are the last things that Soulution's new electronics are. You'll also know without question—particularly from the Concerto for Two Pianos—that these 500 Series components have some of the most lifelike bass you've ever heard from mere stereo gear.

Generally I don't get all worked up about the bottom octaves of speakers or electronics. Sure it's swell to have "floor" and "jump" and all those good things that you hear in an actual concert hall. The trouble is that it's hard to get those good things in an average listening room without getting a whole bunch of bad ones along with them (like a huge midbass hump at room or port resonance, or a steep roll-off in the low bass, and/or a pronounced suckout in the power range). Getting deep, powerful midbass that also sounds "continuous" (to use Harry Pearson's great, multipurpose word) with the octaves above and below it is a neat trick, and very few loudspeakers can bring it off without a few tricks of their own.

Take my current reference speaker, the Raidho C 4.1 (reviewed elsewhere in this issue). This seven-driver, ribbon/ceramic-cone hybrid, D'Appolito floorstander uses four 160mm ceramic-sandwich woofers, mounted, as are all of the C 4.1's drivers including the central ribbon, on thick anodized aluminum plates bolted to a tall, slender, tapered-in-the-back, dual-ported-in-the-front reinforced-MDF enclosure. The load this large multiway presents to an amp isn't particularly difficult (a nominal 5.8-ohm impedance with a sensitivity in the upper 80s); nonetheless, meeting the conflicting demands of such a hybrid critter isn't all that easy for any amp to do. To come to fullest life the C 4.1 requires an amplifier that is capable of unusual power and grip in the bass and, at the same time, very low distortion, high speed, and exceptional delicacy in the upper midrange and treble (where that ribbon driver plays).

Generally speaking, most amps are going to be better at one task than at the other. For instance, both the Technical Brain and Constellation amps are speed demons, with lightning transient response, tremendous resolution of inner detail, and (given the right source) gorgeous (and highly realistic) midband-to-treble tone color and texture. However, as it turned out, with the C 4.1 neither of them was supplying the grip and impact in the bottom octaves that the Soulution 501/520 supplies.

While the Soulution 500 Series electronics didn't exactly turn the C 4.1 into a thump-in-the-chest machine, they certainly increased its low-end "wow" factor to sensational levels. With the Soulution 501/520, the midbass and upper bass (from about 45Hz to 125Hz) immediately sounded more prominent and powerful, as if the 501s had seemingly elevated those frequencies by a few dB (although they have not). Suddenly the C 4.1 had floor, jump, slam. And yet the additional mid-to-upper bass energy wasn't overshadowing the very low bass or cheating me of color, power, and heft in the 100Hz to 400Hz power range. Indeed, via the 501s the C 4.1's output between 30 and 40Hz was measurably the same as its output at 1kHz, and so was its output in the power range.

Now the greater prominence of mid-to-upper bass in the Raidho C 4.1 may constitute a bit of a departure from strict neutrality, but it certainly makes for a very concert-hall-like low end when the amplifier driving the Raidho is capable of supplying enough voltage at a fast enough slew rate and with enough of a damping factor to wring more information about pitch, color, intensity, and duration out of the bottom

octaves. The Soulution 501 monoblock and 520 preamplifier do this very thing—spectacularly well.

The word "solid" best describes the Soulution low end—solid not just in a three-dimensional sense (although it is that), but also in a continuous, "of-a-single-piece" sense. Like a chunk of black marble, the mid-to-upper bass seems to have been expertly chiseled to make a perfectly seamless fit with the power range above it and the deep bass below. Getting this kind of weight and sheer exhilarating impact along with superb pitch definition and astonishing resolution of timbre and texture in both the bottom-most octaves and the power range isn't usually in the cards outside of a concert hall, where you hear it all the time on orchestral tuttis or instrumental fortissimos.

One of the secrets to both the 500 Series' and the 700 Series' sonic success is standard-settingly lower distortion, achieved by slightly unusual means. Where every other tube and solid-state amp designer I can think of flees from negative feedback like the plague, Soulution has rushed to embrace it. It is Soulution's contention that negative feedback in itself has gotten a bad rap; it isn't feedback but the time it takes to send the "corrected" signal from the output to the input (technically, propagation delay) that causes the problems. Unless that propagation delay is zero or close to zero, applying feedback will add time-domain errors to the musical signal, since music doesn't sit still for a glamour shot and as time goes by the feedback loop will be "comparing apples at the output to oranges at the input" (in the words of Cyrill Hammer, Soulution's CEO—for more of whose wisdom, see the interview accompanying this review).

In the 700 Series, Soulution's, uh, solution to the propagation delay problem was to increase the amp's bandwidth to the megahertz region and, thereby, increase the speed with which the feedback loop does its thing by a factor of 1000. Most amplifiers and preamplifiers work with a propagation delay of 1–5 microseconds; Soulution's amplifiers and preamplifiers work with an overall propagation delay of 5–10 nanoseconds, reduced to 1–2 nanoseconds in the voltage amplification stage—where most of the negative feedback is applied. To quote Hammer again: "Since the timing errors of the Soulution amplifiers are negligible, we have the opportunity to apply as much negative feedback as we need wherever it is required in the amplifier without reducing sonic performance. This is how we can lower distortion to never-before-seen levels."

Lower distortion certainly helps explain the Soulution 501/520's terrific top-to-bottom clarity and resolution. But the phenomenal distortion numbers alone (THD is less than 0.001% and SNR greater than 120dB) can't explain why Soulution's new 500 Series electronics sound so world-beatingly "real" (and exciting) in the bottom octaves and the power range. You might think that its power delivery was a matter of sheer watts, but, while more than capable of driving the C 4.1s to run-from-the-room levels, the 501s are only rated at 125W into 8 ohms, 250W into 4 ohms, and 500W into 2 ohms. Voltage, amperage, and peak power, however, are different stories.

At a glance, you would never think it—the 501s are actually quite compact, about a quarter the size of the humongous 700s and purely Bauhaus utilitarian in the looks department—but these little Soulutions put out 70V RMS, 45A, and 5000W of impulse power at a slew rate of 900ns with a damping factor that exceeds 10,000!

The sheer, seemingly inexhaustible flow of power from these small, plain-looking things (fed by the every-bit-as-outstanding 520 preamplifier) unquestionably has something to do with "improvements" that Soulution has made to the power supplies. Unlike the original 700 Series amplifiers, the 500 Series uses "switch-mode" supplies—two of them, electrically isolated from each other (and from the audio circuit) by opto-couplers and transformers, "high-performance-filtered" for noise at the inputs and outputs, and high-speed voltage-regulated. Each of these switch-mode supplies is capable of delivering 600VA, and Soulution claims that, together, they "deliver considerably more stable power than any conventional, transformer-based technology." (Lest you be confused, the Soulution 501 is not a Class D amp. Though it uses a switch-mode power supply, its gain stages run in Class AB, heavily biased toward Class A. In addition to the switch-mode supplies, the 501 also uses four linear power supplies for other functions.)

The upside of switch-mode supplies as I understand it (make that "as Robert Harley explained it to me") is that they keep the power supply constantly and fully charged no matter what the signal-demands; they can also be power-factor-corrected (so that wattage and voltage are not slightly out of phase, as they are in conventional supplies).

I know there are switch-mode naysayers, who point out that, even if filtered and shielded, the strong noise (chiefly RF) of the digital switching signal can be radiated throughout the circuit. All I can tell you is that I don't hear this issue. What I am hearing is that when an amp has no droop or phase shift in the supply at any level with any signal, the net effect seems to be equivalent to plugging your speakers directly into a wall socket.

When it comes to dynamic linearity the 501 is simply nonpareil (although I have a feeling that its big brother, the newly redesigned 701, now also equipped with a switch-mode power supply, may be nonpareil*er*). Here's the thing: Every other amp I've listened to, tube or solid-state, reaches a point where it simply can't get louder or more dynamic without also audibly changing its sonic character. Sometimes, this pivot point comes relatively early on, as it did with the puny ARC Reference 210 monoblocks (less so with the stouter Reference 250s); sometimes it comes relatively late, as it did with the Constellation Centaur. But come it does. And when it comes, the music doesn't just get louder (if it does get louder); it also gets more distorted. Typically, timbres begin to lose their natural sweetness, becoming thinner, more skeletal; with the loss of tone color textural details seem to be planed away, too, so that the resolution of instrumental body and performer articulations is reduced; transients and big dynamic swings often acquire a sharp, unpleasant edge or, alternately, sound flattened out, as if they're being compressed against an invisible loudness ceiling; the soundstage, in turn, congeals, as if it, too, is being pressed against a pane of glass; what was orderly and beautiful

becomes disorderly and clamorous; what was realistic becomes unmistakably the sound of a recording poorly reproduced. Understand that all of these effects set in well before actual clipping. Understand, as well, that this sense of strain is one of the foremost differences between music performed live and music played back on a stereo.

Up until it can give no more and its protection circuits simply shut it down to silence, the 501 is the only amp I've heard that doesn't do any of this. It just keeps getting louder without any change in sonic character—at SPLs so far beyond what you might expect from its nominal 125 watts that its actual output is difficult to gauge. And because it keeps getting louder without strain or outright distortion magical things happen in the bass and power range on big dynamic moments. Tymps, bass drums, gongs, doublebasses, trombones, sarrusophones, tubas, trumpets, bassoons and contrabassoons, bass clarinets, saxophones, pianos, organs acquire the acoustical power that they have in life on big orchestral tuttis—that sense of effortless, seemingly limitless power focused by the hall and projected toward you with enough physical force to be felt like an onrushing wave—and to thrill you with its impact. With the 501s, bass-range instruments *gain* sweetness, texture, solidity, and energy as they get louder, as if the amps were continuously kicking themselves into higher gears—as if there were no end to the gears they could engage.

There is no question in my mind that it is the combination of exceedingly low distortion, astounding speed, almost limitless voltage, amperage, and peak power, and tremendous damping that allows the Soulution 501s to bring a speaker like the Raidho C 4.1s to such incredible life in the bottom octaves and the power range where grip, damping, transient response, and unlimited power are all-important.

But what about the midrange and the treble octaves? What about the delicacy, speed, and sweetness they require?

If you're expecting that other shoe to drop here, you're going to be disappointed. True, their bass/power-range color, definition, and dynamics may be their most salient features simply because in the bass and on big dynamic swings—such as the Catherine Wheel fireworks of the *Feria* that closes Ravel's *Rapsodie espagnole* on Acoustic Sound's marvelous reissue of *The Reiner Sound* or the avalanche power of the Basie band's brass section on "Street of Dreams" from *Sinatra Live at the Sands* [MoFi] or the deep-reaching ostinatos of Paul's Gretsch bass guitar and the slug-to-the-midsection accents of Ringo's tom on the 15ips Puget Sound dub of *Sgt. Pepper*—they sound so unlike other electronics sound when pushed past their comfort zone. That said, the 501 and 520 are almost as good at soft and thrilling as they are at loud and thrilling.

I've mentioned Keb' Mo's National guitar on his eponymous debut album, which the Soulution amp and preamp don't just reproduce with snap and speed, but with a thrillingly lifelike density of color and texture on overtones that is new to Soulution electronics—and quite beautiful to hear. The 500 Series gear is just as good on Keb' Mo's head-cold of a voice, which (given the right speaker and the right room) it reproduces with jaw-dropping realism, making the Raidho C 4.1s sound very much like a 'stat, which is to say at one and the same time naturally hued, in-the-room present, and see-through transparent (though unlike a 'stat the C 4.1 doesn't flatten aspect and lose three-dimensional body).

On high-pitched instruments (or instruments with strong treble-range overtones), the Soulution 501/520 is just as discerning as it is in the bass and midrange, reproducing upper-octave piano with its ivory-and-felt colors—and the weight of the performer's touch—fully intact. Ditto on cymbals, bells, flutes, piccolos. The Soulution gear not only reproduces these things with natural sweetness; it reproduces the engineering—always a strong point of the ultra-high-resolution Soulution electronics—with utter clarity. As a result, the strings, winds, and percussion on the great, albeit slightly dry Columbia [EMI] recording of Von Karajan's thrilling performance of Bartok's Music for Strings, Percussion, and Celesta sound (as they should) slightly dry, where on a richly colored, highly ambient recording like the aforementioned *Reiner Sound*, strings, winds, and percussion have the dark, silken beauty they're supposed to have.

Having said this, I would have to admit that the Soulution 500 Series tends to be a little soft, sweet, and recessed on the very top, perhaps because it is so very strong on the bottom. All that weight and energy in the bass and power range tends to give it a slightly more bottom-up (to use Michael Børresen's phrase) kind of presentation, where the Technical Brain and Constellation gear sound more top-down. I would also have to say that in spite of its incredible low-level resolution I've heard a couple of amps that marginally exceed it in this regard—the original Soulution 710, for example, when paired with the

SPECS & PRICING

Soulution 501 Monoblock Amplifier

Inputs: One analog XLR
Outputs: One analog XLR, one pair of binding posts
Power: 125W@8 ohms, 250W@4 ohms, 500W@2 ohms
Output voltage max.: 70V RMS
Output current max: 45A
Impulse rating: ~5000W
Sensitivity: 1.55V RMS
Voltage amplification: +26dB
Frequency response: DC–800kHz
Slew rate: 900ns
Distortion (THD+N): <0.001%
Signal-to-noise ratio: >120dB
Damping factor: >10,000
Input impedance: 2k ohms
Output impedance: 0.001 ohms
Dimensions: 442 x 143 x 448mm
Price: $55,000/pr.

Soulution 520 Preamplifier

Inputs: Two balanced XLR, two unbalanced RCA, one phono (five total)
Outputs: One balanced XLR, one unbalanced RCA
Impedance: Balanced (Inputs 1 and 2), 3k ohms; unbalanced (Inputs 3 and 4), 3k ohms; phono (Input 5), adjustable
Output gain: Balanced, +16dB; unbalanced, +10dB
Frequency response: DC–800kHz
THD+N: <0.001%
Signal-to-noise ratio: >120dB
Crosstalk: <120dB
Impedance: Balanced, 10 ohms; unbalanced, 10 ohms
Dimensions: 442 x 143 x 448mm
Price: $26,000

SOULUTION AUDIO
soulution-audio.com

ultra-high-resolution MartinLogan CLXes or the original Technical Brain TB-Zero v2 electronics with Apogee speakers, which produced a wealth of inner detail such as I've never heard before (or again) from solid-state electronics. However, the added resolution of both of these ultra-high-resolution products came at a clear and objectionable cost in density of tone color; they were both lean in timbre. The Soulution 500 Series is more natural sounding than both, and the difference between it and TB or Soulution's own earlier amps and preamps in resolution is, honestly, miniscule. Plus, both of these other amps and preamps cost twice the dough of the 500 Series gear.

As for ambience and sountstaging, though the 520—which comes equipped with a marvelous phonostage, with loading that is adjustable via DIP switches on the rear panel and an RIAA IEC subsonic filter that is actually quite effective and relatively inaudible (oh, you do lose a little "floor" on certain power-discs that can be recaptured by simply turning the subsonic filter off)—doesn't reproduce ambience on, say, the richly resonant 45rpm Acousence recording of the Belenus Quartet playing Bartók's Fourth Quartet with quite the same cavernous width and depth as the superb stand-alone Audio Research Reference Phono 2 phonostage paired with ARC's superb new, two-box, $30k Reference 10 linestage, it comes closer than most of the other solid-state competition I've heard (plus it is marginally faster than the ARC combo and, in all respects, considerably better in the bass than the ARC—or anything else).

Though they aren't the only goodies in Santa's bag, in the sector of the market in which they compete the new Soulution 500 Series (which also includes the 540 CD/SACD/DAC) are unquestionably must-audition products, but then if you've heard them in Munich and elsewhere driving Focal Stella Utopias to previously undreamed-of heights you already know that. Naturally, they come with my highest, warmest, most enthusiastic recommendation. Indeed, until better comes along (from Constellation, Technical Brain, or Soulution itself), the 500 Series are my new solid-state references. tas

Operating the 500 Series Electronics

There really isn't a lot you need to know about setting up and using Soulution's new 501 amplifier. Outside of an EIC power-cord inlet, a power-on switch, and XLR connector (no RCA) for the input from your preamp, an XLR output connector (for God knows what), and what Soulution calls its "Link" connector (for slaving the amps and preamps to the remote control) on the back panel, there really isn't much to the 501. On the front panel is a single rotary dial that switches (with a click) among three positions—off, standby, and on. To operate the amplifier you simply turn the dial to the "on" position. You can leave the amp in standby or off when not using it, although I will have a proviso about this later on.

The 520 preamp is quite a bit more complex. Like the 501, it has a multi-function rotary control on its front panel, which can be used to adjust the volume by rotating it, to lower the volume of the preamp to a pre-set minimum by pressing it in (you press it in again to return to the volume set prior to muting), and to program the preamp in certain ways. (All of these functions are duplicated on the handy remote.) To the left of the rotary control are three buttons: Power, Prog (for "Program"), and Mute. And to the left of the buttons is a rectangular LED display, the intensity of which can (and should) be dimmed during playback.

The operating parameters of the preamp can be adjusted in many different ways by pressing the "Prog" button (which puts the preamp in "Program mode"). In this mode, you can adjust balance, volume limits, phonostage subsonic filtering, display dimming, etc. by selecting the parameter you want to change via the rotary dial, which cycles through a list on the LED readout, pressing the dial in to engage program mode for that parameter (three LEDs light on the display when you do this), again rotating the dial to select whatever change you want to make from the options displayed on the LED screen, pressing the dial in again once you've made your selection (the three LEDs go off), and pressing the Program button again to return to operating mode. It may sound complicated but it becomes second nature once you've done it a couple of times; moreover, it can also be done via the remote.

On the rear panel of the preamp are an EIC power-cord inlet, a power-on switch, four sets of line-level inputs (two XLR-only and two RCA-only), a single set of RCA inputs for the phonostage (with two banks of DIP switches between them for independently setting the loading of the left and right channels), two sets of preamp outputs (one XLR and one RCA, the latter of which is odd since there is no RCA input on the 501 amplifier), and those Soulution Link connectors.

There was and is an operational quirk on my very early pair of 501s. One of the amps would and will occasionally trigger its protection circuit on turn-on, which then requires me (as with a modem) to unplug it from the wall, let it sit for a time, and then re-plug it in. Apparently with these first 501s, the turn-on sequence of the power supplies is being "misread" by the amp's protection circuit, which sees a problem where there is none. I am told that this programming issue was identified and corrected in later-build samples of the 501 (mine are from the first batch, better than a year old). Nonetheless, I am noting the problem, which is annoying, out of due diligence.

Let me also note that as much as I like the 520's built-in phonostage (and I love it), I wish that Soulution had included a second set of inputs (à la ARC and others) for those of us with more than one turntable. I also wish that cartridge loading could be set via the Program mode rather than by DIP switch. It would be more convenient.

PREVIOUS PAGE NEXT PAGE

An Interview with Cyrill Hammer, CEO, Soulution

First, tell us about the new switching power supplies in the 501 amps and the 520 preamp. Who thought them up? How do they work? What do you think they add to the Soulution sound? Are there any downsides?

Switched-mode power-supply technology was part of Soulution's development work from the very beginning. However back in 2000, when we started the Soulution project, there was no switched-mode power-supply module available that could match all technical requirements for a high-end audio amplifier and that would have been reliable in the long run. The technology was widespread and well established for "low" power applications only. Therefore we based the designs of the 700 mono amplifier and the 710 stereo amplifier on linear power supplies with big toroidal transformers and focused in the succeeding years on pushing the performance of this technology to its best level.

However in the past 10 years switched-mode power-supply technology did advance considerably. Especially the power ratings and the switching frequencies increased dramatically. Therefore we reconsidered using them for the Series 5 power amplifiers.

The switched-mode power-supply module of the 501 mono has two regulation stages. A power-factor correction (PFC) and a power-switching pulse-width-modulation (PWM) control, both operating at 70kHz. We use a dual-phase interleaved PFC circuit with feedback. This reduces the total harmonic distortion (THD) induced "backwards" into the input current of the power supply, which is absolutely key in order to minimize "pollution" of the mains with high-frequency noise that could be picked up by other audio devices.

The main advantage of the switched-mode power supplies is the fact that the output voltage is perfectly regulated and remains stable irrespective of the amplifier load. The PWM control, which keeps the output voltage stable, works with soft waveforms for excellent audio behavior and a fast feedback loop for best performance. A lot of development effort went into the design of the power supply's output stage, which was jointly developed by Soulution and the manufacturer of the power-supply modules. In addition the design of the output filter was fine-tuned to the PWM control protocol. The result is a double-regulated, high-current switched-mode power supply with specifications that cannot be exceeded by any conventional linear power supply. We are convinced that our switched-mode power-supply technology marks a breakthrough in power-supply design for high-end audio products.

The new power-supply technology provides better control over the loudspeakers. This gets very obvious for massive bass impulses. As the bass fundamental is more stable and consequently more precise, the soundstage gets wider and deeper. Overall the amplifier seems to stay "relaxed" even with very complex and demanding music signals.

In the past switched-mode power-supply units have been used for many audio products mainly in order to reduce the space requirements or to reduce the costs, while compromising on performance of the power supply and in the end of the amplifier. In our experience a high-end switched-mode power supply has about the same size and the same or even higher cost than a conventional linear power supply.

The Soulution switched-mode power supply does not have any drawback in our opinion. On the contrary it has many advantages over linear designs!

Second, your previous amps and preamps have used negative feedback in an ultra-fast (ultra-wideband) circuit to lower distortion to vanishing levels. Are the 500s also doing this same thing? If so (and power supplies aside), in what ways do the 500 Series circuits differ from those of the 700 Series electronics?

Yes, the Series 5 amplifiers do follow the design principles that are similar to those of their bigger counterparts. The voltage amplifier does work with lowest propagation delays (the best conditions for applying negative feedback wherever needed). However, the design of the Series 5 voltage amplifier is less complex. The current stage of the Series 5 amplifier has just five transistors per side (NPN/PNP) whereas the Series 7 amplifier has seven transistors per side. Therefore the current rating of the 501 mono amplifier and 530 integrated amplifier is limited to 45 ampere (where the 700/710 are capable of 60 ampere).

Like the Series 7 amplifiers the 501 and 530 do have a global negative feedback loop. As the Series 5 amplifiers are very precise in the first place, the amount of feedback required in this loop is very low or close to nonexistent. We apply less than 0.1 dB of negative feedback. The stability of the fully controlled switched-mode power supply unit of the Series 5 amplifiers helps to further reduce this value. Very good tube amplifier designs, with low feedback, usually have more than 10dB in the global feedback loop (100 times more!).

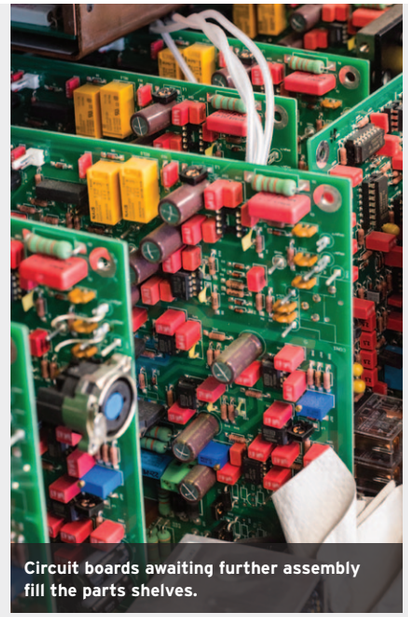
Third, though only rated at 125W into 8 ohms (250W into 4 ohms), the 501 mono amps have unusually good dynamic linearity, by which I mean that they continue to get stronger and more powerful without changing their sonic signature or plateauing, right up until the very point where their protection circuits shut them down. Is this owed to their new power supplies? Or to other factors as well?

This is owed to the new power supply technology! Amplifiers give their power supplies a very hard time. The ideal power supply should be as powerful, precise, and fast as the amplifier itself. Big transformers have high voltage drops between low current delivery and full load. The supply voltage of a 700 amplifier can easily drop by 10% at full load. This leads to lower power output especially for transients. Fluctuations in the mains supply will affect the output voltage as well. Apart from the sonic advantages of having stable power conditions, it also allows us to reduce the required headroom for safe operation of the amplifier. Less headroom in the power supply means less heat dissipation. The chassis of the 501 mono amplifier is much smaller than the one of the 710 for instance. However both amplifiers have about the same power rating.

Fourth, the phonostage that is built into the 520 is considerably better than the add-on phonostages usually built into preamps. Tell us about it. Is it the same basic ultra-wideband design as that of the phonostage found in the 720? What are the differences between the two phonostages, in sonics and build?

The basic design of the 520 phonostage is the same as for the 720. It is as well an ultra-wideband design using four amplification stages, but the filter functions have been reallocated. The first stage is purely linear and just amplifies the small signal from the cartridge. The second and third stages do the RIAA filtering whereas the forth stage drives the switchable subsonic filter. The sound gets more natural with this design. However, the power supply section for the phonostage of the 520 is less complex and less powerful than the one for the 720. Therefore the 720 phonostage is still the reference design, though the 520 gets very, very close.

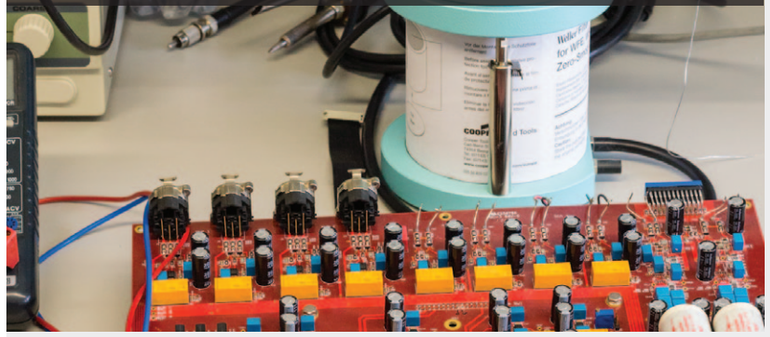

Close-up of Soulution 500 Series circuit board. Note the quality of the parts and the workmanship.


Circuit boards awaiting further assembly fill the parts shelves.

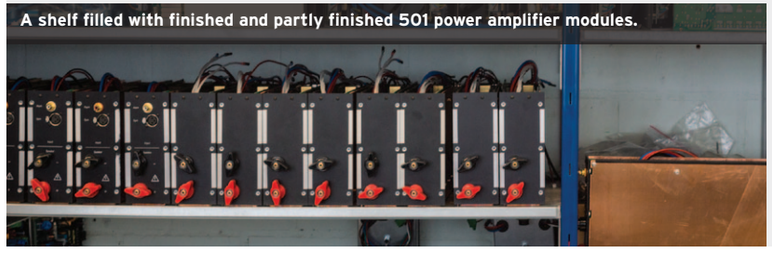

Chief Engineer Bonne Ditmar at his office desk.


Matthias Duso and Manfred Hasler are in charge of assembly of Soulution electronics.

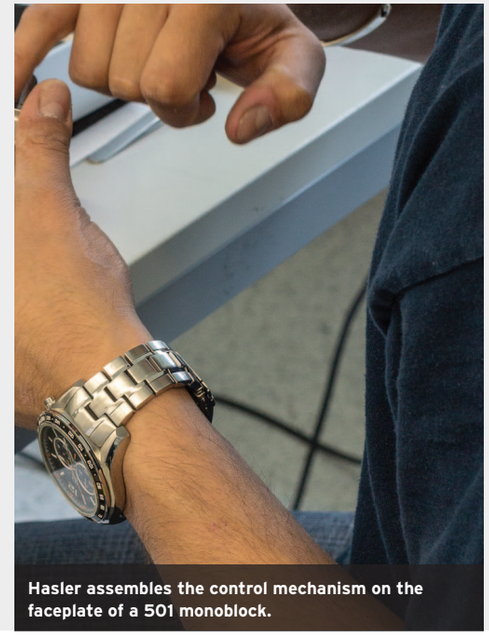
A circuit board is tested. This is a small section of the Soulution's elaborate test bench.



A shelf filled with finished and partly finished 501 power amplifier modules.



Boxed Soulution products awaiting shipment.


Hasler assembles the control mechanism on the faceplate of a 501 monoblock.

Building The Soulution 500 Electronics

About a year ago I visited Soulution in Dulliken, Switzerland—a little town outside of Zurich—to see the first 500 Series electronics being built. Soulution shares a building with and is a subsidiary of Spemot AG, producer of extremely high-precision, high-tech electronic devices and electric motors used in automotive and other applications.

The bottom floor of the Spemot factory houses Soulution's parts, testing, assembly, shipping, design, and accounting departments. The Soulution facility is also equipped with a pair of Magico M5s and Q5s for listening tests and a complete lab bench. Soulution's chief engineer, Bonne Ditmar, is largely responsible for the design of the 500 Series and the new 700 Series electronics, both of which now incorporate switch-mode power supplies.

In Dulliken the boards are assembled into finished products by the team of Matthias Duso and Manfred Hasler.

Dan D'Agostino Master Audio Systems Momentum Preamplifier and Amplifier

Dan D'Agostino's Finest Effort

Anthony H. Cordesman

One of my friends who makes a constant series of jokes about my obsession with the high end described the sculptured look of the D'Agostino designs as "the best equipment I'll never listen to"—the most positive remark the earbud-wearing twerp has ever made about any hi-fi components. If you don't like the D'Agostino Momentum preamplifier and amplifier even before you listen to them your soul is simply dead.

You can get superb performance from, say, a car that has an understated "form-follows-function" design, like the Porsche 911. The Pass Labs preamp and amp I use as references have that kind of utilitarian, Bauhaus character. You can also, however, signal functional excellence through a visual image so unique that it is really a work of art.

In the Momentum's case, the closest analogy I can think of is the kind of "art-follows-function" design you get with a highly styled Italian super-car. The Lamborghini Murcielago Reventon is an instance—from the bodywork down to the electronic display on the dashboard. The D'Agostino Momentum preamplifier and amplifier are the first examples of this paradigm I've ever seen in high-end audio—from the copper finish of the heatsinks to the hole in the needle on their custom-designed meters.

To paraphrase another car-related image, these also are not your father's Krell designs—a reference to the iconic company D'Agostino founded in the early 1980s. They are personal designs from Dan D'Agostino—one of the greatest amplifier designers in high-end audio. They are custom-made in virtually every area with quality as the object and little regard to cost. The Momentum preamp sells for $32,000; the Momentum power amps sell for $60,000 a pair, although an only slightly less powerful stereo version sells for $32,000.

Talking to Dan D'Agostino during setup made it clear that to some extent making the Momentums was a liberating experience compared to running a full-range audio company like Krell. He was able to both go back to his roots and reinvent most of his approaches to design. The visual style of his preamp and amp has a

EQUIPMENT REVIEW - Dan D'Agostino Momentum

clear functional rationale. Like the Lamborghini Murcielago Reventon, they are intended to define the state of the art and they are priced accordingly. They are the audio equivalent of *auteur* products—the result of the design skills and ears of one of the most proven engineers in the high end, rather than a corporate product or one thought up by the equivalent of a committee.

Yes, this does make them unaffordable for me and at least 95% of TAS readers. At the same time, they almost have to set a precedent for making equipment as much fun to look at as to listen to. More importantly, they provide any audiophile who listens to them with the kind of sound quality that can help aid him in choosing far more affordable equipment. You can't set your standards by comparing one affordable preamp or amplifier to another affordable one. You need to choose your trade-offs by listening to the best.

The D'Agostino Momentum Preamplifier

Let me begin with the preamp—both because it comes first in the audio chain and because preamps are always more fun to describe than power amplifiers. Dan D'Agostino summed up some of the key features in the Momentum preamp as follows in an interview for this review: "The Momentum preamplifier is an all-discrete design using all through-hole components. The preamplifier is pure differential with all of the circuit boards exhibiting one plus phase and one minus phase with the board split down the middle. The preamp consists of six plug-in boards, three per channel. Plug-in boards allow for future updates making the design future-proof.

"The audio circuits of the preamp are very wideband using multiple current mirrors and zero feedback, and are built using all through-hole devices that are matched and assembled by hand. The power supply is all discrete and has separate transformers for analog and digital supplies with separate ground paths.

"The tone control is a separate amplifier board which is completely isolated from the main amplifiers of the preamp and has its own power supply. When it is switched on it is inserted between the input and volume control board by a high-precision relay. When the tone control is switched off it is completely out of the circuit.

"The volume control, one of the most important parts of a preamp, is made up of a discrete ladder using special 0.1% resistors and high-precision, very-low-loss aerospace relays. The volume control itself uses an optical encoder with a 2+"-diameter, rotating encoder-wheel, which will give extremely good linearity with very small increments of change possible. The knob is assembled with two sealed ball-bearings. The two bearings are assembled into a preloaded chamber, which allows a perfectly smooth precision feel to the volume control."

At a more pedestrian level (arguably the first mixed metaphor in this review), the Momentum Preamplifier is a six-input linestage preamp, but it does have a number of special features. Its six XLR balanced inputs include a theater input (the theater input has unity gain regardless of the volume-control setting). It has a remote control that can either be used to control a small IR sensor-tower wired to the rear-panel input, or the front IR sensor in the meter housing. There is a meter to show the volume and and a large ring around the meter that controls the volume. This is a beautiful design feature in itself.

The remote control adjusts balance and signal polarity as well as volume and source-selection. There are truly functional tone controls that are carefully designed to allow you to increase the amount of bass at low frequencies or reduce a trace of boom, and alter the upper-frequency balance to adjust for hardness or dullness in the upper midrange and treble with minimal impact on the rest of the midrange. Almost all of these features affect the lighting and colors on the front display in a subdued enough way to complement rather than spoil the design, and the remote is a round unit suitable to live on a table or hold, with buttons spaced far enough apart and labeled clearly enough to actually use easily.

There are also 12-volt trigger jacks that can control power amps and other equipment, and a DB9-type input, which allows the Momentum preamp to be controlled by home automation systems that use the RS232 protocol. The preamp also fits on a power supply unit connected by a bale in the rear that adds to the sculptural effect, making it quite a display item if you like showing off your equipment (and easy to conceal if you don't).

You can get more of these details in the preamp manual at the company Web site; it's a fun read regardless of your real-world equipment budget.

D'Agostino Monoblock Power Amplifier

Dan sums up the features in the D'Agostino monoblock power amplifier as follows:

"The circuit for the amplifier is very different from anything I have done in the past. With very low nested feedback of 5dB and no global feedback, the Momentum is an extremely quiet design, typically -104, -105dB unweighted. The low-gain design is harmonically accurate and true to the input signal.

"The use of copper allows me to get much more output power from a very small package, not requiring large aluminum heat sinks. Copper absorbs heat 91% faster than aluminum keeping all the output devices at a constant safe temperature. The Momentum amplifier can produce huge amounts of power—1200 watts into 2 ohms—and has enough output to drive any speaker with power and authority.

"All components in the amplifier are matched and curve-traced for maximum linearity and repeatability. The selection of parts is based on sound with a cost-no-object approach. All of the operating circuits are analog and all parts are through-hole, allowing for maximum reliability."

The Momentum amp is a visually compact design (although it weighs 98 pounds), and draws less than a watt in standby, allowing you to keep it operating constantly at little cost in electric power. Although the Momentum amplifier sounds good at turn-on, it requires approximately 30 minutes to reach optimal operating temperature.

There aren't many features to describe: 12V control, input and output jacks, and switches for meter brightnesss and power sensitivity. The D'Agostino monoblock is designed for XLR inputs, although RCA adapters can be used. It is also far smaller and far "greener" that most power amps.

If you want a full description of all the operating features, the on-line manual describes

EQUIPMENT REVIEW - Dan D'Agostino Momentum

the product, and the cover photo shows its visual beauty

The Sound

I normally review the sound of preamplifiers and amplifiers separately even when they come from the same manufacturer. In this case, however, the only meaningful differences between the sound of the preamp and the amplifier were largely the product of the amplifier/speaker cables. There was no meaningful difference in the sound character of each unit except for the impact of the speaker-dependent interface—something that became clear by shifting my different reference speakers in and out, and by using the D'Agostinos to drive the speakers of two of my friends.

In general, I would also recommend that you stick with preamps and amplifiers from the same manufacturer, and at the same level of quality in that manufacturer's line if you can afford to do so. It may be possible to get lucky and get the best possible sound with a mix-and-match between either the D'Agostino preamp and amplifier and a different manufacturer's preamp or amplifier. For instance, the D'Agostinos certainly worked well with my Pass Labs XP-30 preamp and Pass Labs power amps. But with almost all top equipment you almost always get the best results when you use a matching amp and preamp. You reduce coloration, hear what the preamp and amplifier designer actually meant you to hear, and reduce the risk of any trace of a hum loop or other interface problem.

This is particularly true with products of the quality of the D'Agostino preamp and amplifier. They are far too neutral and accurate to use them to try to compensate for the colorations in another piece of gear. Like the other preamps and amps that top today's high end, they do not have a characteristic sound that shapes the music. They are not warm, bright, or hard, and don't favor or penalize some part of the sound spectrum. They do not perceptibly alter dynamics from the subtlest to the loudest levels I can stand to listen to.

While some high-end gear seems designed to shape the sound of all the music that passes through it, the D'Agostino Momentum preamplifier and amplifier seem to free music from such alterations, getting the best of detail, dynamics, soundstage, and imaging.

Part of this "freeing" of the music is due to the fact that the preamp and amplifier seem so truly quiet. I don't just mean they are low in hum and noise, although once properly set up they are outstanding in those respects. The music simply seems to come without any of the faint electronic cues of character that make you at least subtly aware the sound is electronic and not natural.

Some audio designers and reviewers refer to this as a "black" sonic background. Whether they mean "black" in the sense of a black film background, a black hole, or any other interpretation of "black" that mixes visual and sonic images, the end result is still an oxymoron. It's simply one more instance of struggling to describe a sound that isn't there.

That does not mean the D'Agostino Momentums don't have their peculiarities. Like the other state-of-the-art preamps and amplifiers I have listened to, they have extraordinary transparency. This becomes clear almost immediately if you listen to them with really good recordings on a really good system, and then shift to otherwise top-quality, high-priced preamps and amplifiers. There is none of the slight rise in midrange energy which in some electronics gives the impression of added detail, or for that matter any of the softening that slightly reduces real detail and natural musical edge. You don't hear additional detail and musical realism in the form of some sudden new insight into the music or an unexpected change in a given recording. When it comes to preamps and amplifiers, I always find such "discoveries" to be a warning of a problem in either the item under review or the one it is being compared to. Changing today's preamps and amplifiers should never make those kinds of changes in sound quality unless there is a real design fault in at least one of the components under review.

What you do hear are clear dynamic shifts, more low-level detail, better definition. Differences between really good digital recordings in the 24/96 world—copied from masters made directly at the performance at these rates—show up the potential of high-resolution digital. If the recording is good enough, you also hear a more natural, articulate, and three-dimensional soundstage. The stage seems to expand in width without stretching instruments or voice. There is a more natural spread and more centerfill, and, particularly with the Momentums, more depth. In addition, imaging is not only more precise; images are placed more realistically in both width and depth.

It is important to note here that, while their nuances are hard to describe, there are audible differences between the Momentums and other state-of-the-art preamp and amplifiers. For instance, both of the Momentums tend to be more mid-hall than front row in perspective. The problem is that the differences are small enough, and enough dependent on the recording, that I can't be sure that any coloration is involved when comparing the D'Agostinos to other top electronics because I have no way of knowing

SPECS & PRICING

Momentum Preamplifier
Inputs: Six balanced XLR stereo (one of them theater-bypass)
Outputs: Two balanced XLR stereo
Frequency response: 0.1Hz–1MHz, -1dB; 20Hz–1MHz, +/-0 dB
Distortion: <0.006%, 20Hz–20kHz (full output)
Signal-to-noise: -105B, unweighted
Gain: +6 to +12dB, adjustable
Weight: 75 lbs.
Dimensions: 18" x 4.3" x 12"
Price: $32,000

Momentum Monoblock Power Amplifier
Inputs: One balanced XLR, one unbalanced RCA (adapter supplied)
Outputs: High-quality binding posts
Power: 300 watts into 8 ohms, 600 watts into 4 ohms, 1200 watts into 2 ohms
Frequency response: 1Hz–200kHz, -1dB
Noise: -105dB, unweighted
Gain: 26.5dB
Weight: 98 lbs.
Dimensions: 12.5" x 4.3" x 18.5"
Price: $60,000 per pair

D'AGOSTINO MASTER AUDIO SYSTEMS
7202 E. Cave Creek Road #B1
Carefree, AZ
(480) 575-3069
dandagostino.com

EQUIPMENT REVIEW - Dan D'Agostino Momentum

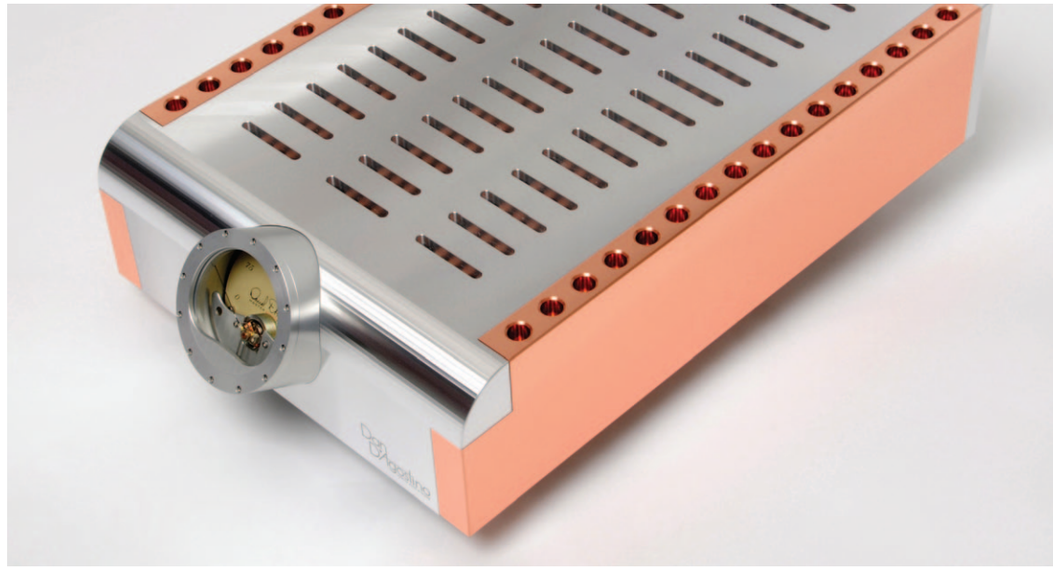
what the actual performance was like.

What I can say is that the Momentums' mix of imaging and other soundstage characteristics, coupled to their other merits, makes the music more listenable, more emotional, and more real on many recordings. Moreover, the sound remains deeply engaging over long listening periods.

Unfortunately, there is no audio term for the ability to produce a fully enjoyable sound over time. It isn't just a matter of avoiding listening fatigue; it is the ability to keep you engrossed in the music. These are not a preamp and amplifiers to read by or use for background music. With equally good associated components, they pull you into the music and the performance and they keep you there.

At one level, they give you truly outstanding performance with truly outstanding recordings, and are not forgiving of any defects in mediocre or poor recordings. At another, they get the best out of even the most ordinary Deutsche Dullaphon recordings (although tweaking the tone controls does help!), as well as the all-too-many jazz orchestra, symphonic, and opera recordings that tend to blur the music into a mass at peak levels on large-scale choral passages, or during those many recordings when Mahler seemed determine to cram 1000 or more performers onto the stage at the same time. The Momentums make as much sense out of the final parts of Saint-Saëns' Symphony No. 3 as possible, until a recording comes along that can actually handle all of its dynamics and detail.

There is, however, one important difference between the Momentum preamp and amplifier.



The preamp has excellent bass. The amplifier not only has that same bass, but does an exceptional job of controlling the woofers in good associated speakers—even ones that are difficult to drive. I suppose you could argue that the amps make a slight trade-off between bass detail and sheer energy, but they also make a slight gain in extension in the deep bass. In practice, this is far more a description of their sound than a criticism.

Setup and Interfacing

The Momentum monoblock amps seems to be able to drive any speaker known to man, including older electrostatics and the earlier low-impedance Apogees. They did not present any problems with different interconnects and speaker cables, either, or exhibit any interface problems with different front-end components. They are so transparent that they will be far more revealing of the sound of the other components in the system, and this may require some adjustments in your choice of "wires," and possibly even a slight movement in speaker location to reflect the better focus of the soundstage and to get the best bass response, but this is true of all really state-of-the-art preamps and amplifiers.

Any really good power cord, including those that came with the preamp and amplifier, functioned well in my home. The only sensitivity I found in my setup occurred where I have separate power circuits to each outlet near the speakers in my listening room, and another circuit to the components in a separate room. This did not present a problem *per se*, but the use of in-wall AC filters and a separate power conditioner did create trace ground-loops even with AC cheater-plugs. This is a common problem with a lot of top equipment, and a caution about upgrading your AC power. The value of conditioners is very supply-and-house-wiring dependent. Spending vast sums on AC outlets is ridiculous. Most of the time, using high amperage, very thick AC lines for the AC wiring that feeds your sound system, improving AC grounding, and using the cheaper high-quality outlets available at any home improvement store will produce better sound quality than using separate AC filters or conditioners on different AC circuits.

My advice is that if you have the slightest hum, check the AC lines and their grounding. The problems will not be in the D'Agostino equipment and it makes no sense to buy electronics at this price without having high-quality and preferably dedicated AC lines. If you do not know how to do this, most dealers will be able solve the problem for you, or can recommend an experienced electrician. Good overall AC circuits are a key part of a high-end system.

Summing Up

There are always rivals at the top of any area. You don't get constantly better without real competition. I had two new power amplifiers in for review at the time I carried out these listening tests, and each provided outstanding performance with a different mix of the more subtle sonic nuances I touched upon earlier. The fact remains, however, that the D'Agostino Momentums are as good as the high end gets. A real privilege to audition! tas

Viola Audio Laboratories Crescendo Preamplifier and Concerto Power Amplifier

Discovery!

Robert Harley

It's both rewarding and disconcerting to regularly discover fabulous albums that have been around for decades yet remained unknown to you until some chance encounter brought them to your attention. The "rewarding" part of that statement is self-evident; the "disconcerting" part is the realization that there must be many other such gems out there that you will never chance upon, but that you would also consider essential.

The same could be said about high-end audio manufacturers. Right at this minute there must be many amazing-sounding products that I'm completely unaware of. There are so many companies and so little time to sample their products that it's natural that some firms fall off the radar for years—until a chance encounter compels further exploration.

It was just such a chance encounter that led me to this review of the Crescendo preamplifier and Concerto power amplifier from Connecticut-based Viola Audio Laboratories. During a trip to France a couple of years ago to tour Focal and Micromega I visited the home of Micromega's owner where I heard an extraordinary system of all-Viola electronics driving the Kharma Exquisite Extreme Grand loudspeakers (with Kharma's massive subwoofer thrown in for good measure). The sound was spectacular in every way. The system's owner, who was not bound by price constraints, considered many electronics brands before choosing Viola. (The company apparently enjoys a strong reputation in Europe and Asia despite its low North American profile.) At the time, I knew almost nothing about Viola and had never heard its products.

Six months later at the 2013 Consumer Electronics Show I had another positive encounter with Viola, this time with its Crescendo and Concerto preamplifier/power-amplifier pair. The products' user interface was unlike any I'd seen before, and the new units, while not inexpensive at $22,000 each, were priced lower than other products in Viola's line.

At the show I also learned about the background of the company's founders, Paul Jayson and Tom Colangelo. They had been designers at the original Mark Levinson Audio Systems company in the late 1970s, and had contributed to many of that company's landmark products. In 1984 when Mark Levinson left to form Cello, Jayson and Colangelo went with him. With Jayson as Engineering Manager and Colangelo as the head of R&D, they comprised the engineering team behind that company's highly regarded offerings, including the Audio Palette, which remains the best product of its kind every created. Cello folded in 2000, leading Jayson and Colangelo to form their own company, Viola Audio Laboratories. Colangelo passed away in 2007 after 30 years designing high-end audio, 27 of them with Jayson.

Overview

The Crescendo and Concerto look and operate unlike any other electronics I've seen. The

EQUIPMENT REVIEW - Viola Crescendo & Concerto

identical chassis have no apparent front-panel knobs or controls, just a small truncated-pyramid-shaped display with nothing more than a few symbols illuminating it. The minimalist look is possible because the system is controlled via an included iTouch and dedicated Wi-Fi network. Power-on and -off, source selection, volume, muting, and other functions are all made through the iTouch. The units are supplied with a pre-configured Wi-Fi router that can be plugged into any AC socket within Wi-Fi range. The Crescendo and Concerto are connected by an Ethernet cable, but get their instructions from the iTouch wirelessly via the router.

Via the iTouch interface you can change the display color (globally or by selecting a different color for each input), apply 10dB of attenuation on select inputs, name the inputs, monitor the heatsink temperature, and access other functions beyond those found on traditional remote controls. In practice, I appreciated that the iTouch liberated me from requiring a line-of-sight between the remote and the equipment rack. Of course, Viola's remote app will run on any iDevice. As much as I like the feel of a heavy machined remote, the iTouch proved a welcome change in daily use. If the iTouch is out of power, the Crescendo and Concerto can be operated by the rudimentary front-panel display. The Crescendo's display has power and volume up/down controls, and the Concerto a power on/off. These displays are contained within the small "V" shape cut into the front panel, which extends to the top plate and the back of the unit.

The chassis are machined from solid blocks of aluminum and have a monolithic look. Ridges are cut into the top plates that suggest heat sinks, but without the fins and sharp edges. The power amplifier, housed in an identical chassis, has within this top-plate groove an unusual heat sink integrated into a slot running down the middle of the chassis. The metal work is gorgeous—as good as it gets. Moreover, the aluminum is anodized with a slightly grayish patina that gives the Crescendo and Concerto an elegant, yet businesslike vibe. The visual effect of the whole package is stunning.

The Crescendo is the second model up in Viola's four-preamplifier line, and the only one to incorporate a digital-to-analog converter. In addition to digital inputs on USB and SPDIF, the Crescendo offers analog connectivity via three balanced and three unbalanced analog pairs. The output choices include balanced or unbalanced connection. The DAC can accept datastreams up to 192kHz/24-bit, with the sampling frequency and word length displayed on the iTouch.

The circuit is based on Viola's discrete operational-amplifier module. Op-amps needn't be integrated circuits; they can be built from discrete components into a module that functions as an op-amp but without the sonic compromises of an integrated-circuit op-amp. Viola's discrete op-amp is built from a low-noise FET input stage, a differential voltage-gain stage, and a low-output-impedance voltage follower. Volume control is realized with a discrete thin-film-resistor network controlled by switches (in 1dB steps—2dB steps below -50dB). The integral DAC section is built around an XMOS processor running on Viola's own clock circuit and a BurrBrown PCM1794A DAC. The DAC section had no trouble locking to any sampling frequency and word length I fed it. Finally, the power supply is housed in a separate subsection within the monolithic chassis.

The Concerto is the entry point in the Viola power-amplifier line, with four models above it. The amplifier delivers 100Wpc into 8 ohms, and commendably, can double that output power into 4 ohms. The dual-mono design extends to the power supply, which employs a choke just after the transformer. This technique, developed many years ago for Cello products, is deployed throughout the Viola line. According to designer Paul Jayson, the choke smoothes the current spikes that charge the reservoir capacitors, keeping them more fully charged

at all times. It's intuitive to think of a power supply as drawing current from the wall on a consistent basis, but in fact current is pulled from the wall in spurts during the peaks of the 60Hz AC power waveform. The choke, with its inherent energy storage, spreads this energy out over a longer time and keeps the capacitors fully charged between the peaks in the 60Hz AC waveform. Incidentally, the power supply for both the Concerto and Crescendo automatically configures the transformer for the correct line voltage.

The Concerto's output stage is built around a fairly new transistor technology from Motorola called ThermalTrak. The transistors have five leads rather than three, and incorporate a diode within the package that reacts to the transistor's temperature. Specifically, the voltage drop across the diode changes with temperature, and this voltage drop fine-tunes the bias current on a moment-to-moment basis. Viola has taken this idea to the next level by including a microprocessor that adjusts the overall bias level within which the ThermalTrak system makes fine, short-term adjustments.

The only chink in Viola's armor is its woefully inadequate owner's manuals. Products of this price, sound quality, and execution deserve professionally written and produced documentation, not a few photocopied pages inserted into a plastic Office Depot cover that falls apart. More importantly, the quality of the writing and the organization of the contents of the manual are sadly lacking. For example, the first two sentences of the "Quick Start Guide" are: "Prior to crescendo version 1.0.1.11, any crescendo leaves the Viola facilities with the default factory setup to create its own network named 'crescendo' and assumes a network IP of 192.168.1.2 with an IP mask of 255.255.255.0. On a point to point network on versions prior to 1.0.1.11, all IP addresses on the network are to be static." This doesn't appear buried in the back of an owner's manual, but is the first paragraph on the first page of the Quick Start Guide. Oy.

The owner's manual, however, is a microcosm of a larger picture I garnered of a company that is totally engineering driven. Viola has no consistent look among its products, offers only very-high-end preamplifiers and power amplifiers (no integrated amps, CD players, DACs, or other products to "round-out the line"), has never pursued the entry-level or even mid-level customer, seem to relish its low profile in the market, never advertises its products, and creates the kinds of components Jayson is interested in designing rather than what the market asks for. The picture that emerges is of a designer, Paul Jayson, who has dedicated the last 35+ years of his life to perfecting cutting-edge amplification circuits—to the exclusion of all else.

But as we're about to discover, that path has its own glories.

Listening

I hinted in the introduction that these Viola products were quite a discovery, and indeed they are. Starting with analog input signals (we'll get to the Crescendo's DAC performance later) from a dCS Vivaldi or Basis Inspiration/Air-Tight PC-1 Supreme/Simaudio 810LP, the Viola pair was startling in its speed, transparency, and resolution. Instruments and voices were right there, vivid and alive in ways that rivaled any amplification I've heard. The treble, in particular, had a realism and tangibility that were simply sensational. This was the result of an extreme transparency and clarity that seemed to strip away all sense of anything imposing itself between me and the music. Listening to music through these electronics was like taking one significant step closer to the original performance. Here's an analogy. I live near the California coast and walk every morning. When I leave the house the rolling hills and vistas are often softened by a light shroud of moist ocean air. By the time I get back and the sun has ascended and burned off the moisture, the same landscapes appear more vivid, with greater clarity of detail and a richer, denser color palette. That's what the Viola electronics sound like; lifting the electronic haze renders an immediate increase in clarity and palpability.

This quality was particularly pronounced in the treble, which was simply sensational, among the best I've heard from a small handful of the best electronics. I've been listening lately to a terrific hybrid SACD from 2003, Roy Haynes' *Love Letters* with Christian McBride, Dave Holland, David Kikoski, Kenny Barron, John Scofield, and Joshua Redman. It's a musical triumph, made all the better by the stunningly great sound quality (it's an original DSD recording). The Viola electronics rendered Haynes' cymbal and snare work with such clarity and precision that they fully conveyed the measure of his genius. He creates very fine gradations of dynamic expression that perfectly complement the melody or the soloist's expressions. Moreover, the drums and cymbals have a sonic tangibility that's breathtaking. I heard a new wealth of subtle inflections and nuances in his performance through the Viola electronics, not to mention a far more convincing illusion of the drum kit appearing in my listening room. The top end was finely textured and highly nuanced, conveying a fresh abunance of inner detail.

This brings me to another of the Concerto and Crescendo's great strengths, its rendition of transient information. These electronics are lightning-fast—Spectral and Constellation fast—yet they have no artificial etch that would impart

SPECS & PRICING

Crescendo Preamp
Inputs: Three balanced on XLR jacks, three unbalanced on RCA jacks, one SPDIF, one USB
Outputs: One balanced on XLR jacks, one unbalanced on RCA jacks, tape-out on RCA jacks
Network connection: Wi-Fi
Viola Local Network (link bus): CAT-5
Gain: 16dB or 26dB (switchable)
Supplied accessories: Apple iTouch, pre-configured Wi-Fi router, Ethernet cables
Dimensions: 17.5" x 3.5" x 15"
Weight: 25 lbs.
Price: $22,000

Concerto Stereo Power Amplifier
Power output: 100Wpc into 8 ohms, 200Wpc into 4 ohms
Inputs: One balanced on XLR jacks, one unbalanced on RCA jacks
Viola Local Network (link bus): CAT-5
Dimensions: 17.5" x 3.5" x 15"
Weight: 53 lbs.
Price: $22,000

a mechanical or sterile character to the sound. The Viola reproduces transient sounds the way instruments do in life, with sometimes startling attacks and quick decays. Some electronics can sound fast through the treble, but exhibit a kind of discontinuity because the midrange speed doesn't match that of the top end. The Viola electronics totally avoid this pitfall. In fact, they exhibit a degree of transient coherence, from top to bottom, that is as startling in its sonic achievement as it is in the musical result. Drums fairly jump from the presentation. Even low-level transients sound highly realistic through the Viola. Midway through Joe Pass' great solo on "Contractor Blues" from the LP *88 Basie Street*, the drummer sets the rhythm with gentle rim shots. Through the Viola these are not just undifferentiated transient noises, but instead sound like wood hitting the rim of a snare drum.

This transient performance served piano particularly well, highlighting the fact that the piano is a percussion instrument. The explosive dynamics from, say, Bruce Katz's instrument on the superbly recorded AudioQuest CD *Crescent Crawl* or Minoru Nojima's Hamburg Steinway on *Nojima Plays Liszt* were nothing short of sensational. Again, this electrifying transient speed was not the result of an artificial hype that quickly grows tiring. Rather, the Viola electronics simply had the speed and wide dynamic envelope of the real thing.

Speed, resolution, and transparency are often accompanied by a tendency toward leanness, lack of body, thinning of tonal colors, and a bottom end that favors precision over visceral weight. That was not the case with the Concerto and Crescendo. In addition to a full-bodied tonal balance, the Viola pair's bass was phenomenal. These electronics combined deep and effortless extension at the extreme bottom with a visceral muscularity in the midbass that created a powerful physical involvement with the music. The huge left-hand chords in the previously mentioned *Nojima Plays Liszt* were thunderous and spine-tingling. The Concerto seemed to have an iron-fisted control over the Magico Q7's woofers, showcasing this speaker's remarkable combination of pitch precision, lack of overhang, extension, and sheer bottom-end verve. Despite its rating of "only" 100Wpc, the Concerto sounded like a powerhouse, with no softening of bass drum impact at high playback levels or any sense of dynamic compression. The only other amplifiers I've heard in my own system with this quality of bass were the Jeff Rowland 725 monoblocks I reviewed in Issue 228.

These impressions were made listening to the Concerto and Crescendo being fed analog signals from a dCS Vivaldi, Aesthetix Romulus CD player/DAC, and my LP front end. How does the Crescendo's integral DAC sound? I connected my MacBook Pro running iTunes and Pure Music to the Crescendo via USB, and alternately to the dCS, and Aesthetix, with the dCS and Aesthetix feeding the Concerto's balanced analog inputs. I found the Crescendo's integral DAC to be excellent, but not at the same level of achievement as the Concerto and Crescendo's analog circuits. The Concerto and Crescendo are so good that anything less than a superlative source prevents them from achieving their full potential. The Crescendo's DAC was fairly dimensional, clean in timbre,

and wide in dynamics, but it did impart a bit of hardness and sheen to the treble, along with a reduction in transparency and immediacy. The exquisite, finely filigreed top end which sets these electronics apart as special was still apparent, but not to the same degree as when the Crescendo was fed an analog signal from the Aesthetix or, especially, the dCS. If the Crescendo and Concerto weren't so spectacular, the DAC wouldn't have come under such a critical ear.

Conclusion

The Viola Audio Laboratories Crescendo and Concerto are simply stunning musically, and among the best electronics I've heard. The transparency, the sense they convey of nothing coming between you and the music, their sensational treble resolution without a touch of the analytical, their wide dynamic expression, and their absolutely sensational bass vault the Viola electronics to world-class status.

Throughout this review I've felt the urge to temper my praise of these electronics only because these are the company's "entry-level" components—what are Viola's $69,000 Spirito preamplifier and $59,000 Legacy 100W pure Class A monoblocks capable of? It's mind-blowing to consider that one of the following statements must be true: 1) the Crescendo and Concerto are very close in sound quality to Viola's reference-level products; or 2) Viola's top-of-the-line electronics are in a league that I've never experienced.

Whatever the case, you should seek out and listen to these extraordinary electronics for yourself. Viola products may be difficult to find, but you may consider them to be as great a discovery as I do. tas

Zanden 8120 Power Amp and 3100 Linestage Preamp

Audio Artistry

Jonathan Valin

Ever since I heard Audio Note's single-ended-triode amps (the Ongaku and the Neiro) back in the late 90s, I've been a fan of Japanese artisanal high-end electronics. My trip to Tokyo some years ago only increased my admiration for the Japanese ultra-high end—and my astonishment at its sheer scope, which ranges from some of the most lifelike solid-state gear on the market (such as Technical Brain and BAIabo) to some of the most lifelike tube gear (such as Air Tight, Audio Tekne, and the aforementioned Audio Note SETs).

Though none of these very different brands sounds alike, they all have this in common: very high resolution of very low-level musical detail. Indeed, Naoto Kurosawa's Technical Brain electronics remain my benchmark for the reproduction of low-level musical detail (and for transient speed, which is intimately tied to the realistic reproduction of the location, texture, and articulation of individual instruments).

The Zanden electronics I'm about to review certainly don't break the mold. They are extremely fast, extremely high-resolution devices—maybe not Technical Brain fast and high-res, but mighty close. The thing is that, unlike the solid-state Technical Brain gear, the Zanden 8120 stereo amplifier and 3100 preamplifier are tube components, albeit tube components with a distinctive pedigree and a distinctive sound.

The unique, patented circuits of Zanden electronics are the work of Kazutoshi Yamada, an electrical engineer who, since founding Zanden in 1980, has literally dedicated his life to amplifier design. Yamada's single-minded, near-religious devotion to perfecting his art strikes me as typically Japanese, as is his use of the absolute sound as his reference (since 1980 he has acted as an "audio coordinator" for more than 500 live classical and jazz events). All of Yamada's efforts have been aimed at bridging the still sizable gap between what we hear in actual concerts and what we hear on our stereo systems.

Japanese perfectionism may not be a new story, but for me it is still an inspiring one. Of course, men like Yamada want to earn a living, but they also want to do this "honorably," by creating the finest examples of their art—and in the Japanese high-end community making high-fidelity components is every inch an art, no matter how much science is applied in the process. Such aestheticism is a refreshing change from the "by-the-numbers" approach of many of the foremost engineers here and in Europe, where products are designed and voiced not in comparison to live music but to computer models, to machine measurements, or, blindly and entirely unscientifically, to each other. (As far as I can tell, so-called "double-blind listening tests" that a few speaker- and electronics-makers swear by bear no resemblance to the actual double-blind tests used in real-world scientific

EQUIPMENT REVIEW - Zanden 8120 and 3100

experiments, such as medical drug trials.)

Though it is easy enough to hear the results of Yamada's aestheticism and perfectionism in the listening, they aren't fully reflected in the Zanden measurements. Going solely by its numbers Yamada's 8120 stereo amplifier, for example, appears to be just one more Class AB, KT-120/12AU7-based, 90Wpc tube amp with nothing approaching the spectacular bandwidth and vanishingly low distortion of a Technical Brain TBP-Zero or a Soulution 700. Though it uses direct-coupling between its second and third stages and "minimum" negative feedback, and is said to be fully balanced in operation, these things in themselves are not extraordinary.

Yes, the amp is handsome in a very Japanese, less-is-more way. And, yes, there is a hint that there is something special about its "unique circuitry." (Though he guards the secrets of his circuits closely—to the extent of masking and potting the parts on his triple-shielded circuit boards—Yamada is in print saying that, after decades of research and experiment, he has discovered "correlations between the realistic balance of music and the phase components embedded in the audio signal." Examples of phase anomalies are inconsistencies in the recording equalization curves of LPs and high-frequency phase distortions caused by the low-pass filters in digital gear. Only by fully accounting for these phase anomalies, says he, can music be reproduced with the "utmost fidelity.") Still and all, you likely won't be impressed by reading the 8120's spec sheet. Same for the tube-rectified, zero-feedback, 5687WB-based 3100 linestage preamplifier.

Once you audition the pair, however, your opinion will change.

This Zanden amplifier and preamplifier are one of those rare combos that somehow manages to be transparent to the sources ahead of it (and the speakers behind it) while at the same time putting a consistently lovely and lifelike spin on timbres. This is not to say that the Zandens are overtly "dark," "warm," "beautiful," "liquid," or "rich" sounding. They are not inherently any of these things. Like so much other top-rank Japanese audio gear, the Zanden pair is essentially neutral in balance—neither "bottom up" (i.e., dark) nor "top down" (i.e., bright), to quote Raidho's Michael Børresen yet again. As a result, differences in recording, speaker, and source balance are always clearly reproduced by the Zanden duo. Not only do RCAs sound like RCAs, Deccas like Deccas, Mercs like Mercs, but the same specific differences in miking and mastering among individual RCAs, Deccas, and Mercurys that one hears through the highest-transparency, highest-resolution gear are also clearly reproduced by the Zandens. And yet, at the same time, the 8120 and 3100 are most attractively and addictively...pliable—to coin a phrase. Which is to say, sonic differences, large and small, are there for observation, but they aren't insisted upon. Instead, the Zandens seem to find a dollop of natural musical sweetness in whatever balance a recording, record player, or DAC presents them, making everything not just more listenable but more enjoyable and realistic.

I don't know how Yamada has accomplished this trick, but it is a helluva neat one, reminiscent (for a lot less money) of what Edwin Rijnveld managed to do in his swooningly beautiful-sounding yet startlingly realistic Siltech SAGA System.

I'm mentioning the SAGA electronics in the same breath with the Zanden 8120 and 3100 because they share several other qualities beyond a see-into transparency that is not bought at the price of lovely natural timbre. For one, like the SAGA, the Zanden duo doesn't sound "tubey" in the fat, old-fashioned, loads-of-second-order-harmonic-distortion sense. It is quick and clean and quiet and quite incredibly finely detailed, with superbly defined bass (perhaps even better here than the Siltech).

For example, in Britten's *Young Person's Guide* (from Reference Recording's *Britten's Orchestra*) at the close of the *Allegro maestoso* that announces the majestic Purcell theme upon which the variations that follow are based, the bass drum is struck sharply—to help signal the end of the thematic exposition and the start of the variations. Provided your electronics don't stumble over transients or muddy up the bottom octaves, this dramatic percussive punctuation mark should sound crisp, clean, and exciting—with beater, drumhead, and shell clearly audible in series.

What may not be clear—or as powerful—is the drum roll that follows this *fortissimo* thwack, like a little flourish as the curtain is raised. Some electronics—particularly some tube electronics, and particularly in the bass octaves—need figuratively to "catch their breath" after large expenditures of dynamic energy such as that initial drum thwack. As a result, notes that follow hard upon in the same register can sound a bit smeared or compressed, kind of like the electronic version of woofer "overhang."

Despite the fact that they're powered by tubes, the Zanden 8120 and 3100 have none of this overhang-like effect. The drum roll is as clean and clear and distinctly full and natural in timbre as the *fortissimo* thwack that preceded it. It wasn't all that many years ago that tube gear simply couldn't do a very dynamic se-

SPECS & PRICING

Zanden 8120 Stereo Amplifier

Nominal power output: 90Wpc
Maximum power output: 100Wpc
Input impedance: 100k ohms (RCA-standard); 7k ohms (XLR-optional)
Transformer taps: 4 ohms, 8 ohms
Analog input: RCA and XLR (optional)
Frequency response: 7Hz–60kHz (-1dB)
Tube complement: Four KT120, four 12AU7
Dimensions: 426mm x 308mm x 379mm
Weight: 46.2 kg
Price: $19,990 ($1000 additional for optional balanced inputs)

Zanden 3100 Linestage Preamplifier

Frequency response: 10Hz–20kHz -0.5dB
Input impedance: XLR, 10k ohms; RCA, 100k ohms
Output impedance: 300 ohms
Analog inputs: Three RCA, one XLR
Analog outputs: Two RCA, two XLR
Tube compliment: Two 5687WB
Dimensions: 398mm x 254mm x 103mm
Weight: 9.0 kg
Price: $12,500

ZANDEN AUDIO NORTH AMERICA
zanden-usa.com
Contact: Mr. Eric Pheils
eric@zanden-usa.com

EQUIPMENT REVIEW - Zanden 8120 and 3100

quence like this one—which flies from *fortissimo* to *fortissimo* in the space of two notes—without audible losses of leading-edge clarity, energy, focus, and color.

Again, on an assemblage of deep-going instruments such as Gonzalo Rubalcaba's Fender Rhodes, Mario Parmisano's synths, Ernie Adams' drums, Anthony Jackson's electric bass, and Al Di Meola's own collection of dumbeks and stomp boxes on "Zona Desperata" from *Flesh on Flesh*, a good deal of tube gear would be flummoxed trying to keep track of each musical line without smearing them together, and simply tripping over its shoestrings and falling face forward on really deep notes (and this track goes deep). Once again, the Zanden duo simply sails through this torture test, keeping musical lines clean and uncompressed in dynamic while also preserving intact the full-bodied timbres and complex articulations of every instrument and going right through the floor on the temblor-like deep bass notes. Once again, this is not typical tube-amp behavior.

If you think I'm concentrating on the bass because the Zandens fall short everywhere else, think again. These are full-range electronics, whose virtues extend from top to bottom. One listen to the in-the-room-with-you realism they elicit on the lead vocal and potted-in harmony and backup vocals (all Joni, actually) from Joni Mitchell's "Help Me" will prove that these electronics are capable of the same outstanding clarity, speed, energy, and truth to timbre in the midband that make them so stellar in the bass. And their string and wind tone on something like the Reiner/CSO *Pictures at an Exhibition* [Analogue Productions], which in the wrong hands can sound a little gruff, is to die for—a further instance of the Zandens' remarkable ability to find the natural musical sweetness of any recording, no matter how it was recorded, what dynamic level it is played back at, or how busy the instrumentation is.

Although the Zandens are a little less forgiving in the treble than they are in the midband and the bass—which is to say that they won't sweeten or smooth away the bright edge of a too-closely-miked piano, piccolo, flute, or cymbal—they don't exaggerate such miking/mastering flaws. They simply report them. On good recordings, their treble can be startlingly realistic—as fast, clear, lovely, and finely resolved as their midband and their bass. And when it comes to soundstaging—reproducing the ambient space in which a recording was made (along with the three-dimensional disposition of the ensemble within that space)—this Zanden gear is very nearly peerless.

Of course, Zanden electronics have always been famous for their spaciousness (a quality that Yamada has consistently sought to capture in his designs), but the 8120 and 3100 are high among the most spacious I've heard, reproducing soundstage depth and width (both wall-to-wall and among individual instruments) with just a touch more air and room than virtually anything else I've heard. On the right recordings, this is quite a spectacular effect.

No, Zanden's new stereo amp and linestage preamp don't have the seemingly inexhaustible power and sheer whomp of Soulution's latest solid-state gear (you can run the Zandens out of steam at very loud levels—after all 90 watts is 90 watts); nor do they have all the density of power-range and midband tone color of Siltech's gorgeous-sounding SAGA System; nor do they have all the astonishing resolution and transient speed of Technical Brain TB-Zero line or Constellation's Performance Series; nor do they have all the bloom and 3-D depth of image of Audio Research Reference 10 electronics. But...they come so close to these exemplars for so much less money that I wouldn't want to quibble about the differences.

When you take what they do do—which is reproduce all recordings with an almost magical ear to what makes music sound sweet and lifelike—and when you consider that they do this from top to bottom (simply outstanding bass for tube electronics—indeed, for any electronics) and when you throw in their *sui generis* soundstaging, I don't see how the Zanden 8120 and 3100 can earn anything but my highest recommendation. I consider them reference-quality (they're outstanding matches for Raidho D-1s, BTW), and given that they cost one-third to one-half of what my other references cost, I also consider them ultra-high-end bargains. Go listen for yourselves. tas

Pass Labs Xs Preamp and Xs 300 Mono Power Amplifiers

Major New Challenges to the State of the Art

Anthony H. Cordesman

This is a case where I need to begin a review by reminding the reader that the name of this magazine is *The Absolute Sound*, not the *Cost-Effective Sound*. Both products I'm reviewing—the Pass Xs preamp and Pass Xs 300 power amplifier—are efforts to provide that absolute sound without compromise in either quality or price. They are new top-of-the-line components that push the state of art in audio to its limits, and they are priced accordingly. The Pass Xs Preamp sells for $38,000, and the Pass Xs 300 mono power amplifiers sell for $85,000 a pair.

As might be expected from Pass Labs' history, both components meet their goal. At the risk of eliminating any suspense from this review, they are the two best-sounding examples of a preamp and power amp I have yet heard. The kind of gear most audiophiles dream about—which only the truly lucky can afford—and that redefine the perceptions of reviewers during the all-too-brief time they pass through their systems.

A Case Study in Searching for the Limits to the High End

There is, however, a broader purpose to this review than simply praising the Xs preamp and Xs 300 amps. I've been reviewing Pass Labs components for years, and Nelson Pass' amplifier designs since the peak of high-end audio's popularity during the early Fillmore Administration. I use a Pass XP-30 preamp and a pair of Pass XA-160.5 Class A mono amplifiers in my reference system. Reviewing the Xs preamp and the Xs 300 mono amps gave me the opportunity to put the merits of two true new assaults on state of the art in perspective. It allowed me to focus on the level of improvement you actually get from designs with a total cost of $123,000, when my reference XP-30 preamp and XA-160.5 mono amplifiers cost $38,500, and other truly excellent Pass components like the XP-10 preamp and XP-150.5 stereo amp cost a total of $10,750, and the superb INT-150 integrated amplifier a mere $7150.

The answers to these questions aren't simple, and they are discouraging to audiophiles on much tougher budgets. Every Pass preamp and power amplifier I've heard has been remarkably neutral, worked easily with a wide range of front-end components and loudspeakers, was free of any solid-state coloration, and was transparent and neutral in sound quality. You begin with truly musical components, and they get better

and better. Moreover—as is the case with every other top manufacturer of high-end preamps and amps—the level of improvement in sound quality relative to price is a matter of steadily diminishing returns. You have to pay more and more for less and less improvement.

I wouldn't be a high-end-audio reviewer or an audiophile, however, if I had an accountant's objectivity in measuring the incremental benefits from investing in top-of-the-line equipment. Like car freaks, wine snobs, and stamp perforation-edge perfectionists, my goals are not to be cost-effective, but to go to the limits of the sound quality I can afford—and all too often beyond. Real audiophiles pursue the limits of the high end for its own sake. We share a hobby or "sport" that largely ignores the reality of diminishing returns with each additional dollar spent. Success or "winning" consists of getting the best possible musical experience within a given personal budget. If you want to be cost-effective investing in Pass Labs equipment, buy the INT-150 and read TAS simply for your dreams.

The Pass Xs Preamp

So let me begin with the Pass Xs preamp, and try to explain why I soon came to feel the level of sonic improvement was both real and worth it to audiophiles who can afford it. Let me also set the stage by noting that virtually all high-end manufacturers tend to voice their equipment to a consistent standard. That standard tends to evolve with time and becomes steadily more realistic and musically enjoyable, but years of reviewing have taught me that given manufacturers and designers have consistent biases in the sonic nuances they voice into their equipment.

Equipment that measures "flat" using steady-state sinewaves into a fixed load does not sound flat reproducing complex musical signals into real-world loudspeakers. Some manufacturers voice for a slight bass boost, some add a slight boost for midrange or treble detail. Some voice for a more dynamic sound or more detail. Some voice for the warm and forgiving. I'm in the camp that says preamps and amplifiers can't affect tempo or rhythm—and modern digital electronics and the best turntables are incredibly accurate in this domain—but a slight upper midrange rise can give the music more apparent life.

This voicing of electronics also affects soundstage width, imaging size, and back-to-front realism and perspective. Some manufacturers voice for a wide, more front-of-the-hall soundstage. Some seem to play with imaging, and a few seem to play with depth. Centerfill is another related issue, and one I suspect we understate in reviews because—like depth—it is usually dominated by the recordings, speaker, and room setup.

To me, the best electronics have as little of this characteristic voicing as possible. I'm a mid-hall listener, unless I'm reviewing; I listen almost exclusively to acoustic music and small jazz groups, classical groups, and soloists, rather than band, orchestra, opera, etc. With a library of music that involves thousands of mediocre to excellent recordings going from the 1930s to the present, I don't want someone else's biases to give me apparent "insights" into part of my recordings, and mask or color the majority of the rest.

This is one reason that I minimize references to the sound of individual recordings in my reviews. My concern is sound using a musical library, and far too often I find that a sudden "insight" into the music on a given recording usually proves to be a warning of a broader problem in listening to a full range of music. I have enough problems dealing with the voicing in my recordings, the sharper colorations in front-end components, and the unavoidable problems in matching even the best speakers to a given room and listening position.

At a different level, attention to electronic and physical noise and hum also varies, although any such problems have become far less audible over time. Like most audiophiles today, I want and expect my music to come out of a "black hole" of silence. I now find even a trace of electronic hum, noise, and hiss annoying—particularly with solo instruments in the quiet of the night. Some of my friends—particularly audiophiles who prefer the tube classics of the 1950s and 1960s—will listen gladly through such problems.

Moreover, the more I review, the more I come to distrust what I have come to regard as "trick" electronics. Preamps that minimize features to the point they don't even have a balance—to me an "imaging" or "soundstage" control—or enough XLR and RCA inputs and the equivalent of a tape loop; preamps and amplifiers that are remarkably sensitive to given cables and loads; underpowered amplifiers that work well only with some music on a handful of speakers; and particularly amplifiers whose wattage rating are not matched by high current, extension into the deep bass, and the ability to tightly control a wide range of speakers.

These criteria are why I now use Pass Labs preamps and amps in my reference system, why I use and have used equipment from other manufacturers, and why I praise the electronics I review when they deserve it. Overall balance

SPECS & PRICING

Pass Xs Preamp

Max output: 22V
Output impedance: 20 ohms main balanced per leg; 50 ohms aux balanced per leg; 120 ohms single-ended RCA, either
Noise floor: -122dB ref to 5V
Distortion: .001% 1kHz 5V
Frequency response: -1dB@1Hz and 100kHz
Channel separation: Greater than 110dB
Residual broadband noise: Less than 25mV
Max gain: 10dB
Volume control: .5dB steps
Power consumptions: 55W
Dimensions: 19" x 6.25" x 14"
Weight: 80 lbs.
Price: $38,000

Pass Xs 300 Mono Amplifier

Gain: 26dB
Power output: 300W into 8 ohms, 600W into 4 ohms
Input Impedance: 200k ohms bal, 100k ohms single-ended
Power consumption: 1000W
Number of chassis: Two per amplifier channel
Dimensions: 19" x 11.5" x 27.5", each chassis
Weight: 168 lbs. (power supply), 130 lbs. (amplifier)
Price: $85,000

PASS LABS
13395 New Airport Rd., Suite G
Auburn, CA 95602
(530) 367-3960
passlabs.com

EQUIPMENT REVIEW - Pass Xs and Xs 300 Mono

and lack of coloration or voicing, and lack of equipment noise and interaction problems, are the reasons that I have used the Pass XP-10, XP-20, and XP-30 preamps as references in the past. Each has proved to be progressively better—as have the preamps I've used as references from other manufacturers.

I have wondered each time whether the new Pass preamp was really going to be all that much better than its predecessor. As with most of the top high-end manufacturers I've worked with in recent years, I've never heard any Pass equipment that did not provide excellent sound by most standards—regardless of price. I've also found the improvement to be progressively smaller and harder to describe. The fact is that most high-end preamps and amplifiers today are notable successes regardless of price, and the ones that have the least apparent voicing present more and more problems in describing the sonic differences.

The Xs preamp is, however, definitely better that the XP-30, and even more of a challenge to other manufacturers. Its price tag is an issue, but the Xs is better in every respect, and not just in sound quality. It has better ergonomics: The display is larger, and the volume and balance settings are more obvious; it has a polarity button that can make a real difference in sound quality; and the steps in the volume and balance controls seem more precise. It is a large two-chassis unit, rather than a stack of slimmer units—three in the case of the XP-30—which makes hookup easier. Although having an easy choice between XLR and RCA inputs is a strength of almost all Pass designs, the Xs interfaces perfectly with the Pass XP-25 phono preamp. It also retains the ability to

independently adjust the outputs for bi-amping—a key feature with more complex systems.

As you might expect, the Xs also pushes the limits of its components and circuit design well beyond the capabilities of the Pass XP-30 preamp I use as a reference (along with the EMM Labs Pre-2 preamp). The noise floor is an incredibly low -122dBV. The Xs retains the features of the XP-30, but has more output and can swing enough voltage to drive a balanced follower output at 150 watts rather than 80 watts. There are three advanced power supplies, and they drive what are the equivalent of dual-mono, gold-plated ceramic circuit boards.

When I asked Nelson Pass to describe the design activity that led to the Xs Preamp's sound quality and price, he replied as follows:

"Wayne [Colburn] was given an unlimited budget to do whatever he wanted: 'This is your chance to go all out, Wayne. We aren't calling this Xs for nothing.' And so the approach is more like obsessive attention to detail armed with lots of money.

"Gold Megtron and ceramic circuit boards, hyper-selected and matched NOS FETs, crazy regulation and isolation, fabulous relays and switches, bigger display, more expensive parts and more voltage, more bias current, and still *more* voltage and bias current. 'I want to be able to drive Magicos directly with this, Wayne!'

"There are a couple tricks I can't talk about, such as how he got this great performance out of the volume controls, or the bias regulation of the output circuits, but most of the technology is *excessively* straightforward.

"Starting with two prototypes that measured very well, the last year has been spent tweaking them in tandem with a totally subjective approach—probably more listening time than any product we've ever done. Back and forth. More time, attention, work, imagination, and money is what we put into these products."

I also asked Wayne—the lead designer on the Xs Preamp—to summarize his view of the impact of the design improvements in the Xs and how making them improved sound quality, and he provided the following background:

"This preamp is the sum of a lot of small things, from the first one I worked on at Threshold (the Forte 44), to all the small circuit refinements over the XP-30 and the group of people involved

in testing and listening. It was also fun to do, especially when finished. It is DC-coupled as well. The XP-30 used custom caps, but no cap at all is better. It provides better bass and extended resolution throughout the full range of music. I feel the servo-system I came up with works better than previous configurations I have seen or tried.

"The use of the optimized circuit-board materials has subtle effects. Sonically, it seems to lower the noise floor ever so slightly and give a bit of top-end extension. I also love the way solder works on the ceramic circuit boards and their gold-plating. I am not sure being rated for 280 degrees C does much, but it can't hurt. The main board uses a new-to-us Panasonic material designed for high-speed computer routers, and the power supply has a high temperature board with heavy copper plating. There are thus a total of four different types of circuit board materials in the Xs.

"The new gain modules also use higher-power Toshiba devices for the cascode portion of the circuit and the pre-driver stage, allowing for more bias, which gave a bit more clarity and space in the sound. Two separate circuit boards for the power supply made for a marked improvement in instrument placement and bass control. The measured crosstalk is also better. The output stage runs twice the bias and sets itself automatically, so it is very stable and comes to its best operating point quickly. I think this makes for a better power amplifier interface."

I found in comparing the Xs preamp with the XP-30 that Wayne met all of his goals in improving sound quality and other improvements, as well. The XP-30 is a truly great preamp, but the Xs preamp is a better preamp at every level. It provided an audible margin of musical realism that was progressively more audible as speaker quality improved over a broad range of recordings with a variety of different front-end components and power amplifiers. (I used my Wilson Alexias and Legacy Aeris speakers, an aging pair of Spendor BC-1s, a pair of older Electrovoice horn speakers, and a friend's Quad 2905s—a friend crazy enough to actually bring his speakers to my listening room.)

Could I hear more realistic musical energy and dynamics at every level from my best recordings? Yes. Was there more musical life? Yes. Did I hear more soundstage detail with the recordings that really have one? Yes. Was there even more freedom from even a touch of upper-midrange hardness without softening strings, solo piano, or woodwinds? Yes, again. Was there slightly more electronic silence? Yes, although at an almost sub-audible level compared to the XP-30—and at only slight improvements over my memory of the sound of the XP-10 and XP-20.

The already exceptional highs of the XP-30 were even more natural. Bass definition was slightly improved in the mid and upper bass, along with the transition to the lower midrange. Male and female voice were equally excellent and somewhat more open and natural. Complex organ passages were a bit cleaner, and so were complex orchestral dynamics. I've never found recordings of large jazz bands to quite live up to the live listening experience, but the Xs preamp sometimes almost forced me to pay close attention to just how creative some passages of big band music can be.

This is an ideal preamp if you want to get the very best sound from your best LPs and for testing the limits of high-definition digital downloads. More importantly, it is a preamp that allows you to fully appreciate both the fun the Modern Jazz Quartet could have with the right music, and the subtleties of the best recordings of Bach's most complex choral music.

I did keep trying to pin down exactly why the Xs preamp sounded better than the XP-30, and I kept finding that the improvements in the Xs were limited and not confined to any one area. They did, however, make the Xs consistently more musically natural and involving.

At a given point, however, describing the improvements in transparency and neutrality becomes an exercise similar to trying to write a long essay on different shades of red. You can try to make the prose exciting, but you really can't describe the color red.

As for trying to rank or quantify such improvements, I ultimately found myself reacting to such efforts in the same way that I do to attempts to precisely rate wines from 1 to 100 with difference scored down to the last digit. Saying one bottle ranks a 91 and the other ranks a 92 implies you can really measure such difference consistently. Throwing references to the taste of wild raspberries, forest mushrooms, and oak trees, doesn't help. (Query: Would a wine snob really know an edible forest mushroom from a poisonous one? How many oak tress and wild raspberries has he actually eaten?) Each level of improvement in Pass Labs or other preamps is audible, but if you begin with excellent overall sound quality, trying to quantify the level of subjective improvement is simply impossible.

The Pass Xs 300 Mono Amplifier

As you may already expect, I had much the same experience with the Xs 300 mono amplifiers. The differences, were, however, more dramatic because I was comparing amps with such different power levels. The Xs 300 mono amps were not only better sounding in every respect than the XA-160.5s, but they had nearly twice the power: 300 watts into 8 ohms, 600 watts into 4 ohms, and 48 amps worth of peak output current. In contrast, the XA-160.5s deliver 160 watts into 8 ohms, 320 watts into 4 ohms, and 36 amps of peak output current.

I had originally chosen the Pass XA-160.5 Class A mono amplifiers over the more powerful Pass Labs X600.5 and other outstanding amps that were then available from other manufacturers that were not Class A because the overall mix of trade-offs was audibly worth it with the system and speakers I had at the time. I knew from long experience that this would mean a slight trade-off in the most exciting and detailed aspects of musical dynamics, but I felt it more than made up for this in other aspects of sound quality—particularly in lower-midrange realism and warmth, and in putting an end to any trace of edge in the upper midrange.

In the case of the Xs 300, however, the increase in power really makes a difference in both apparent musical "speed" and detail, especially in high-level dynamic peaks with top modern speaker designs like the Wilson Alexia. It was apparent with the sound from the woofers and other drivers on my Legacy Aeris, even though they have the equivalent of built-in amplified subwoofers. It helped improve the resolution of musical energy and dynamics,

PREVIOUS PAGE NEXT PAGE

EQUIPMENT REVIEW - Pass Xs and Xs 300 Mono

from microdynamics to the highest-level peaks, which good speakers like the Quad 2905s can resolve without distorting. Good as the XA-160.5s are, the Xs 300s made them seem just slightly polite and forgiving in contrast.

The Xs 300s do involve a major increase in size and weight. Each mono amp has a separate power-supply and gain unit; each unit is 19" x 11.5" x 27.5". The gain unit weighs 168 pounds and the power supply 130 pounds; both consume some 1000 watts of AC. This may pose placement problems, but the styling and new meters are both restrained and visually impressive.

The Xs 300s are the kind of components that make a real visual statement to other audiophiles. That really shouldn't matter. However, if you do happen to be an authoritarian leader and high-end audiophile who is seeking to intimidate other high-end authoritarians—and to do so with style and dignity—these are the amps for you, *and they match the Xs preamp*!

At the same time, as Nelson Pass makes it clear in the Pass literature on the Xs 300s, they are not an exercise in size for size's sake or in specmanship. He stresses the harmonic structure of the Xs 300's transfer curve and its ability to reproduce the quality and integrity of live music. He also responded to my request for background on how the changes in design affected sound quality by stating that "we had been working on the Xs amplifier design for several years, and the big hardware aspect of it was nicely covered, but the progress stalled when we found that a simply bigger version of what we had been doing wasn't enough of a breakthrough in sound. Then a couple of years ago my batch of custom SIT transistors arrived, and we started to listen to the first prototypes of little 10 watt amplifiers using them. The transistors had a unique character, and while the SIT amplifier was not at all adequate to our needs, it still showed us what we were looking for. I remember remarking that 'whatever the hell that has, we need to find a way to bottle it!'

"I began a comprehensive *objective* analysis of the SIT amp and began applying some new approaches to elicit some of those same qualities from the existing Xs amp circuit. Initially we used the SIT amps as a benchmark, but quickly began expanding the performance envelope for much greater power and control and much less distortion. While we retained most of the signature in the subtle relationships between the lower-order harmonics, it was not quite the same—it was better.

"While every part of the amplifier is important, playing with developmental tube and SIT designs showed that it is the character of the power output stage itself is most influential in shaping the sound of the amplifier. This is not a radically new idea—the output stage does the most work, generally has the most distortion, and is the interface to the complex variable and reactive load which is a loudspeaker. In the end, we found that adjusting the values for push-pull Class A biasing, and also the amount of single-ended bias in the output stage, gave us a major improvement. There are also two new and proprietary circuit techniques, one having to do with a form of local feedback around the middle stage (stage 2 of the 3), and the other fundamentally altering the use of the constant current sources that are used to contribute to the bias of Class A push-pull output stage and mold its sonic footprint."

EQUIPMENT REVIEW - Pass Xs and Xs 300 Mono

Nelson notes in the instruction book for the Xs 300 that his previous designs for Pass Labs led him to go from the single-ended/push pull Aleph Series, to single-end bias in balanced output stages in the early XA Series, to balanced push-pull/single-ended Class A in the XA.5 Series, to finally making massive increases in the output stages of the Xs with a 10-fold increase in the bias current provided by constant current sources. This expanded the single-ended power range by a factor of 100, and brought the Xs Series to something far closer to pure single-ended Class A. The output stages eliminate even trim capacitors, have a 100kHz open-loop bandwidth with only limited feedback, and the circuit is DC-coupled.

He also notes that the Xs Series of power amps makes improvements in the drive stages and devices—using Toshiba MOSFETs and new forms of local feedback. Input impedance has been raised to 200k ohms in the balanced input, with minimal capacitance. Virtually any preamp will drive the Xs, and sensitivity to input cables is minimal.

Like the Xs preamp, the end result is a pair of amps I'd love to be able to afford and own—perhaps Pass will let me use one of my children as a hostage and loan me a pair. The Xs 300s are superbly musical with any kind of solo voice and instruments, depending on the recording. That added level of detail and dynamic realism is less forgiving of recording and front-end limits than the XA-160.5s—particularly any that are slightly bright or have an upper-midrange edge.

Going back to its ability to deliver immense levels of power and energy at real-world listening levels, the Xs 300 has enough power in the bass to drive my listening room—hell, my whole house—to vibration on those few recordings that really get down to the deepest bass. It can easily handle the electronic room compensation of my Wilson Alexias down below 25Hz (get out your copies of Rutter's *Requiem*, the Fennell and Dallas Wind symphony recording of *Pomp and Pipes*, or the Jean Guillou organ recording of Moussorgsky's *Pictures at an Exhibition*). Control, detail, and apparent speed are all improved for the lower bass into the bottom edge of the midrange.

It is the overall realism of the music in the lower to upper midrange, however, that is the area of clearest improvement. In a head-to-head comparison with the Pass XA-160.5s, and the excellent AVM SA8 power amp, the Xs 300s did as much as any amplifier I have yet heard to get the most musical detail and realism out of the full range of my recordings. Low-level musical and soundstage detail were particularly impressive. So was the purity of really good recordings of solo violin and piano, as well as soprano voice.

I was also struck by the fact the Xs 300s made two other improvements over the XA-160.5 and other Pass amps I've auditioned, which I had heard to a lesser degree in comparing the Xs preamp to the XP-30. The soundstage is not only more detailed, but also more open and wide, and apparent depth is more realistic when the recording permits. The mid- and upper-bass are also more detailed and lifelike, again when the recording permits.

The Xs 300 is the first Class A amplifier I have heard that does not even slightly soften upper-midrange and upper-octave dynamics. The end result is musically realistic and involving at every level. No aspect of music or sound quality stands out from another because none has to. This is an almost perfectly balanced set of incremental but very real improvements over the other amplifiers I've auditioned in my system, and it is an overall level of improvement my audiophile friends heard and commented upon without any prompting from me.

As a result, there is a natural synergy between the Xs preamp and the Xs 300 mono amplifiers. To go back to my earlier comments about the way manufacturers voice their electronics, the two are complementary in their improvements, and the sheer neutrality of their voicing ensures that improvements in the sound quality of one does not mask those in the other.

Summing Up

I should stress that the margin of superiority that the Xs preamp and Xs 300 amplifiers had over my reference XP-30 and XA-160.5 was limited, and was dependent on the quality of the recording, my front end, speakers, and cables. But hell, I'm an audiophile and that margin of superiority is really hard to resist. There are reasons why Nelson Pass warns in the manual for the Xs preamp that "I can only say that if you are on a restricted budget, you might be wise to avoid borrowing one of these." That same warning applies to the Xs 300s, and even more to listening to both.

But, I'd temper Nelson's warning just a bit. I've heard a lot of truly superb systems and gear over the years that were well beyond my budget. I've never regretted such experiences, for they have always taught me something about setup, sound, and music, and even when I've had to return gear on loan I've gone back to my reference system able to understand it and enjoy it more than before.

As has been the case with every bit of really good gear I've listened to—regardless of whether I could afford it—I have truly enjoyed my time with the Xs preamp and amplifiers, and done so without regret. Moreover, I know from personal experience you can get truly outstanding performance out of far less expensive Pass Labs preamps and amplifiers. I never come away without learning enough to make slight improvements in the way I place my speakers and listening position, in choosing interconnects and cartridges, in how I set up my tonearm and turntable, and in selecting front-end components. Oddly enough, I also find myself rethinking my ratings of the sound quality of both my older LPs and high-resolution recordings and downloads. Being an audiophile does not have to be a passive sport. Every time you learn from listening to other components, you can act on those lessons.

Finally, if you do ignore Nelson's warning and somehow become addicted to the Xs preamp, the Xs 300, or both—and if find you desperately need a solution that goes beyond intelligent restraint—I have one that works every time: Just win the lottery. You deserve an Xs preamp and a pair of Xs 300s! tas

EQUIPMENT REVIEWS

Phonostages

PS Audio NuWave Phono Converter

A New Breed of Phonostage

Anthony H. Cordesman

PS Audio's NuWave Phono Converter combines a phono preamplifier and an analog DSD/PCM converter that can be used for a record player, a tape recorder, an FM tuner, or any other high-level input. It features an advanced all-analog phonostage and an equally advanced A/D converter, both of which have discrete circuit sections. The NuWave isolates and separates the analog and digital paths within the device—making it the first product where you can clearly compare the sound of a true high-end analog phono preamp with that of a state-of-the-art A/D converter that can drive virtually any modern DAC.

For those who don't yet need the integral A/D converter, the NuWave functions just as any other phonostage would. It will amplify cartridge outputs with a pure-analog signal path based on a differential low-noise input stage coupled through passive RIAA equalizer to a discrete Class A FET output stage. It has an extraordinary range of gain which can accommodate cartridges from moving coils with as low as 0.2mV output up to moving magnets with up to 220mV output, and can do this with virtually no noise or hum.

At the same time, the NuWave utilizes a high-performance Burr Brown PCM4222 A/D converter that PS Audio states has exceptional dynamic range and low noise. It allows the user to choose between linear PCM or DSD at the NuWave's digital-output jacks. For PCM, the A/D chip can provide up to 24-bit/192kHz resolution, while the DSD option offers both standard DSD (2.8224Mbs) or double DSD. This means that you can digitize and store your LP collection at up to 192kHz/24-bit PCM, or standard or double-speed DSD. The PCM output is available at the USB, SPDIF coaxial, and I2S outputs. The DSD stream is output exclusively on an I2S bus via an HDMI port.

The A/D chip's clock is processed by PS Audio's Digital Lens reclocking circuit to reduce jitter. It's worth noting that jitter in the A/D's clock is just as sonically pernicious as jitter in the D/A's clock. The difference, however, is that jitter introduced in the A/D stage is permanently embedded in the signal and cannot be removed later. There is a separate high-level analog input for digitizing line-level sources such as from an FM tuner.

You can find a full technical description on the PS Audio Web site. There, you can also find a copy of the instruction handbook—which is far more intimidating at first glance than it is in practice. What counts, if you choose to reject all the techno-babble, is that you can not only use the PS Audio NuWave Phono Converter to play straight into any DAC with DSD or PCM and take advantage of its linestage preamp capabilities, but also create your own digital library from vinyl, tape, radio broadcasts and live events, or even studio work. This does allow for the potential horror of someone recording high-res digital karaoke or Guitar Hero—ironic as that may be—but in every meaningful respect it provides a mix of features I suspect every audiophile will eventually need.

EQUIPMENT REVIEW - PS Audio NuWave Phono Converter

Performance as an Analog Phono Preamp

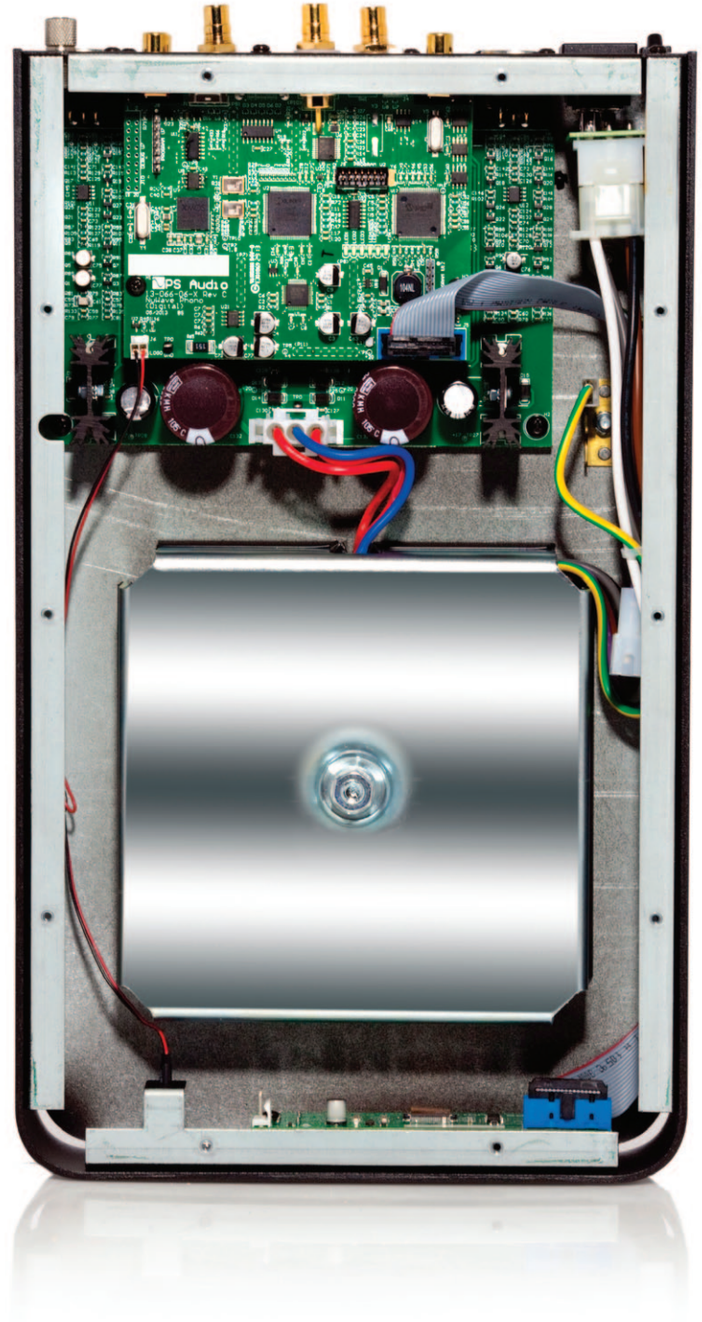
Let me begin with the core aspect of the PS Audio NuWave Phono Converter's performance. First, it is a truly excellent analog phono preamp. While it has many other features, this will be the most important single aspect for most owners. It also means you can have some of the best analog sound available right now and wait for the day you will need its digital features, or continue with analog while you convert your LP collection for digital storage. With all of the additional features of the PS Audio NuWave, there are none of the trade-offs typically required when choosing between a purely conventional phono preamp and an A/D converter, especially at its price of $1895.

Not only does the NuWave have exceptional gain with exceptional silence, its gain can easily be adjusted to allow for different cartridge loadings while playing a record. It produced excellent results with my lowest-output moving coils, high-output moving magnets, and moving irons. My only quibble would be providing some additional higher impedances like 3k, 5k, and 1k ohms for what is admittedly a handful of moving-iron designs—more a reflection of my love of trying different loads with Soundsmith and Grado cartridges than a real-world audiophile need.

Optimizing the gain and loading are critical with a phono preamp. So is consistency, regardless of gain and load, and here the PS Audio NuWave Phono Converter is exceptional compared to many competing products. Far too often, a phono preamp has "sweet spots" in noise, in gain versus sound quality, and in accurately reproducing the dynamics of music.

As for actual musical performance, I have no idea how PS Audio's voicing tests for this unit were conducted, but someone clearly went well beyond his favorite cartridge and really worried about providing a truly musical interface with a wide range of cartridges and preamps. A few much higher-priced all-analog phono preamps sound better to my ear, but they tend to be at the cutting-edge level, like the Pass Labs XP-25—a unit that sells for $10,600, some five times the cost of the PS Audio.

In short, this is an intensely musical phono preamp. I've had some quibbles about the sound of some PS Audio equipment in the past; its previous preamps and phono preamps seemed to tilt a bit towards the highs, making the midrange just a bit bright and hard. The PS Audio NuWave provides all of the upper midrange and treble energy anyone could desire, but like the rest of the PS Audio equipment I've auditioned in recent years, it now provides that life and detail without any hardness, leanness, or unrealistic brightness.



I lean towards a slightly warmer sound, but this reflects my preferences as a mid-hall listener. Even so, I had no problem enjoying the upper-octave sound from my most demanding reference records—including harpsichord, transverse flute, older violins, modern clarinets, and all of the other torture tests of upper midrange and treble sound quality. If you are lucky enough to have a collection with some of the Accent classical recordings or other smaller European labels that made truly great classical chamber music recordings—ones that did as little as possible to compress the sound or limit the true near-field energy of older instruments—you'll know how demanding such music can be. However, you can use any other LP in your collection that exposes the most demanding aspects of the upper midrange, and you'll find that a properly loaded cartridge will perform at its musical best.

Fortunately, the lower midrange and bass are equally good; if anything, the NuWave either has just a touch of excess deep-bass energy, or does a better job of retrieving such musical information than most of the competition. The deep bass seems to be an area where no two top designers ever seem to voice their units or deal with the RIAA curve in exactly the same way (the NuWave uses passive RIAA equalization). The key point is that if the NuWave errs at all, it errs in the direction of musicality, even in a system that measures relatively flat down to 25Hz in my listening room. There is musically realistic life and detail—from the lowest passages to the loudest—without any of the dulling that all too often occurs at really low musical levels in phono preamps and without any problems at peak levels. This is as true of the most demanding fortes in full symphonic music, jazz orchestras, and opera as it is of solo voice, piano, guitar, and violin. Part of this

Paul McGowan on Archiving Your Vinyl

Many of us have large vinyl record collections that are part of our personal treasure trove. These essentially one-of-a-kind libraries are nearly impossible to replicate because each vinyl LP is unique—no two copies sound identical. I personally have multiple copies of some discs because they might have been mastered differently, were from a different pressing plant, or different vinyl weights, while still others just sound special for unknown reasons. In years past, we would look for copies of LPs from the beginning of a stamper run, not those near the end of life of the metal masters that make LPs. But alas, that information is hard to find. Bottom line, these one-of-a-kind libraries are fragile, change slightly after every play, and benefit from being archived. But there are reasons that you might want to copy your LPs to a hard drive other than those interesting to the archivist.

Playing a near perfect copy of your favorite vinyl by selecting it from your iPad and listening through the DAC is an experience that's hard to beat once you try it. In fact, my records generally sound better played through my DAC than straight ahead from my turntable because of the care I take when I record them. I take the time to carefully wash each side, prepare the stylus with my little nail polish bottle of needle-*schmutz* remover, and take my time prepping for the recording. When I play an LP for pleasure, I often grab and go.

But archiving your discs isn't an exercise that happens quickly. Unlike ripping a CD to your hard drive—a process that can take mere minutes to memorialize an entire 70-minute disc—the LP-ripping process is a real time affair. The good news is you get to put the album on, and enjoy it from end to end while you're doing something else. The bad news is a 70-minute LP takes 70 minutes to capture, plus prep time. This is a labor of love, one worth the effort, but you should recognize it takes time.

It also takes hardware and software. What comes out of your phono preamplifier is analog and ready to listen to through the sound system. To get it into your computer, you'll need an analog-to-digital converter (A/D converter). The hardware converter can be in the form of a sound card in your computer or preferably an external device such as our NuWave Phono Converter. Once the hardware has processed the turntable output into a digital audio form, you need software to organize the data and place it on the hard drive.

In my experience, the requirements for software include ease of use, the ability to handle all the formats available through the A/D converter, and bit-perfect presentation to the hard drive. For those of you using the NuWave Phono Converter, or any A/D converter that also offers the possibility of DSD, the only product I am aware of that meets all three of my criteria is a product out of the UK called Vinyl Studio (alpinesoft.co.uk). Available for a mere $29 via on-line download, Vinyl Studio is easy to use, works with both Mac and Windows, handles both high-resolution PCM and DSD, and is bit perfect into your hard drive.

Many software programs, including both Vinyl Studio and Pure Vinyl, offer the possibility of implementing the RIAA curve through software, a practice I am not happy with for several reasons. Primary to my thinking is that playback of an LP is a combination of mechanical and electrical processes that combine to produce a "sound" from your LPs. There's no right or wrong, there's only what works for you. Phono cartridges, for example, are all over the map. These mechanical devices all sound different. And then there's the turntable, the cabling, the phono stage, the RIAA curve implementation in the hardware, and so on. As a system, LPs sound the way they do because of all the elements within the system hardware chain. Changing that chain to a software-based approach adds yet another variable to the mix, one I would prefer to not have. My recommendation is to use exceptional performance may be the superb signal-to-noise ratio, which makes the NuWave sound significantly quieter than the specified 72dB for moving-coil cartridges—at least compared to similar specifications in other phono preamps (try finding a real-world room silent enough to really listen at levels where the ambient sound allows you to clearly hear the full impact of such S/N ratios).

The soundstage is also very detailed and is as natural as given recordings, cartridges, tonearms, and setup permit. One of the strengths of the NuWave is that it clearly presents the sonic and musical impact of small changes in tracking weight, VTA, azimuth, and channel separation. The cartridge and set-up quality will generally be the key limiting factors in imaging and soundstage size with a really good phono preamp—analog has its limits as well as its joys—and this was fully apparent with the NuWave.

It does an equally good job of reflecting the more subtle nuances in the sonic characteristics of given cartridges—an issue I'll come back to later. My VPI tonearm allows almost instant cartridge swaps and makes it very easy to hear the differences between cartridges without using two tonearms. Once again, it takes a truly excellent phono preamp that costs substantially more than the NuWave to challenge its ability to clearly reproduce the subtler sonic differences among cartridges.

The World Beyond Analog

At this point I had better start focusing on why it is called a Phono Converter rather than simply a phono preamp. Let me remind you that it converts analog phono sources into digital and has a separate high-level analog input that can provide a digital output from analog tape recorders and FM tuners. In short, if you have a DAC that is a full digital preamp, or you want to stream your analog music for any reason, the NuWave is one of the first truly high-end products that can do this and provide a conversion in both high-resolution DSD or PCM.

EQUIPMENT REVIEW - PS Audio NuWave Phono Converter

I was able to use the NuWave with PS Audio's Perfect Wave DAC and the far-more-expensive EMM Labs XDS1 DAC, as well as do some short listening with several of my friends' DACs in their systems. In each case, the sound of the digital output from the NuWave was virtually the mirror image of the sound from the analog phono circuit—allowing for the colorations introduced by each DAC. In the case of the Perfect Wave DAC, the sound through my analog reference system was remarkably close to the pure analog path, and I could make use of the Perfect Wave's volume and balance controls, along with its wide range of digital inputs, to successfully eliminate the need for an analog preamp and get truly great sound.

In short, if you want to know about the nuances of the NuWave's sound quality, just read my earlier comments about the analog sound. Its digital output preserves all of the sonic nuances in its analog output including the character of the cartridge and front end, and the end result—at the recommended recording rate of 24-bit/96kHz—gives you something so close to the sound of playing a record through the system used to make the recording that you get all of the (guilty?) pleasures of analog.

Certainly, there is no loss of life or dynamics, nor a constant touch of digital edge. It affords the ability to hear all the different sonic nuances that come out of various cartridges, or even pressings of the same recording. And if you doubt this, just try comparing the sound of the analog output to the sound of the PS Audio NuWave Phono Converter's digital output through a really good DAC. This is a result I never expected. My experience to-date with anything approaching consumer level A/D has often been very good, but never this close to being inaudible. If there is any coloration, it is at a token level and masked by all of the other coloration in an analog front end.

I should note, however, that these comments are based largely on the Phono Converter's PCM outputs. The one DAC I could use with DSD input capability produced excellent sound, but I'm not really familiar enough with that DAC's DSD performance to make detailed judgments or enter the raging high-end debate over PCM versus DSD. About all I can say is that PS Audio is a great fan of DSD, and it is highly unlikely that the DSD output lags behind the PCM with regards to sound quality.

Creating Digital Copies of Your LPs and Tapes

I did try making digital copies of FM and tapes with the PS Audio NuWave Phono Converter, and it did an excellent job. My main focus, however, was on its ability to make digital copies of LPs. This is also the main focus of the PS Audio instruction manual, which I would strongly suggest you follow to the letter. The process was also complicated enough for me to contact Paul McGowan—head of PS Audio—for a supplement to the manual on finding the right software to create a digital library of LPs, which is provided in the sidebar to this review.

One of Paul's recommendations is an independent product called Vinyl Studio ($29.95; alpinesoft.co.uk), which is a very affordable program that worked as well as anything I've encountered, and whose features keep improving as the software is refined. The end result was again excellent sound quality for every LP that I copied, but I did come away with mixed feelings about the idea of transferring a library of records to digital. This is not a process that is nearly as easy as streaming CDs or downloading digital recordings. You have to bring your computer to your turntable or vice versa; there are some minor computer set-up issues. Unless you use a Mac, you have to make sure your record is properly cleaned and your phono front end is optimally adjusted, and you have to monitor the actual playback of the record.

This is fine for the pearls of your record collection, but work your way through several hundred or thousand LPs and do so knowing that cartridges, tonearms, and turntables constantly evolve? Well, audiophiles are crazy—I know because I am one—but, that crazy?

And yet, the answer eventually might be yes. The rationale for such a library is not just to ensure against damages to your records or having a digital copy in your library for streaming; rather, one of the great strengths of analog for seasoned audiophiles is that they almost certainly have gradually acquired a front end that has the colorations they love.

Let's face it, LPs have serious technical limits, one of which is an often musically satisfying level of compression, and most LP recordings were mastered with considerable equalization. No cartridge can be neutral and no audiophile I know of buys a cartridge for its technical performance.

Tonearm settings are critical, and as CBS Labs found years ago there is no right setting for VTA—there is no null; you have to trade increases in one form of distortion for another. Turntables, levels, and cables all make a difference—as does the way you clean your record and stylus. And yet, the end result can still be a triumph of aesthetics over technology.

Some purists may get upset with the idea of recording colorations. The Absolute Sound has never, however, been the province of Puritans. When TAS was founded, Harry Pearson repeatedly pointed out that the test is how real and moving the music is. In fact, if TAS had a mantra, it would be: "It's the music that matters."

Summing Up

PS Audio's NuWave Phono Converter is truly an innovative product with great sound and value for the money. A real pleasure to review—even if it does suck me into making digital copies of my LPs! tas

SPECS & PRICING

Inputs: Two RCA phono; two RCA line-level
Outputs: RCA or XLR; S/PDIF digital coax; HDMI; USB
Gain: 0.2-220mV, mc/mm
Cartridge loading: 60 ohms (80nF) up to 100k ohms (47pF)
A/D Converter: PCM up to 24-bit/192kHz; DSD 2.8MHz or 5.6MHz (DSD64, DSD128)
Dimensions: 14" x 8.3" x 2.4"
Weight: 14 lbs.
Price: $1895

PS AUDIO
4826 Sterling Drive
Boulder, Colorado 80301
(720) 406-8946
psaudio.com

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Parasound JC 3+

Déjà-Vu and Then Some

Neil Gader

First, hats off to Parasound for not bowing to convention and badging its new, hot-rodded version of the original JC 3 phonostage with the shop-worn cliché "Reference" or "Signature Edition." And second, and more importantly, if you're a current owner of the Parasound JC 3 phonostage, don't panic. It's still a great phonostage, except now it has company—the JC 3+—priced $645 above the original's $2350.

As readers will recall, the original JC 3 clinched a Golden Ear Award not long after I reviewed it in Issue 215. I stated at the time that this full-chassis, dual-mono design featured "a near obsessive attention to isolation," to the extent that each channel was housed in its own extruded aluminum enclosure within the chassis, and further isolated from the power supply with 3/8"-thick, low-carbon mild-steel partitions. It remains, in my view one of the most worthy phonostages on the market. But audiophiles are a finicky bunch and the JC 3's lack of variable loading stuck in the craw of some. Taking notice, Parasound tasked phono wizard John Curl to work his magic once again. Curl's wand-waving not only resulted in loading adjustments but a chassis full of other improvements as well.

The story goes that during the design phase of the original JC 3, Curl had rejected variable-load adjustment due to the added noise intrinsic in potentiometers. As a result the JC 3 was built with limited, switched-input load-impedance choices. In a short interview accompanying my original JC 3 review Curl's remarks turned out to be prescient: "Actually I think I underestimated the market. Most phono cartridges don't require a whole lot of big extremes and I thought on this particular point people wouldn't be using the most exotic cartridges, so I kept them to a minimum with 100 ohms and 47k for the moving coil and 47k for the moving magnet...We might even consider adding more loading if people complain enough."

Evidently the market did indeed pipe up. But Curl and circuit-board designer Carl Thompson needed to be convinced they could get the required performance to make the change worth pursuing. They turned to Vishay, a top manufacturer of low-noise parts, which ultimately agreed to develop a potentiometer and manufacture it in small quantities for Parasound. The JC 3+ now features independent, variable-load fine-adjustment capability for moving coils in each channel, ranging from 50–550 ohms using Vishay's special low-noise dual-gang potentiometers.

As it turned out there are lot more positives to the JC 3+ than variable loading. Curl and Thompson tweaked the phono-module boards to further optimize every performance parameter. The copper circuit-board traces in the phono modules are now plated with 24-karat-gold at the junction where each part is soldered. Turning to numbers the moving coil signal-to-noise ratio is improved from 75dB to 87dB, A-weighted. Moving-magnet gain has been increased slightly from 47dB to 48dB, but mc gain has actually been reduced from 68dB to 64dB so that very-high-output mc cartridges won't cause the JC 3+ to overload the inputs of some linestage preamps. The JC 3+ power supply has also been significantly upgraded with 47% larger, low-ESD power-supply filter capacitors for greater current reserves. Finally the new R-core power transformer is 82% larger to provide better bass performance. One ergonomic nitpick: The inputs and pots are deeply inset on the back panel so that only the smallest fingers need apply when trying to reach the spring-loaded release buttons of a typical pair of balanced XLR interconnects.

I had an opportunity to listen to these phonostages side by side, and I'm glad I did. Fortunately the essential character and balance of the standard JC 3 remains intact in the "+" version—the air, the impression of warmth and bloom, the fully realized timbres, and the three-dimensional continuity of the soundscape. Backgrounds are still eerily quiet, instrumental colors ripe, and channel separation exquisite. But then there's just a little something more. Curl's application of choice go-fast bits-and-tweaks adds up to speed and resolution improvements of consequence. As I followed the backing accordion during "I'll Be Seeing You" from Ricki

Lee Jones' Pop Pop [ORG], the "+" kicked low-level transparency up a notch with a heightened resolution of dynamic gradients—micro and macro—and cleaner transient behavior.

Critically there's a subtle reduction of haze and veiling on top, which further sweetened Joni Mitchell's folksy soprano during "A Case of You" from Blue [A&M]. The lack of electronic noise and hash revealed a fuller expression of the inner dynamics of her voice, drawing more attention to the flutter of her vibrato as she sustained the lyric "And still be on my feet." Les Brown Goes Direct to Disc [Century] is a clinic for big band dynamics and a challenge for any phonostage. I'm particularly fond of the tracks "Satin Doll" and "Fly Me To The Moon" with their sparkling and colorful clarinet and trumpet solos. On a macro level there was more jump and pace to the performance through the JC 3+. The trumpet solo was cleaner, alive with snappier transients and clearer decays. More dimensional cues were revealed as well. Especially noteworthy was the piano placement. Where it once resided closer to the right edge of the stage, with the JC 3+ it slipped into a comfortable pocket within the band. This goes along with my general observation that this version's improved dimensionality is likely due to its higher resolution of micro-dynamic nuances.

Further validation of the JC 3+'s broader dynamic contrasts came during the "Winter" movement of Vivaldi's The Four Seasons [Argo]. Overall there was greater resolution of inner detail. The solo violin was sweeter—warmer and simultaneously a little quicker off the mark—and the full weight and micro-dynamic expression of the string section were more keenly expressed. As the melody ascended there was also the slightest reduction of the upper-frequency glare that would sometimes slip into the picture with the JC 3. In addition the "+" reproduced more of the textural gradients of the harpsichord, while also further revealing the ambience encircling the keyboard. The JC 3+ created a soundstage that simply flowed more smoothly from corner to corner.

Original or new and improved? There are no wrong answers. But choosing one or the other comes down to two issues. For those with stable analog rigs who assiduously avoid the cartridge-of-the-week hunt—the obvious choice is to stick to the Parasound original. But then there are those unrepentant analog junkies prone to swapping exotic cartridges, and seeking resolution's final word. For you (and you know who you are) an extra six hundred bucks is a small price to pay to put a little extra "+" into your records. tas

SPECS & PRICING

Input impedance: Moving magnet, 47k ohms; moving coil, 47k ohms fixed, 50–550 ohms, variable
Gain: Moving magnet, 48dB; moving coil, 64dB
Dimensions: 17.25" x 4.12" x 13.75"
Weight: 19 lbs.
Price: $2995

PARASOUND PRODUCTS, INC
2250 McKinnon Avenue
San Francisco, CA 94124
(415) 397-7100
parasound.com

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PREVIOUS PAGE

NEXT PAGE

Musical Surroundings Nova II

Superduper

Paul Seydor

In one iteration or another, the Musical Surroundings phono preamplifiers designed by Mike Yee have been my references since I reviewed the original Phonomena in 2002 (TAS 134). The design has undergone two upgrades since then. The first, called the Nova Phonomena (TAS 172), incorporated the original's optional outboard battery supply in the main chassis, and now here is the second, called simply the Nova II. Despite the changes, which I'll detail anon, all three models exhibit the same basic sonic personality, which, quoting my original review, I characterized as "Apollonian, all classical grace, poise, and restraint, with a neutrality and freedom from coloration that I have no hesitation in calling state of the art." I've read some reviewers who fault the earlier versions for being too neutral—a criticism I've always found odd when made of something the purpose of which is to reproduce something else—and others who crave more in the way of kick, slam, liveliness, what have you. Fair enough, perhaps, but what places Yee's designs ahead of most of the pack is that very neutrality, which translates into a more accurate replica of what is actually being fed it, including the sonic personality of the phono pickup. As Yee has brought out successive versions, however, there have been subtle improvements in both dynamics and that elusive sense of lifelikeness, without compromising the original's neutrality.

EQUIPMENT REVIEW - Musical Surroundings Nova II

Once the Nova II was plugged in and cooked (a few hours does the trick) and the batteries fully charged, I got down to serious listening with the recent Gould/Bernstein Beethoven Fourth as reissued by Impex. It opens with the soloist playing the limpid first theme, his piano set slightly back in the center, the impression of a holographic image so persuasive that Peter Walker's metaphor of a window on the concert hall became eerily real, an impression only deepened with the entrance of the orchestra surrounding the piano. Better still was the lightness, ease, and delicacy of Gould's touch and the severe beauty of his tone—best of all the involvement and vitality of the listening experience. Panorama and detail are ideally resolved, with Gould's famous singing and humming along just evident enough without being emphasized (the way some overly detailed components can).

Being in an orchestral mood, I followed this with Original Recording Group's new reissue of The Planets in the Mehta/Los Angeles Philharmonic recording. I've always found this a checkered recording, with the sound varying from cut to cut and all sorts of shenanigans with levels, balances, and miking, and not very much depth. "Mars" sounds hard, for example, but "Jupiter" quite wonderful, with strings smoother and more beautiful. Overall, however, this recording's dynamic range is impressive, which is one reason I played it: I wanted to see if there were any further improvements in the Nova II—and there were. Nor did I have to listen very long to Stokowski's sensational Rhapsodies [RCA] to discover even more. This recording never ceases to thrill me both as performance and as sonics. The combination of weight, warmth, definition, and sheer power in the bass the Nova II rendered as about as spectacularly as any phonostage I've used and better than most because free from any editorializing, while the range from soft to really loud was equally impressive. One reason for this is the Nova II's quietness. Even in AC mode it's quieter than most phonostages I've heard, but in battery mode it's close to dead quiet even at pretty healthy levels.

I concentrated on music with a lot of dynamic range and weight because I wanted especially to hear the new version's performance in these areas. The dynamic opening of Graceland [Sony] made me snap to attention, while the clarification of textures really brought a smile to my face. And if it's toe-tapping rhythmic panache you're after, this unit will give it to you (and without that "clipped" impression you get with some components that tend to etch each beat, i.e., those...that...sound...like...this). Reference Recordings' new album by the blues singer and guitarist Doug MacLeod, made at the famous studio at Skywalker Ranch (the site of so many fine Harmonia Mundi USA recordings), is wonderfully transparent on MacLeod's powerfully expressive voice, at once warm yet raspy and palpably present, with a strong low end in the doublebass and the kick drum. Sometimes Keith Johnson's recordings can be too spacious, but not here, where focus is never blurred at the expense of atmosphere. A very different kind of singing is to be heard on Sing We Noel [Arkiv Music], a longstanding favorite of mine by Joel Cohen and the Boston Camerata. The program is early British and American Christmas music performed by small chorus, soloists, periodinstruments, and the like. The recording, made in a reverberant church, captures the voices with rare beauty: rounded, dimensional, and very vivid. It also makes full expressive and dramatic use of the venue—the final number has the whole ensemble singing the "Gloucestershire Wassail" as they recede. A really good setup will allow you to hear a greater portion of reverberant to direct sound as the group moves farther back (and also more bounce off the rear wall), which is certainly true of the Nova II and Ortofon Windfeld/Basis 2200/Vector combination.

The last thing I played before wrapping up this review was the classic first Bernstein recording of The Rite of Spring [Columbia], recently newly remastered and reissued on vinyl—just the sort of material previous Novas and Phonomenas were supposed to come a cropper on. Not this time. The recording is close-up, explosive, and cataclysmic, and was reproduced accordingly. Wow!

The new Nova II shares with its past brethren all-discrete, dual-mono circuitry and peerless flexibility when it comes to loading and gain options. Like them, the Nova II's are accessible via DIP switches on the rear panel. A pair of internal NiMH battery packs, one for each phase, supplies the power in full-battery mode. Yee employs a novel "smart-sensing" circuit that automatically causes the unit to go into recharge mode when the batteries lose their charge (without interrupting playback). A charge is good for about three hours of listening, and when full-battery operation is selected, a relay completely disconnects the unit from the AC line (though the wallwart power supply must always be plugged in).

But it is the new aspects of the design that contribute the most, I believe, to its improved performance with respect to dynamic range and lifelikeness. First, the original design's matched pair of transistors went out of production, so Yee had to find a replacement and what he found yields lower noise and, on the basis of what I'm hearing, increased control. (Yee tells me that the new "matched pairs alone are more expensive than the integrated op-amps that most companies use for phonostages.") He has also changed the RF filtering, which reduces the noise floor by some 6dB, which in turn by definition results in increased dynamic range. One of my notes reads that in battery mode especially "this thing is really, really, really quiet!" Finally, the chassis and mechanical design are new and to entirely beneficial effect. Good as the Nova Phonomena was and is, it always looked to me as if it had been manufactured in a garage, with a large Cyclops-like indicator light—the designer himself called it a "flashing eyeball"—that struck me as positively ugly. Based on Yee's MYDAC II

SPECS & PRICING

Gain: 40–60dB in 13 steps
Input loading: 200pF/300pF, 30 ohms to 100k ohms in 17 steps
Dimensions: 9 7/8" x 9 7/8" x 2.5"
Weight: 5 lbs.
Warranty: 3 years
Price: $1200

MUSICAL SURROUNDINGS, INC.
5662 Shattuck Ave.
Oakland, CA 94609
(510) 420-0379
musicalsurroundings.com

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EQUIPMENT REVIEW - Musical Surroundings Nova II

DAC and available in black or silver, the Nova II's chassis is now svelte, sleek, and elegant. The front panel has a single button that allows you to choose among battery, charging, or AC modes. Another benefit of the new casework is improved mechanical isolation, which extends even to the mounting of the circuit board inside the chassis. Yee also tells me it's easier to build, which may help account for why the price increase is so small: at $1200 the new unit costs just $201 more than its predecessor—fair to the point of giveaway—and it's still built entirely in California.

Indulge me a few moments about the loading and gain options here, which remain unprecedented for number and scope in any phono preamp known to me regardless of cost. I know I tend to go on about the importance of loading mc's, but it is necessary for optimum performance, and I am far from alone in believing this. Years ago I once asked Dave Wilson, as perfectionist a man as you can get about all things audio, how he felt about proper loading of mc's. He answered with a question, "Would you drive a car without shocks?" Bullseye. All moving coils have resonances in the extreme highs that left undamped (i.e., unloaded) will ring and usually result in some frequency response anomalies, especially in the highs. Many audiophiles, including more than a few reviewers, actually seem to like this effect because they hear it as increased openness, airiness, transient sharpness, and so on. I have no intention of arguing taste here, and if you like these effects, my response is to live, be well, and enjoy. But they are impositions upon the source and they cannot result in accurate reproduction.

If you happen to purchase the Nova or have a phono preamp that has provision for loading, I'd suggest giving it a try. I believe you'll discover that over the long haul, you'll prefer the focus, precision, and accuracy of correct loading, especially with its gains in musical naturalness. Mind you, proper loading will not make a pickup that lacks flat response into one that has it. All correct loading will do, apart from suppressing the high-frequency resonance, is allow the frequency response of the pickup to be as flat as the design itself permits. If that isn't flat, then you won't hear flat; if it is, you will. The Nova II provides loading for 17 values from 30 to 100k ohms and 13 gain settings from 40 to 60dB. There is also a switch to select a capacitive loading of 200 or 300pF to accommodate moving-magnet pickups that are sensitive in this regard. (Typically capacitive loading has little effect as such on moving coils.) The combination of all this flexibility plus truly high performance adds up to why I continue to use Yee's designs as my reference: In addition to their musical pleasure, they are invaluable tools for reviewing pickups of all kinds.

To sum up, the Nova II retains all its forebears' virtues of neutrality and low coloration, with considerably improved dynamic range, robustness, and perceived life and vitality: in other words, this new Nova now has a satisfying infusion of Dionysus in its otherwise Apollonian personality. Although Yee's designs are always very quiet and extremely transparent, this latest one is exceptionally so, ranking up there with some of the most expensive phonostages I've ever heard. Where does it stand in the marketplace? Limiting myself to recent high-performance designs I've reviewed, it doesn't have quite the sheer grip or bottom-end crunch of Plinius' Koru, which costs three times as much, doesn't offer nearly the flexibility, and is trumped by the Nova's neutrality. Nor does the Nova have quite the warmth, body, and ultimate "organic" quality of Zesto Audio's Andros, but the Andros costs well over three times as much, isn't as quiet or neutral, and again has less flexibility for loading and gain (though the Andros is certainly adequate in these respects for the pickups I tend to prefer, such as Ortofon, Dynavector, and a couple of Benz and Clearaudio models). But when I switch from the Andros to this new Nova, I listen with as much involvement and equal, if different enjoyment. So just in case I've not made myself clear: The already superb performance of the Nova II's predecessor has been made even better in the new model, which means that a super value is now a superduper one. I cannot recommend it enthusiastically enough. tas

EQUIPMENT REVIEWS

Preamps

NuForce MCP-18 Multichannel Analog Preamplifier

Transparency at a Budget Price

Steven Stone

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

Technology and Ergonomics

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

Although the MCP-18 supports 7.1 channels, the main right and left front channels have a slightly different signal path than the rear, side, center, and subwoofer channels. According to NuForce's Casey Ng, "What we wanted to do with the MCP-18 was to have it first and foremost serve as a superb two-channel preamp. We borrowed heavily from our P20 and HAP-100 designs. The front left and right channels use a digitally controlled, discrete-resistor-ladder circuit. This uniquely implemented resistor ladder is in the feedback loop of the high-performance op-amp circuit so as to have minimal impact on the signal chain."

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

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

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

EQUIPMENT REVIEW - NuForce MCP-18

The Setup

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

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

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

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

I have two Parasound P7 ($1995) multichannel analog preamps, one in each of my two room-based systems. The Parasound P7 has very similar functionality to the NuForce MCP-18, but includes a built-in crossover for two-channel sources so that you can go seamlessly from two channels to multichannel, using your subwoofer with both kinds of sources. From an ergonomic perspective, it's unfortunate that NuForce chose not to include a similar crossover scheme in the MCP-18.

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

Sound

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

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

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

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

During my DAC comparisons I discovered that it was very difficult for me to uncover the MCP-18's intrinsic sound. When I changed DAC

SPECS & PRICING

Inputs: Two RCA, one XLR, two 8-channel RCA
Outputs: RCA and XLR (XLR output is balanced)
Connectivity: RS232 Com Port: X 1;Trigger out: X 1
THD+N: 0.0 02% at 1kHz
S/N Ratio: 105dB
Frequency response: 10Hz-100kHz -0.06dB; 20Hz-20kHz -0.04dB
Dimensions: 17" x 3.1" x 13.4"
Power Consumption: 1W standby, 10W operating
Weight: 15 lbs.
Price: $995

NUFORCE INC.
47865 Fremont Blvd
Fremont CA, 94538
(219) 363-1328
NuForce.com

EQUIPMENT REVIEW - NuForce MCP-18

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

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

Conclusion

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

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

Audio by Van Alstine FET Valve CF

Modern Tube Sound at its Best

Dick Olsher

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

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

Possibly this design's major takeaway is that there's still plenty of magic to be found in plain vanilla circuit topology. Series-regulated push-pull (SRPP) and Mu-follower stages have been quite popular in recent years, and each topology has its adherents. Differences in tube operating points and tube types make it difficult to reach a definitive conclusion about which is better, though I would concede that when mated with a plain vanilla power supply the more exotic totem pole circuits have the advantage. However, the sophisticated power supply deployed by AVA makes all the difference. This was the approach used by Audio Research in its highly successful SP3a preamplifier. In fact, Audio Research revolutionized the high-end scene in the 1970s, riding the paradigm of power-supply regulation to market supremacy.

I should mention that a bit of negative global feedback (NFB) is taken from the buffer stage and returned to the cathode of the first gain stage. For those of you who are NFB phobic or wary of cathode-follower stages, I would simply ask you to give the FET Valve a serious audition. You'll be surprised by its dynamic prowess. To be sure, it's a bit unusual to deploy NFB in what is truly a single-ended Class A voltage amplifier. One consequence is a reduced distortion spectrum and hence less euphonic residuals. It's not difficult to imagine that someone in search of aural thrills might actually be attracted to a tube preamp precisely because of a particular euphonic sonic signature. Pervasive tube warmth that blankets the midrange irrespective of the program material falls in this category, and has proven to be a siren call for many tube-o-philes. The FET Valve is far from being a euphonic linestage. It does 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

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

NuForce HAP-100

Multi-tasker

Chris Martens

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

The HAP-100 is a half-rack-width-sized component that features single-ended, Class A, zero-negative-feedback preamplifier/headphone amplifier circuitry, a linear power supply, and a switched-resistor ladder-type volume control with 100 steps in 1dB increments. The NuForce also comes with a handy remote that provides on/off switching, muting, input selection, and volume up/down controls. Unlike some headphone amp/preamps on the market,

the HAP-100 can drive both its headphone and preamp outputs simultaneously, though it gives users the option of disengaging the preamp outputs if they wish. This capsule description of the HAP-100 sounds promising, but the key question is whether the NuForce sounds as good in real life as on paper. I will tackle that question by discussing the HAP-100 first as a headphone amplifier and then as a stereo preamplifier.

HAP-100 as a Headphone Amplifier

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

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

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

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

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

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

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

To better understand the foregoing comments, try listening to the HAP-100 with a variety of headphones on a bellwether track such as "Angel of Darkness" from Hot Tuna's Steady As She Goes [Red House Records]. This enjoyable but non-audiophile-grade recording presents midrange content that is energetic and somewhat prominent to begin with, so that the need for midrange and upper midrange neutrality and for counterbalancing bass weight and body becomes critically important. The HAP-100 displayed its signature sonic virtues on "Angel of Darkness" when driving the Sennheiser HD-800s, but with harder-to-drive 'phones the amp often pushed Jorma Kaukonen's vocals and electric guitar too far forward in the mix, giving them a borderline shrill quality. Similarly, when driving difficult loads, the amp undercut Jack Cassady's normally vigorous-sounding, syncopated bass guitar lines, making them sound thin and insubstantial, thus robbing the song of its low-frequency foundation.

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

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

PREVIOUS PAGE NEXT PAGE

EQUIPMENT REVIEW - NuForce HAP-100

HAP-100 as a Preamplifier

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

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

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

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

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

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

SPECS & PRICING

Inputs: Four stereo analog inputs (RCA)
Outputs: One variable-level stereo analog output (RCA), one 1/4-inch headphone jack
Accessories: Power cord, full-featured remote
Frequency response: 20Hz–20kHz, +0/-0.1dB
Distortion: <0.002% @ 20Hz–20kHz (3V RMS output at RCA jacks)
Signal-to-noise ratio: >100dB
Preamp output: 7.8V RMS, RCA, maximum
Headphone output: 5.2V RMS, Hi-Z, maximum
5.1V RMS @ 300 Ohms
1.81V RMS @ 32 Ohms
0.91V RMS @ 16 Ohms
Weight: Not specified
Dimensions: 8.5" x 1.875" x 10"
Price: $595

NUFORCE, INC.
382 South Abbott Ave.
Milpitas, CA 95035
(408) 890-6840, East; (408) 240-0746, West
nuforce.com

ASSOCIATED EQUIPMENT
Full-Size Headphones: Audeze LCD3; Fischer Audio FA-002W High Edition; HiFiMAN HE-400, HE-500, and HE-6; and Sennheiser HD-800
Custom-Fit In-Ear Monitors: JH Audio JH 16 PROs; Ultimate Ears In-Ear Reference Monitors and Personal Reference Monitors; and Westone Elite Series ES-5 Monitors
Headphone Amps, Amp/Preamps, and Amp/DACs: Audio Electronics by Cary Audio Nighthawk, Burson Audio Soloist, CEntrance DACmini, and HiFiMAN EF-5 and EF-6.
Sources: AudioQuest DragonFly DAC with Mac Mini, CEntrance DACmini with Mac Mini, NuForce-modified Oppo BDP-93SE universal/Blu-ray player, and Oppo Digital BDP-95 universal/Blu-ray player
Preamps: Burson Audio Soloist, NuForce Reference P9
Power Amps: NuForce Reference 9 V3 Special Edition monoblocks
Loudspeakers: PSB Imagine T2
Interconnects/Speaker Cables: Nordost Blue Heaven and Ultralink
Room treatments: RPB Binary Absorber/Diffsorber panels

EQUIPMENT REVIEWS

Headphone Amplifiers

AURALiC Taurus MKII

An Impressive Sonic Achievement

Chris Martens

My first exposure to the Taurus MKII came at the 2013 Munich High-End Show, where the Hong Kong-based high-end audio firm AURALiC used its components to power both a pair of exotic YG Acoustics Sonja 1.2 loudspeakers and multiple sets of Audeze LCD-3 planar-magnetic headphones. In my view, both the YG speakers and the Audeze 'phones sounded exceptionally good with AURALiC equipment behind them, which led me to place the firm near the top of my "must-audition" list, starting with this review of the firm's Taurus MKII balanced-output headphone amplifier/preamplifier ($1899).

Let me begin by supplying some company history. AURALiC was co-founded in 2008 by President and CEO Xuanqian Wang and his business partner Yuan Wang. Xuanqian Wang's background includes formal training as both an electrical and audio recording engineer, plus talents developed over the years as an accomplished pianist. Yuan Wang, in turn, has a background in sociology and management science. The common denominator is that both founders share a deep abiding love of music and a passion for sound quality. Propitiously, the two met at a musical event, the 2008 Festival of Waldbühne Berlin, and decided to launch AURALiC not long thereafter.

What attracted me to AURALiC equipment was its sound quality, first and foremost, though I was also drawn by the components' elegant industrial design and self-evident, German-camera-like build-quality. Sonically and visually, a certain graciousness and refinement set AURALiC components apart. In practice, I have found AURALiC equipment tends to sound highly resolving and detailed, yet consistently keeps its focus on the broader musical whole. There is, too, an element of naturalism at work in AURALiC gear—one which makes the equipment simultaneously easy to listen to, yet also invigorating to hear. As you might imagine, this finely judged mix of sonic virtues perfectly suits the Taurus MKII role as a powerplant meant for use with the finest top-tier headphones presently available.

The Taurus MKII is a fully balanced solid-state headphone amplifier/preamplifier that provides switch-selectable single-ended and balanced analog inputs, preamp outputs, and headphone outputs. At the heart of the Taurus MKII is a critically important, signature AURALiC design element: namely a set of the firm's proprietary ORFEO Class A output modules. According to AURALiC the ORFEO modules use "a mass of small signal components with (the) best (possible) linear characteristics," which are packed in a thermal compound and mounted within shielded containers. The ORFEO modules are said to achieve "impressive performance

PREVIOUS PAGE NEXT PAGE

EQUIPMENT REVIEW - AURALiC Taurus MKII

with open loop distortion less than 0.001%."

Interestingly, Xuanqian Wang says the ORFEO modules were "inspired by (the) Neve 8078 analog console's circuit design," and that they share "the same warm and natural sound (of the) Neve 8078." It is refreshing to find a relatively young designer who appreciates and has been influenced by the brilliant work done by the British recording console designer Rupert Neve (Neve's consoles are prized for their transparency and innate musicality).

Another highlight of the Taurus MKII is its low-noise input buffer, which offers very high input impedance (100k ohms single-ended, or 200k ohms balanced) and yields an exceptionally low 0.8uV of noise. The Taurus MKII offers real-time switching between two output modes: STD mode, which is intended primarily for applications where single-ended outputs are desired, or BAL mode, which is intended specifically and exclusively for balanced output operation. Power output is generous, ranging from 250mW @ 600 ohms (BAL mode) on up to 4500mW @ 120 ohms (STD mode). The Taurus MKII is suitable for use with headphones with rated impedances of 32–600 ohms.

Like all AURALiC components, the Taurus MKII uses several passive noise-suppression technologies to achieve backgrounds as quiet as the proverbial tomb. These technologies include a chassis material called AFN402, described as "an alloy of iron with (a) certain portion of nickel, silicon, and other rare metals," which offers three to ten times greater resistance to EMI at audio frequencies and above than conventional chassis materials do. To further combat EMI and mechanical resonance AURALiC developed a multi-layer, electro-mechanical damping material called Alire, which is applied to the interior surfaces of all AURALiC components. The firm says its Alire Resonance Dampers can "exempt the products from both electromagnetic interference and vibration interference," thus providing the purest input signals possible. In short, AURALiC takes noise control very seriously, with benefits you can readily hear.

For my listening tests I used three superb but admittedly challenging-to-drive top-tier headphones: namely, the Abyss AB-1266, the Audeze LCD-3, and the HiFiMAN HE-6. These revealing planar-magnetic designs are relatively power-hungry, with the HE-6 having the lowest (83dB) sensitivity of the group. Right out of the gate, the Taurus MKII proved it had more than enough output capability to produce a robust, articulate, and authoritative sound with all three of these 'phones. Granted, one must turn up the volume control a good bit in order to achieve satisfying levels with the HiFiMAN 'phones, but that is to be expected.

AURALiC advises that the Taurus MKII needs roughly 100 hours of run-in time before it will sound its best, which turned out to be spot-on. Straight from the box, the amp sounded lively, crisp, and well defined, but also perhaps a bit too "splashy" and tightly wound for its own good. As the hours built up, however, the edgier aspects of the Taurus MKII's sound soon melted away, even as focus, transparency, and bass power and articulation increased dramatically. The end result was an amp whose sound became more transparent and resolving, but also more natural, hearty, and robust-sounding than had at first been the case. One important point to bear in mind is that, in order to deliver this appealing sound, the Taurus MKII needs a good hour of warm-up before it will sound its best (I'm told the reason for this is that the ORFEO modules take a while to come up to temperature and then to reach thermal equilibrium).

With many components, a reviewer's first impulse might be to characterize the product by discussing its overall tonal balance, but frankly the Taurus MKII is so neutral in its presentation (once fully warmed up) that about all one can say is, "It's accurate and uncolored—period." The only comment I might offer with respect to tonal balance is that the AURALiC's bass is exceptionally good in both precise pitch-definition and extension, which means the Taurus MKII offers some of the best bass reproduction you'll hear from any headphone amplifier regardless of price. The bass is so good, in fact, that it's easy to become preoccupied with it, but if you listen more closely you'll soon discover the Taurus MKII offers pretty great sound across the entire audio spectrum.

EQUIPMENT REVIEW - AURALiC Taurus MKII

A piece that nicely shows both the Taurus' evenness of overall tonal balance and remarkable bass prowess is the third movement of Vaughan Williams' Symphony No. 7, "Sinfonia Antartica" [Bakels/Bournemouth, Naxos]. The movement is meant to capture the eerie, forbidding, and frigid majesty of Antarctica by weaving orchestral passages around and through dark brooding pipe organ passages. The various orchestral voices are each given their due, with none taking precedence over the others (except by the composer's design), while the pipe organ presents descending and at times quite powerful phrases that suggest, among other things, the plunging temperatures at hand. As organ pedal notes go lower and lower, the Taurus MKII tracks every step along the way, maintaining beautiful pitch control—even on notes so low that they seem to balance on the line between pitches that are heard and those that are felt in a tactile way. What is more, the Taurus does a beautiful job of capturing low-level textural variations and modulations in volume in those low notes, letting you hear and feel the low-frequency "shudder" of columns of air in the organ pipes. This consistent ability to differentiate and delineate musical lines—and to do so precisely and explicitly—is very much one of the core attributes in the AURALiC's bag of tricks.

What also caught my attention about the Taurus MKII were its dynamic capabilities, which I found eye-opening. Compared to many headphone amplifiers, even some very good ones, the Taurus MKII conveys the impression of substantially expanding or "opening up" the dynamic range of your favorite records (almost as if the MKII has magically removed an imaginary audio compressor from the signal path). As a result, the energy level and expressiveness of many recordings seem to increase, while dynamic shadings become more explicit and intelligible. The benefit, of course, is that listeners enjoy a heightened sense of connection with the performers and with the music itself.

Oddly enough, the AURALiC's superior dynamic capabilities make themselves felt in places you wouldn't necessarily expect—in quiet passages, for example, and not just in large-scale, dynamically bombastic pieces. For instance, it was revelatory to listen to violinist Hilary Hahn's performance of the first movement of the lovely Meyer Violin Concerto [Sony] —a piece that thrives on delicacy and subtlety more than on explosive, Paganini-style violin pyrotechnics. As Hahn plays, the AURALiC deftly renders the sound of her bowing changes (letting you hear just how masterfully they are executed), while also showing how Hahn uses the gentlest of variations in bowing pressure to modulate the intensity of individual notes. In a sense, the dynamics of the Taurus MKII give you a "zoomed in" perspective on the music, allowing you hear exactly where and how great artists are practicing the finer points of their craft.

Finally, I was favorably impressed with the richness and density of musical information the Taurus MKII was able to convey. In areas where other headphone amplifiers offer a rough sketch of certain low-level harmonic or reverberant details, the AURALiC renders them with exquisite precision and clarity. If you are a listener who enjoys savoring every last usable drop of musical information in your favorite records, then I suspect you will find the Taurus MKII both rewarding and enlightening.

To appreciate what I mean, it can be helpful to put on a record known to be rich in musical information, just to see what sonic treasures the TAURUA MKII might bring to light. For me, one such piece was the third movement of Bartók's Music for Strings, Percussion, and Celesta, as captured in the classic Reiner/Chicago Symphony recording [RCA Living Stereo, SACD]. Here, the AURALiC let me hear the complex and angular ways in which Bartók combined the various tone colors and shadings from his chosen orchestral palette. The Taurus MKII vividly reproduced the intersections of incisive plunging or ascending string themes, the round and almost otherworldly tonality of the celesta, and the intense, piquant sound of multiple percussion instruments adding commentary and spice. The Taurus MKII was utterly unflustered by complex, overlapping musical lines, meaning that it captured the fundamentals and harmonics of the individual instruments with the greatest of ease, making each of them sound rich, whole, and complete unto itself. What is more the AURALiC showed how each of the instrumental voices interacted with the acoustics of the recording venue, thus conveying an even greater sense of realism.

If I sound impressed by AURALiC's Taurus MKII, that's because I am. Even so, critical and astute audiophiles will inevitably ask, "Yes, but is it the best you've heard?" Let me answer that question by saying that it is certainly among the best I've heard, with others in that elite group including Cavalli Audio's Liquid Glass and Liquid Gold headphone amplifiers. Significantly, though, the AURALiC is the only one of these three to carry a price tag comfortably below $2000 (whereas the Liquid Glass and Liquid Gold are priced, respectively, between two and three times higher than the AURALiC amp).

Considering the sound and build-quality on offer, I think AURALiC's Taurus MKII not only represents an impressive sonic and technical achievement, but also qualifies (dare I say it?) as a bit of a bargain. Enthusiastically recommended. tas

SPECS & PRICING

Type: Fully balanced, solid state headphone amplifier/preamplifier
Analog Inputs: One stereo single-ended (via RCA jacks), one stereo balanced (via dual 3-pin XLR jacks)
Outputs: Two stereo headphone output jacks (one via 6.35mm TRS-type headphone jack, one via 4-pin XLR headphone jack with AKG K1000-compatible pin-outs), one stereo single-ended preamp output (via RCA jacks), one stereo balanced preamp output (via dual 3-pin XLR jacks, PIN2:HOT)
Frequency response: 20Hz–20kHz +/-0.1dB; 3Hz–300kHz, +/-3dB
THD+N: <0.002%, 20Hz–20kHz at rated output
Dynamic Range: >130dB, 20Hz–20kHz, A-weighted
Dimensions: 2.6" x 11" x 9"
Weight: 8 lbs.
Price: $1899

AURALiC North AMERICA INC.
12208 NE 104th St.,
Vancouver, WA 98682
(360) 326-8879
auralic.com

Auralic Gemini 2000 Headphone Dock

Lifestyle Meets Audiophile

Steven Stone

It used to be so simple—all you needed was a turntable, preamp, power amplifier, some zip cord, and a pair of speakers and you had a stereo system. But then came digital gear and DACs, followed by computers and music files, and finally all manner of category-busting stuff that combines multiple functions and capabilities. The Auralic Gemini 2000 is one of the new generation of components that includes several functions normally handled by separate components. It can serve as a headphone stand, headphone amplifier, multiple-input DAC, smartcard reader, portable phone-charger, and Android phone player, as well as a preamp to drive your power amplifier (although this last function is not part of the "official" features list.)

Auralic, whose products are all the brainchildren of Xuanquin Wang, has burst onto the U.S. audio scene with its Vega DAC, Taurus preamp, and Merek power amplifiers. The Gemini 1000 and 2000 "headphone docks" are a departure from previous offerings because they were created to be lifestyle products that appeal to younger, mobile, entry-level, high-performance audio consumers. That's not to say that a grizzled old audiophile like me couldn't find plenty of reasons to like the Gemini 2000.

The Tech Tour

There is no way you can mistake the Auralic Gemini headphone dock for anything else. It has a unique shape, courtesy of Klutz Design (seriously). Auralic adapted Klutz Design's original CANCANs headphone stand to accommodate Auralic's electronics, and what electronics they are!

Shoehorned into a tight space is what Auralic describes as "a cutting-edge decoding computer" that employs electronics trickled down from Auralic's Vega digital-audio processor.

On Auralic's Web site you will find an excellent picture of the electronics inside the base of the Gemini. Among the technological features are switching and linear power supplies that are regulated for the lowest noise levels possible. The volume control is in the analog domain, and instead of being labeled "volume," reads "niceness." The Gemini 2000 has a discrete Class A (that means it generates 75% of its energy as heat) balanced headphone amplification circuit capable of producing 2000mW with less than 0.001% distortion at full power output. The most important specification difference between the $1199 Gemini 1000 and the $1995 Gemini 2000

EQUIPMENT REVIEW - Auralic Gemini 2000 Headphone Dock

is this balanced output. The Gemini 1000 uses an unbalanced output circuit that doesn't have as much power, but it still supports headphones with 4-pin balanced XLR connections. Also the Gemini 1000 has only a titanium-grey finish option instead of chrome or gold.

The Gemini supports all current formats up to 384/24 bit-rates including WAV, AIF, AIFF, DSD 64, DSD 128, and DXD via its three inputs—USB 2.0, Phone (USB A), and Audio (TosLink) connections. The Gemini lacks one input that some prospective users may have wanted to see: SPDIF. But according to Aurilic's specifications, the TosLink input will support up to 192/24 bit-rates.

Setup and Ergonomics

Installing the Auralic Gemini in my computer audio system was as simple as connecting a USB cable between my computer and the Gemini. With Macs you don't need to download a dedicated driver, but with PCs you will need to go to Auralic's site to get the latest drivers before hooking up the unit. Once connected, my Mac recognized the Gemini immediately. When I looked in the Midi Control panel I saw that it was capable of 384/24, as advertised.

All the controls are on the base of the Gemini. It has two pushbuttons – the first for on/off and the second for choosing the input source. The only other control on the Gemini is the rotary volume adjustment. Small LEDs indicate the overall volume level and the input source. The base also has space on its backside for the three input connections, an SD card slot, and power connections. The included SD card reader is only a card reader; by this I mean that it will read SD cards only if the Gemini is connected to a computer. The card reader does not turn the Gemini into a stand-alone digital player for music on SD cards. But when the Gemini is connected to a computer any music files that are on the SD card in the Gemini's card reader will be available for playback by your computer's music playback software.

Since the Gemini's analog circuitry is based around a Class A amplifier and has over five-hundred individual components situated on a platform no larger than a human hand, it generates a lot of heat during operation. The Gemini's base was designed to serve as its primary heat sink. After a couple of hours of operation the base can get quite hot. And not only does the base get hot, but the volume knob, which is metal, gets to the same temperature as the base itself. I guarantee you won't be spending much time fondling the Gemini's volume control after the first half-hour of operation.

To protect itself from excessive heat buildup the Gemini has a protection circuit that turns the unit off after more than ten minutes with no signal. If you have an SD card in the SD slot when the Gemini turns itself off, your Mac will generate an error message, reminding you that a USB device was disconnected incorrectly without unmounting it first. You can, by holding down both the volume and source controls on start-up, disable this turn-off feature so the Gemini will stay on after ten minutes of inactivity. Another advantage of disabling the auto turn-off is that when you disconnect a 1/4" stereo headphone the Gemini will not turn itself off. This does not happen when you disconnect headphones from the balanced 4-pin XLR output.

One ergonomic difference between the Gemini 1000 and Gemini 2000 is the way the two units handle balanced and unbalanced headphones. With the Gemini 1000 you can have headphones connected to both the single-ended 1/4" stereo and the 4-pin XLR connections, and they will be simultaneously active so you can drive two headphones at once. With the Gemini 2000, when you plug in a single-ended 1/4" stereo headphone the 4-pin XLR output is muted. This is due to the Gemini 2000's balanced circuitry. Also, when a balanced connection headphone is already attached to the Gemini and you connect an unbalanced pair, the headphones connected to the 4-pin balanced connection will emit a fairly loud click before going silent.

If your personal workflow involves heavy use of smartcards you may be thinking that the Gemini's smartcard reader could see a lot of use in your system. I must warn you that, unless you have very slim fingers, removing the card from the Gemini can be difficult. I ended up keeping a pair of tweezers on my desk to make the job do-able. Also the location of the reader slot is not terribly convenient—you may find that it's far too easy to jostle or even disconnect one of the other connections on the back of the Gemini while trying to remove a card.

I used the Gemini 2000 with a wide variety of headphones, from the hyper-efficient Westone ES-5 custom in-ear monitors to the least-efficient and most power-hungry headphones in my stable, the Beyer Dynamic DT990 600-ohm version and the Audeze LCD-2 Bamboos. With the Westones the Auralic did add a slight amount of hiss to the background, but it had more than enough juice to drive the DT-990s and LCD-2s to well above my high-volume comfort zone without any issues, even on my own live recordings which typically have lower volume than commercial releases.

As a headphone stand the Gemini does a fine job. It's heavy enough that no matter how much your headphones weigh it won't be top-heavy when loaded down. The two chrome posts on the opposite side of the balanced 4-pin XLR connection were created so you can wrap excess cable around them. Some cables, such as the aftermarket Cardas Cable on a pair of Audeze LCD-2, are a bit stiff to go around the posts easily, but most cables' excess lengths coiled neatly around the posts.

SPECS & PRICING

Frequency response: 20Hz–20kHz, +/- 0.1dB
Dynamic range: 124dB
Output power: Class A 2000mW maximum
Audio inputs: One optical TosLink, one USB host for Android device, one USB 2.0 in asynchronous mode
Data interface: One SDXC card reader, support up to 2TB
Headphone outputs: One balanced 4-pin XLR, one 6.35mm stereo phone jack

Supported digital formats: All PCM from 44.1kS/s to 384kS/s in 32-bit, DSD64 (2.8224MHz) and DSD128 (5.6448MHz)
Dimensions: 14cm x 29cm x 14cm
Weight: 2.8 kg
Price: $1995

AURALIC NORTH AMERICA INC.
12208 NE 104th Street
Vancouver, WA 98682
(360) 326-8879
auralic.com

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EQUIPMENT REVIEW - Auralic Gemini 2000 Headphone Dock

Sound

The Auralic Gemini 2000 is a combination of several devices, each of which has an effect on its overall sound. But since these devices—a USB converter, DAC, and headphone amplifier—must be used together, they can only be evaluated as an integrated unit. Sure, you can use the Gemini as a DAC/preamp if you invest in some adapters and interconnect, and I did try using it this way. But the Gemini was designed principally to be a one-component solution for digital-source headphone listening, so that was the way I used it a majority of the time.

Obviously the primary reason for using a dedicated device such as the Gemini instead of the "headphones output" on your computer is for better sound quality, and the Gemini certainly delivered on that promise. Even with relatively easy-to-drive headphones such as the Oppo PM-1, the Gemini 2000 produced greater dynamic contrasts and a larger soundstage than any of my Mac's headphone outputs could. But the Gemini not only has a beefier and more music-friendly headphone amplifier, it also has more sophisticated DAC and digital circuitry than what you'll find built into a general-purpose computer. The Sony VAIO is the only off-the-shelf computer that supports DSD and DXD playback via its internal sound card, so if you want to play back DSD in native format, you are going to need some kind of external USB DAC, such as the Gemini, to do it.

I used a variety of sources to evaluate the Gemini, including streaming sources, Internet radio, CDs, and higher-resolution music files up to and including 128x DSD and 192/24 WAV files. In every case the Gemini had no issues decoding and playing files, but it did generate a tick when I switched from DSD to WAV or AIFF files when using the Audirvana Plus app.

With the highest resolution recordings in my library I was impressed by the Auralic's ability to render the music in such a clear and unconfusing way. Some headphone DACs can generate a rich harmonic palette, but at the expense of inner details and added intermodulation distortion. The Gemini presented music in a way that made it easy to listen deep into the mix, but without any reduction of harmonic complexity. The highest compliment I can pay to the Gemini is that it never produced even the slightest hint of a pervasive subtractive or additive "personality" in its overall sonic picture that detracted from a recording's original fidelity.

Just like a conventional power amplifier, a headphone amplifier is only half of an amplifier/speaker system. And just as with loudspeakers, the combination of the two parts, speaker and amplifier, should ideally form a synergistic whole. This synergy, or lack or it, between amplifier and transducer form the basis of much of the overall sonic personality of a system. And while I was not able to assemble any combination of Gemini 2000 and headphones that sounded even remotely sub-par, some headphones did prove to be especially good pairings with the Gemini 2000.

I've owned a pair of Grado RS-1 headphones ever since Joe Grado sent me a pair over fifteen years ago. I've gone through three sets of foam ear-cups, and in all that time, listening to more headphone amplifiers than I can remember, I've never heard them sound better than when connected to the Gemini 2000. I should mention that I was driving them in balanced mode, thanks in large part to an adapter made by Drew Baird of Moon Audio.

With many headphone amplifiers the Grado RS-1 can sound midrange-centric—lacking in bass drive and top-end air. Coupled to the Gemini 2000 the RS-1s had some serious bass extension. The Grados also had a larger and more precisely located soundstage than I'd heard before. I also noticed more upper-frequency extension and air around every instrument. If you are a Grado guy or gal and want to hear your RS-1s at their best, you really need to hear the Gemini/Grado combination.

The Audeze LCD-2 also proved to be an excellent combination with the Gemini 2000. The soundstage was especially large (which is something the LCD-2s usually do well) and within that space the physical location and size of each instrument came through with a level of specificity and detail that I've rarely experienced. To say the sound from the LCD-2/Gemini combo was seductive is an understatement. Only the pressure on the sides of my head from the LCD-2's rather forceful headband after three+ hours of listening made me take breaks; otherwise I could remain tethered to this combo for days.

Most headphone mavens respect but don't actually enjoy listening to AKG K-701 headphones. The expression "dry as a desert" definitely applies to these rather matter-of-fact-sounding headphones when attached to most headphone amplifiers. And while I can't tell you that the Gemini turned the AKG's cold, dry personality into warm and inviting, the Gemini did make the K-701s sound far more musical and involving than other pairings I've tried. The Gemini didn't warm up the K-701's bass, but instead gave the midrange a more natural and less hard and splitchy character. And while I wouldn't be so foolish as to recommend getting the Gemini solely for the purpose of driving a pair of K-701s, if you have pair of K-701s that you've never enjoyed much, the Gemini 2000 could change all that.

The Oppo PM-1 headphones were specifically engineered to be efficient and sufficiently sensitive that they would not "need" to be coupled to a beefy high-performance headphone amplifier to sound their best. But even the PM-1 headphones garnered some additional fidelity and finesse when attached to the Gemini 2000. The soundstage was noticeably larger than what I heard through my iPod touch, MacPro portable, or even the Astell&Kern AK100 (original version). The Gemini also propelled the PM-1's stellar imaging and low-level detail to a higher level than I've heard with any portable device, so far.

At the end of the review period I set up an A/B test to compare the Gemini 2000's single-ended output with that of the Resonessence Labs Herus portable DAC/headphone amplifier (one of my 2014 Golden Ear Award winners). The signal from the single-ended headphone outputs was connected to an adapter that transformed the 1/4" stereo connection to a pair of single-ended RCA female connectors. Then a 1m length of cable connected the adapter to an input on a Wyred4Sound mPre, which was connected to a pair of Wyred4Sound mAMPs driving Audience Clair Audient 1+1 speakers. After matching gain levels via a 1kHz test tone from the AudioTest app I was ready for some rapid/switch A/B comparisons.

EQUIPMENT REVIEW - Auralic Gemini 2000 Headphone Dock

After several hours of A/B comparisons I had to conclude that in this setup the differences in sound between the Gemini and the Herus were so slight that I reliably heard an improvement in image specificity and low-level detail through the Gemini only when I used my own high-resolution live recordings. With the commercial releases the differences were not obvious enough for me to tell which DAC was which. I suspect the differences between the two DACs would be more pronounced if there hadn't been additional adapters, an additional volume control (on the mPRE), and the additional meter length of cable in the system.

Conclusion

The question of whether a component is a great value or not is often a case of personal rather than universal financial considerations. Obviously some readers will consider a $2000 DAC/headphone amplifier to be well beyond the price range of what they personally consider a high-value proposition. But for some audiophiles the Gemini 2000's combination of features, capabilities, and high performance will be exactly what they've been looking for, at a price that is quite reasonable when you consider the cost of a stand-alone premium headphone amplifier, such as the Bryston BHP-1, which when combined with a high-performance DSD-capable DAC can run well above $2000.

Although Auralic calls the Gemini 2000 a "lifestyle product" I think this does the Gemini a disservice. "Lifestyle" implies that features and ergonomics were put ahead of sonics, and if my experience with the Gemini 2000 is any indication of its performance capabilities, it didn't perform like any lifestyle product I've used in the past. No, the Gemini is a high-performance, high-end, DAC/headphone amplifier that will be at home in even the most sonically pristine computer-audio system, which makes it the best lifestyle desktop product I've ever heard. tas

Three Miniature Portable USB DACs

Have DAC, Will Travel

Steven Stone

For audiophiles who travel a portable DAC has become one of those "must-have" travel 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 Resonessence Labs Herus.

Cambridge Audio DacMagic XS

About the size of a small 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 to the Mac. 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 its site.

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.

EQUIPMENT REVIEW - Three Miniature Portable USB DACs

DacMagic XS's Sonic Sorcery

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

Since most prospective purchasers will want to use the DacMagic XS with headphones, I used a wide variety of different headphones and in-ear monitors with the DacMagic XS. With the most sensitive in-ears, such as the Westone ES-5 custom in-ear monitors (115dB sensitivity), the DacMagic XS did generate some low-level hiss and background noise. With somewhat less sensitive in-ears, such as the Ultimate Ears In-Ear Reference Monitors, the DacMagic XS 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 quite 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 offering more of a left-brained rendition of music than that of the Grados, the AKGs connected to the DacMagic had well-controlled upper frequencies that still had air and extension.

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

Although it doesn't handle every audio format, and isn't DSD-capable, the DacMagic XS delivers a lot of functionality and sonic goodness for under $200. For audiophiles looking for a road-warrior-worthy portable DAC that will be at home hooked up to any computer, portable or desktop, and successfully drive most headphones, the Cambridge Audio DacMagic XS DAC is a savvy and very affordable option.

Hegel Super DAC

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

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

Hegel doesn't supply much in the way of "under the hood" specifications, such as the DAC chip used, but according to its literature the Super does not have an asynchronous USB interface, which Hegel considers to be more marketing hype than actual technological advantage. Hegel's published design goals for the Super were "to be extremely silent, to be able to have flat frequency response regardless of the headphone's impedance, and to have sufficient power supply to drive even difficult headphones." The Super does have some "trickle-down" technology derived from Hegel's full-sized DACs including Hegel's proprietary re-clocking techniques, and an output stage with an extremely low output impedance.

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

SPECS & PRICING

Cambridge Audio DacMagic XS
Inputs: USB 1.0 and 2.0 supported
Outputs: 3.5mm stereo headphone jack
Sample/bit rates supported: USB 1.0 Mode: 16/24-bit, 44.1kHz, 48kHz, 88.2kHz, 96kHz; USB 2.0 Mode: 16/24-bit, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz
Dimensions: 1.25" x 0.4375" x 2.125"
Weight: 3.5 oz
Price: $199
cambridgeaudio.com

Hegel Music Systems Super DAC
Inputs: Micro-USB 1.0 mode
Outputs: Mini-jack headphone and optical digital Toslink (mini-jack)
USB interface: 24-bit/96kHz, plug & play via USB 1.0 protocol
Dimensions: 1.6cm x 0.6cm x 3.2cm
Price: $299
hegel.com

Resonessence Labs Herus
Inputs: USB 2.0 supported
Outputs: 1/4" TRS stereo headphone jack
Sample/bit rates supported: USB 2.0 Mode: 16/24-bit, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz, 352.8/24, DSD 64, DSD128
Dimensions: 63.5mm x 31.7mm x 19mm
Price: $350
reseonessencelabs.com

EQUIPMENT REVIEW - Three Miniature Portable USB DACs

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 Wyred4Sound DAC-2 DSD SE. Bass extension and power through the Super, however, was equal to the best DACs I've heard in my desktop system including the Wyred4Sound Dac.

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 convertor. Given the number of other portable DACs available at a similar price, the Hegel faces some tough competition. But for some prospective users, the Super's powerful output and easy setup might be deciding factors in its favor.

Resonessence Labs Herus

The Canadian-made Resonessence 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 0.75" 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 Resonessence Labs' custom code and asynchronous algorithms that run in a generic Cypress USB interface chip. With its low 0.2 ohms output impedance the Herus should be able to handle any headphone from 32 ohms to 600 ohms with no issues.

Like the Cambridge Audio DacMagic XS, the Herus has its own volume control. But unlike the Cambridge Audio DAC, which has an analog control, the Herus adjusts its volume via the ESS 9010-2M DAC's internal 32-bit digital attenuation control. The Herus will also work as a DAC for your iPhone or iPad with the addition of an Apple Lightning-to-USB camera adapter to connect the iPhone or iPad to the Herus. Some Android devices are also supported, such as the Samsung Tab3.

A DAC of All Trades

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

Resonessence 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. [Resonessence says that this problem arises only if the user swaps headphones while music is playing. If the music is paused, this problem won't occur.—Ed.]

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.

EQUIPMENT REVIEW - Three Miniature Portable USB DACs

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

I've been making DSD 128x recordings of live concerts since 2008, when I first started using the Korg MR-1000 DSD recorder, so I have plenty of DSD material in my music library. Whether the music is classical or acoustic folk, the Herus plays back my DSD files perfectly without a single odd noise, hesitation, or drop out.

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

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

Three DACs, Three Good Choices

Of the three portable DACS I reviewed, all three offered good performance at entry-level prices. The $350 Resonessence 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 DAC options 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

Sony PHA-2

Power, Capable, Quiet, and Portable

Steven Stone

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

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

A Tech Tour

The 270-gram (.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 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 micro-USB.

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, and using Audirvana Plus 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 15-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 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. 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 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 highly compatible portable 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 nearly impossible. 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. 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 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 transient pulse of his plucked notes, but also the way the acoustic bass bloomed as the notes spread through the room.

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. When Statman switched to mandolin all of his characteristic contrapuntal humming 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.

PREVIOUS PAGE NEXT PAGE

EQUIPMENT REVIEW - Sony PHA-2

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 were. Using the "HiDef Radio" app I listened to the 128KBPS Venice Classical Radio.eu from Italy, and heard reasonable 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 Wyred4Sound mPre with that same Internet radio feed also coming through my MacPro's iTunes into the Wyred4Sound mPre DAC via its USB 2.0 connection. After matching the output levels, I found it was virtually impossible to tell a difference between the two radio feeds. Both were equally spacious, dynamic, full-range, and detailed. When the program material changed to the BSO conducted by James Levine playing Mozart's Symphony No. 14, I was immediately aware on both sources of the slightly astringent sound of the string section and the overly reverberant recording technique.

Conclusion

Some prospective owners may find my main ergonomic issues with the PHA-2 are its greatest strength—its solidity and weight. The PHA-2 isn't even close to being in the running as the most "travel-friendly" portable DAC/headphone amplifier I've used, weight-wise. Compared to the Resonessence Herus or AudioEngine A3, the PHA-2 is massive. When I recently attended AXPONA in Chicago I opted to carry the Astell&Kern AK100 as my primary portable audio device because of its much lighter weight and far smaller footprint. If faced with equal levels of travel-induced trauma, the PHA-2 would undoubtedly survive better than the AK100, but at the cost of its additional weight and bulk.

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

SPECS & PRICING

Digital inputs: USB Micro-B input (for charging & PC), USB Mini-B input (for Walkman), USB Standard type A (for iPod/iPhone/iPad)
Recharging time: Approx. 7 hours
Outputs: Phones (stereo mini-jack, only 3-pole supported), Audio In/Line Out (stereo mini-jack, only 3-pole supported)
Analog input: One
Output power: Approx. 165mW+165mW (8-ohm, 10% distortion); approx. 90mW+90mW (32-ohm, 1% distortion); approx. 25mW+25mW (300-ohm, 10% distortion)
Input voltage: Maximum: 1V RMS
Dimensions: 2.67" x 1.14" x 5.5"
Price: $595

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2015 High-End Audio BUYER'S GUIDE

THE BEST PREAMPLIFIERS, POWER AMPS, & INTEGRATED AMPS

NuForce HAP-100
$595

NuForce's HAP-100 preamplifier/headphone amplifier offers serious high-end performance at a modest price. The HAP-100 is a Class A solid-state design that delivers unusually wide bandwidth with low levels of distortion and noise. Together, these characteristics make for a sound that is quite detailed and that offers a purity and clarity unexpected at this price. The HAP-100 sports four inputs, a remote control, and a cool volume control with 100 settings in 1dB increments. It makes a good headphone amp, too, with one caveat: namely, the NuForce is audibly load-sensitive and thus not an ideal match for some of today's more difficult-to-drive top-end headphones. With the right 'phones, however, the NuForce sings. nuforce.com (230)

NuForce MCP-18
$599

The MCP-18 is an analog preamp designed to handle both multichannel and two-channel sources in the least sonically obtrusive manner possible. It is basically a source-selector and gain-adjustment device whose signal path has been optimized to obtain maximum transparency and minimum coloration. The MCP-18 offers audiophiles a budget high-sound-quality alternative to digital pre/pros while still retaining a system's multichannel capabilities. SS discovered that it was very difficult to uncover the MCP-18's intrinsic sound. When he changed DAC sources what he heard was the new DAC, not any colorations he could attribute to the MCP-18. The MCP-18 certainly ranks as one of the most transparent preamps he's auditioned, regardless of price. nuforce.com (243)

Rotel RC-1570
$999

The RC-1570 stereo preamplifier is 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. There are two coax and optical inputs, plus two USB inputs (one on the front panel and one on the back). For digital sources, the preamp has a built-in Wolfson DAC that supports resolutions up to 192/24. Indeed, the RC-1570's excellent all-around sound—it gets the essentials of timing, tonality, and dynamics right despite its modest price—only gets better with high-resolution files. 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. rotel.com (242)

AVA Transcendence Nine
$1399

The Audio by Van Alstine T8+ was a noteworthy improvement over the original T8 preamplifier reviewed by DO a few years ago. The spacers for the main motherboard were lowered and low-profile tube sockets were used to accommodate a much taller 6CG7 dual-triode versus the original 6N1P. The optional solid-state phono section ($199) and tape buffers and inverters employed Burr Brown OPA627 op-amps followed by National LME49600 ultra-fast, low-distortion, unity-gain current buffers inside the feedback loop. The T8+ shipped with an Electro Harmonix new-production 6CG7, which DO thought a better choice than the 6N1P, being more refined in detail resolution and image focus. The T8+ line section competed effectively with far costlier designs, offering wide dynamic range, tight image focus, and a transparent soundstage. The phono section was a bit less successful due to a slightly hard-sounding upper midrange. AVA's latest version, the Transcendence Nine, includes a better headphone amp and RIAA section than the 8+, which should take care of the reservations DO had about the phonostage. avahifi.com (225)

AVA FET Valve CF
$1899

To be clear, this is not, in fact, a FET-Valve hybrid. Van Alstine's latest preamp features an all-tube signal path, relegating MOSFETs to the role of power-supply voltage regulators. The basic linestage circuit is rather straightforward: two cascaded gain stages followed by a 12AU7 dual-triode connected in parallel and configured as a cathode-follower buffer. Apparently, there's plenty of magic to be found in a plain-vanilla circuit topology when it is coupled to a sophisticated power supply as deployed by AVA. Both mm and mc phono options are available. 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 doubt the best sounding AVA preamp DO has auditioned to date. avahifi.com (245)

Mystère ca21
$2295

A fine example of the minimalist approach: a line preamp with an input selector (four line inputs) and a stepped-attenuator volume control. It can't get any simpler than that, though some would certainly squawk at the omission of a balance control. It is built much like a power amp, featuring a massive power supply. Happily for DO it has also been "sprayed" with solid-state repellant. With the exception of rectifier bridges for the filament supplies and a handful of Zener diodes, this preamp is pure tube. Check out its sonic virtues: faithful to the original reverberant acoustic, a big-tone portrayal of cello and upright bass, edgeless presentation, and luxuriant harmonic textures devoid of gratuitous tube brightness or upper-midrange grain, especially when used with vintage 6SN7 substitutions. Where else can you find a budget preamp that performs at such a lofty level? A slightly closed-in treble highlights the midrange. mystere-usa.com (208)

PrimaLuna DiaLogue 3
$2699

This surprisingly hefty pre generates tremendous WOW factor—it's difficult to believe that such engaging, gorgeous sound, coupled with a wonderfully expansive soundstage, can be had for such a relatively modest price. One of its most compelling virtues is that it lets music "breathe" and flow effortlessly. Admittedly, it may make many recordings sound better than they should by taking some of the upper midrange edge out of them (particularly on digital recordings). If you want to hear exactly what is on the mastertape or prefer an analytical presentation, the DiaLogue 3 may not be your cup of tea. But if you want to listen for hours without any aural fatigue and be transfixed by the musical performances and the gorgeous timbres of instruments and voices, you've come to the right place. primaluna-usa.com (219)

Parasound Halo JC 2
$4000

The JC 2 is that extreme rarity—a near-reference-quality product that many of us can actually afford. Neutral and natural, transparent to sources, quick and delicately detailed (though not as hard-hitting or detailed as the higher-priced spreads), here is one solid-state preamp that doesn't trade away key parts of the baby (air, bloom, color, three-dimensionality) for the bathwater of razor-cut imaging and iron-fisted control. Creating this little masterwork (it even comes with a serviceable remote control) at this price is another feather in Parasound's and designer John Curl's cap. The poor (or poorer) man's ARC Reference 5. parasound.com (182)

Aesthetix Calypso and Janus Signature
Calypso, $5000; Calypso Signature, $7000; Janus, $7000; Janus Signature, $10,000

The stalwart Calypso and new Janus Signature (which includes a Rhea Signature phonostage) share numerous qualities: speed and detail; highs without a glint of shrillness; a low noise floor; precise rhythms; dynamics that are only a skosh less lively than reference-caliber; and a laid-back perspective. The quiet background and smooth treble add up to long hours of glorious, fatigue-free listening. As for differences, the normal Calypso/Janus soundstage is big, but not huge, while the Signature soundstage is fully realized. The Signature also delivers a richer portfolio of instrumental timbres, more air, longer decays, and better-defined bass. However, these are accompanied by an upper-bass bump that adds a warmth and thickness that affects both timing and timbre. The choice between the Signature and non-Signature model will come down to personal preference, though, at $5000, the original Calypso remains a steal. musicalsurroundings.com (196)

Classé CP-800
$6000

The Classé CP-800 is a phenomenal product that would have been all but impossible to produce at this price even a few years ago. Its versatile functionality, including the ability to manage subwoofers independently, makes it stand out from the pack. It also boasts a feature called power-factor correction that allows you to plug the unit into pretty much any wall socket anywhere in the world with no need to adjust for voltages. Its technological prowess means that the CP-800 has a superlatively low noise floor that reveals subtle musical details that may be masked by other, less-advanced preamplifiers. The Classé shines on classical music, rendering the lusty shimmer of a baroque trumpet with spine-tingling verisimilitude. Newly updated version adds even more functionality. classeaudio.com (230)

LAMM Industries LL2.1 Deluxe
$6290 ($5990, standard version)

A direct replacement for the LL2, LAMM's long-standing, entry-level, tube linestage preamp is an all-tube design, featuring both tube rectification (6X4) and amplification. Harmonic colors are vivid and saturated to a level approaching the real thing with admirable fidelity. The LL2.1's primary concession is in the area of soundstage transparency. It also requires tube-rolling to achieve optimal performance at the frequency extremes. The LL2.1 is extremely easy to live with and integrate into an existing system. According to DO, when outfitted with the right tube complement, it captures 80% of cost-no-object performance for a fraction of the price. lammindustries.com (198)

Zesto Leto
$7500

Cut from the same sonic cloth as Zesto's Andros PS 1 phonostage, the Leto is an all-tube design that represents classic tube sound brought up to date, boasting all the roundedness, dimensionality, and body of tubes without their wayward tonal anomalies, bass deficiencies, and relatively high noise levels. Tonal balance is neutral, but the really distinguishing characteristic is a wonderful freedom from the usual sorts of sonic hype and electro-mechanical artifacts. It's transparent, detailed, fast, and incisive. A naturalness that soon becomes addictive is the order of the day with this preamplifier, though it is also lively in its dynamics and lifelike in its vividness and vitality, with a difficult to define impression of texture that makes it sound organic in its musicality and realism. zestoaudio.com (230)

MBL Corona C11
$8800

The Corona line of electronics is nearly pitch-perfect from every angle—sonics, connectivity and tour-de-force styling. And nowhere in the line is this more on display than with the C11. Silent, civilized, with sonics both airy and open, its dynamics are lively; dimensionality and imaging are exceptional. It's also a joy to use, especially in concert with other Corona gear, where compatibility is all but insured. It also sports one of most sonically transparent analog volume controls (via a motorized potentiometer) that we've come across. Noteworthy too is a well-organized rear panel where RCA and XLR inputs are spaced for easy access. Superb control and communication with other Corona gear via Ethernet link are provided and adds further incentive.
mbl-northamerica.com (228)

Zanden Audio Systems Model 3100
$12,500

This gorgeously built, relatively demure linestage is a virtual sonic clone of its companion piece—Zanden's extraordinary 8120 stereo amplifier. With its all-tube output stage, all-tube rectification, fixed-bias current-regulated power supply, and transformer-coupled outputs, you might expect the 3100 to sound classically "tube-y." But, as is the case with Zanden's power amplifier, you would be entirely wrong. JV has not heard an all-tube linestage that outdoes this one in speed, resolution, soundstaging, and grip. Sounding like a top-tier transistor linestage (only with added lifelike bloom, air, and dimensionality), this little Zanden is a genuine "find"—a tube preamp with almost all of the virtues and none of the shortfalls of solid-state. A reference-quality unit. zanden-usa.com (243)

Audio Research Reference 5 SE
$13,000

The Reference 5 was essentially a more neutral, wider-ranging (at both frequency extremes), lower-distortion, higher-energy version of the Reference 3 it replaced. "Like loose folds that have been given a tug, everything about [this] preamp has been snugged down and tightened up," said JV. Now comes its successor, the Reference 5 SE, and it isn't just a "better Ref 5." The 5 SE is an entirely different animal, more like a cross between a Reference 5 and the best preamp ARC has yet made, the Reference 40, with considerably more dynamic energy, substantially finer resolution, much higher density of tone color, markedly tighter image focus, greater image solidity, far superior grip, power, and definition in the bass, and wider, deeper, taller soundstaging than the Ref 3/5 family of preamps. Like ARC's Reference 250 amps, the 5 SE is so improved it makes its predecessors sound a bit outmoded.
audioresearch.com (236)

Jeff Rowland Design Group Corus
$14,900

The Corus excels on many levels. For starters, it is visually stunning with its laser-cut front-panel and chassis machined from a solid aluminum block. Then there's the tasteful display that gives you all the information you need, but in an elegant way. And when you turn the volume control, the Corus interprets the speed of the volume control's rotation and adjusts its ballistics so that as you slow the rotation the volume steps become finer. But great cosmetics, build-quality, and ergonomics are just the beginning of the Corus' appeal. This linestage has an extremely refined sound that doesn't call attention to itself as being sonically spectacular. Rather, it delivers one of those presentations where you immediately find yourself immersed in the musical expression, not the sound. Very smooth and unfatiguing, yet richly detailed—with deep and muscular bass. jeffrowlandgroup.com (228)

VAC Signature IIa
$15,000 linestage only ($19,500 with phono)

Kevin Hayes has outdone himself with the new Signature IIa preamp—the first new iteration of VAC's flagship transformer-coupled pre in over a decade. Completely balanced, hand-wired, with no coupling capacitors or negative feedback, the linestage-only version sports five pairs of standard line inputs. The full-function model adds a tubed phonostage with mm/mc inputs, a completely separate power transformer with dedicated filter circuitry, and variable-impedance load-switching. The sound is gorgeous. A statement piece, it plays music with extraordinary finesse and drive, accurate timbres, spaciousness in the soundstage, swift attacks and aching decays, and an even spectral balance with superb dynamic and timbral contrasts. Of all the preamps that have been in GH's system, it is the one that most wisely balances the ofttimes contradictory qualities of superior drive and great finesse. vac-amps.com (224)

Pass Labs XP-30
$16,500

Here you have two monaural line preamps sharing a single power-supply chassis—a stacked deck, if you will, that crushes the competition when it comes to traditional solid-state virtues such as transient attack, bass control, and detail resolution. But the real magic is in bridging the great divide between the sound of tubes and transistors. Image focus and soundstage dimensionality are tube-like, as is its ability to lay down an orchestral foundation with big-tone conviction and dynamic integrity. Microdynamic nuances and rhythmic drive are also convincingly reproduced. And there's plenty of startle factor on tap. Orchestral crescendos expand from loud to very loud with absolutely no compression. Consistently faithful to the recording, the XP-30 refuses to dish out the sort of euphonic camouflage some solid-state amps do. A supremely musical line preamp that may well prove to be all things to music lovers and audiophiles alike. passlabs.com (223)

Viola Audio Laboratories Crescendo
$22,000

Machined from a solid block of aluminum, the visually stunning Crescendo has no visible front-panel buttons. Instead, the unit is controlled via a supplied Apple iTouch that provides a whole host of functions beyond those of traditional preamplifiers. Moreover, the Crescendo is unusual for a high-end preamp in that it incorporates a DAC. But it's the Crescendo's sound quality that sets it apart. The transparency, the sense of nothing coming between you and the music, the sensational treble resolution without a touch of the analytical, the wide dynamic expression, and absolutely sensational bass vault the Crescendo into world-class territory. Although it is Viola's least expensive preamplifier, the Crescendo is fully competitive with many other companies' higher-priced offerings. The Crescendo will likely be used in tandem with Viola's Concerto power amplifier. violalabs.com (243)

Absolare Passion
$25,000

This ultra-minimalist single-ended triode preamplifier is about as tweaky as a preamplifier gets, with an extremely simple signal path, just four unbalanced inputs, no remote control, and two unmarked front-panel knobs (volume and input selection). The circuit is built using cost-no-object parts and techniques, and housed in a massive aluminum chassis clad in rich leather. Sonically the Passion is very much like the companion Passion 845 power amplifiers, with a complete lack of grain, etch, solid-state glare overlying timbres. The treble is just a little on the forgiving side, a quality that complements the tendency toward brightness of some dome tweeters. Soundstaging is phenomenal—wide, deep, transparent, and three-dimensional. absolare.com (234)

Constellation Virgo 2
$25,000

It may seem odd to call a $25k preamplifier "trickledown," but that's exactly what it is. The Virgo 2 employs the same design (even the same circuit board) as the $65k Altair preamplifier, but implemented with less lavish parts and construction techniques. Having lived with the Altair and Virgo 2 in his listening room, RH can report that the Virgo 2 comes very close to the performance of the cost-no-object preamp at a lower, though still lofty, price. The Virgo 2 has sensational transparency and resolution that rivals any preamplifier RH has heard, coupled with an almost tube-like warmth in the midband. The top end is exquisitely refined, richly detailed, and finely filigreed. RH's "go-to" preamp for the past year. constellationaudio.com (234)

VTL TL7.5 Series III Reference
$25,000

The 7.5 preamplifier has always been a solid performer, but its new incarnation is far and away the best VTL has produced. The revised 7.5 reflects both a wealth of technological changes and a serious effort to refine its sound. The preamp is a two-chassis unit; the first is called a control chassis and contains noisy circuitry; the other is the audio chassis, which uses a set of 12AU7 tubes for gain. The new TL-7.5 simply sounds as though a barrier to the sound has been removed. Most impressive of all is its ability to play the loudest and most complex passages without a hint of compression. The sound simply seems to swell and soar with no sense of strain. If you already own a 7.5 preamp, upgrading it is a no-brainer. And if you're contemplating taking the plunge for a new preamplifier, an audition might be all that it takes to entice you to leap. vtl.com (222)

Soulution 520
$26,000

Until he got the Soulution 725, JV had never heard a better solid-state preamplifier that this little gem from Switzerland. (Only 2012's POY-winner, the Constellation Virgo, competed on near-equal footing.) Not only does the 520 have all the things you would expect from world-class solid-state—jaw-dropping transient speed, outstanding low-level resolution, tremendous grip and sock in the bass, vanishingly low noise and coloration—but like its companion pieces, the 501 monoblock amplifiers, it joins these qualities with a gorgeous, newfound density of tone color that makes every kind of music sound not just lively and detailed but also beautiful and that much more realistic. When you add the best built-in phonostage JV has heard in a single-box solid-state unit (the 520 is that rarity—a full-function preamplifier), you get a genuine reference-level product, TAS' 2013 Solid-State Preamplifier of the Year, and one of JV's references. axissaudio.com (236)

Ayon Polaris III with Regenerator Power Supply
$28,629

Like its companion monoblock amplifier, the Vulcan II, the 6H30-tube-based Polaris linestage from the Austrian high-end manufacturer Ayon (with Ayon's fully tube-rectified outboard "Regenerator" power supply) offers the signature Ayon sound of huge sonic panoramas, silky black-velvet backgrounds, and gobs of natural detail. A superior performer, said reviewer PB, with lifelike density to its images and large sonic landscapes, the Polaris III produces a veritable IMAX panorama of three-dimensional sound. ayonaudiousa.com (208)

Audio Research Reference 10
$30,000

The extremely short-lived Reference Fortieth Anniversary unit aside, it has been decades since ARC offered a two-box (separate power supply) preamplifier. This handsomely restyled, remote-controllable linestage—with an entirely new built-in touchscreen interface—adds better than twice the power-supply capacitance to the already superb circuit of ARC's Reference 5SE. The results, as might be expected, are large steps forward in dynamics, resolution, bass grip and definition, and soundstage dimensionality (better in this regard than any other preamp JV has auditioned). But the midrange is the Ref 10's true glory. Here it is capable of reproducing the timbres of instruments and vocalists with a realism that *no* other preamp can match. The only downside to this unit (and this has been the case since ARC switched over to massive Teflon capacitors) is that break-in takes forever (600 hours at least). Until then you will have to put up with less-than-ideal sonics. audioresearch.com (Review forthcoming)

D'Agostino Momentum
$32,000

So visually attractive you might buy it as a piece of sculpture, the D'Agostino Momentum preamp's real merit is its extraordinary sound, which seemingly combines the sweetness of the best tube preamps and the detail and accuracy of the best solid-state designs, making it one of the few preamplifiers that can reproduce all the warmth and romance of the best recordings. If the recording is good enough, you hear a remarkably natural, articulated, and three-dimensional soundstage, which seems to expand in width and depth without stretching the instruments or voices within it. Images are not only more precise, they are also placed more realistically in the third dimension. The Momentum has all the features, remote-control capabilities, and input options needed in a top preamp—even truly functional tone controls! dagostinoinc.com (239)

CH Precision C1 DAC/Preamplifier
From $32,975

The C1 is a uniquely flexible control center that can accommodate all kinds of digital inputs: SPDIF, USB, streaming PCM or DSD, and DSD from SACDs via the proprietary CH-Link between the C1 and its companion D1 CD/SACD transport. An excellent, optional analog input board is also available. The C1 creates magnificent colors (but never euphony), dynamic fireworks (without overshoot), startling transients (minus any edginess), and jump-up-and-dance rhythms (with zero slop). Nor are spatiality and resolution slighted. The C1 also reproduces every dynamic, timbral, and rhythmic flux. Although you can hear every little thing in the mix, details come together organically—as they do in real life. The C1's performance with data streamed from a NAS drive deserves special mention for stripping away the glaze that is all but unavoidable with USB. Best used with balanced inputs and outputs. ch-precision.com (239)

Siltech C1
$37,500

The companion piece to Siltech's two-stage SAGA System amplifier—the V1/P1 combo—the C1 is a battery-charged, tube-powered linestage preamplifier of extraordinary sonic sophistication. Extremely fast, minutely detailed, and powerfully dynamic like the best solid-state, it also boasts one of the most realistic (and beautiful) tonal palettes JV has heard, with the gorgeous timbre, extremely lifelike texture, and natural bloom of the finest tubes. Perhaps the most successful hybrid (tube/solid-state) preamp/amp combo in ultra-high-end history, the SAGA System has already garnered raves from other audio reviewers. It is certainly a complete package that anyone shopping in this swan-like neck of the high-end woods needs to audition before considering other contenders. BTW, it comes with a very cool touch-screen remote control. All that's missing now is a SAGA System phonostage. Along with the Soulution 520/725, the Constellation Virgo 2, the Zanden 3100, and the new ARC Reference 10, one of JV's current references. audioplusservices.com (239)

Pass Labs Xs
$38,000

The Xs is an all-out challenge to the state of the art, and to every other preamp available. Wayne Colburn and Nelson Pass have truly outdone themselves in producing this massive two-unit linestage. It does every aspect of sound quality right, and is incredibly revealing of musical and soundstage detail. Reviewer AHC could not find any flaws even in comparison with other top preamps; plus the Xs's extraordinarily low noise floor and natural, detailed deep bass have few, if any rivals. Male and female voice are excellent, open, and natural. Complex organ passages are exceptionally clean, and so are complex orchestral dynamics, opera, recordings of large jazz bands. Form follows functional styling, excellent features, and good ergonomics in this preampifier. AHC's current reference. passlabs.com (243)

LAMM LL1
$42,790

This four-chassis, dual-mono preamplifier is that rare breed that strikes a near-perfect balance between transient attack and instrumental body, and does so from top to bottom in both frequency response and amplitude. Its ability to deliver speed plus sustain at all dynamic levels is extraordinary. The result, said reviewer PB, is near-perfect timbre and, if the rest of your system is up to it, nearly ideal imaging. lammindustries.com (208)

Boulder 2110
$54,000

Boulder's 2110 preamplifier is a technological tour de force. It comprises four modules, two for the power supply and two for the linestage, that help to ensure amazing image stability, subterranean bass, and gossamer-like highs. Timbres have tremendous weight and heft, coupled with a delicious pellucidity that sets it apart from other preamps. Its fully balanced operation banishes any hint of hum. Nothing extraneous ever seems to intrude upon musical reproduction as the 2110 effortlessly delivers transient attacks with unerring accuracy. The 2110 lacks the final degree of fluidity of tube preamps, but its low noise floor, mellifluous tonality, and stupendous control mean that it resides at the peak of solid-state designs. boulderamp.com (Review forthcoming)

Preamps & Amps Specs & Pricing

Preamplifier	Price	Type	Phono Y/N	Remote Y/N	Inputs
NuForce HAP-100	$595	Solid-state	No	Yes	4
NuForce MCP-18	$995	Solid-state	No	Yes	5
Rotel RC-1570	$999	Solid-state	Yes	Yes	11
AVA Transcendence 9	$1399	Tube	Optional	Yes	4
Mystere ca21	$2295	Tube	No	No	4
PrimaLuna DiaLogue 3	$2699	Tube	Optional	Yes	5
Parasound Halo JC 2	$4000	Solid-state	No	No	6
Aesthetix Calypso	$5000	Tube	No	Yes	5
Classé CP-800	$5000	Solid-state	No	Yes	13
Lamm LL2.1 Deluxe	$6290	Tube	No	No	4
Zesto Leto	$7500	Tube	No	Yes	5
Cary SLP 05	$8495	Tube	Yes	No	5
mbl Corona C11	$8800	Solid-state	No	Yes	5
Spectral DMC-30SS	$12,000	Solid-state	No	Yes	7
Zanden 3100	$12,500	Tube	No	Yes	4
Audio Research Reference 5 SE	$13,000	Tube	No	Yes	6
Rowland Corus	$14,900	Solid-state	No	Yes	6
VAC Signature IIa	$15,000	Tube	Optional	Yes	5
Pass Labs XP-30	$16,500	Solid-state	No	Yes	14
Viola Labs Crescendo	$22,000	Solid-state	No	Yes	4
Absolare Passion Preamplifier	$25,000	Tube	No	No	3
Constellation Virgo 2	$25,000	Solid-stat	No	Yes	4
VTL TL7.5 Series III Reference	$25,000	Tube	No	Yes	4
Soulution 520	$26,000	Solid-state	Yes	Yes	5
Ayon Polaris III	$28,629	Tube	Yes	Yes	5
Audio Research Reference 10	$30,000	Tube	No	Yes	6
D'Agostino Momentum	$32,000	Solid-state	No	Yes	4
CH Precision DAC1/Pre	$32,975	Solid-state	No	Yes	4
Siltech C1	$37,500	Tube	No	Yes	5
Pass Labs Xs	$38,000	Solid-stat	No	Yes	4
Lamm LL1	$42,790	Tube	No	No	3
Boulder 2120	$54,000	Solid-state	No	Yes	6
Constellation Audio Altair II	$65,000	Solid-state	No	Yes	4

Power Amplifier	Price	Output Power	Type	Configuration
Odyssey Audio Khartago	$995	115Wpc	Solid-state	Stereo
Rotel RB-1552 Mk II	$999	120Wpc	Solid-state	Stereo
Odyssey Audio Khartago	$1975/pr.	110WS	olid-State	Monoblock
AVA Ultravalve	$1999	35Wpc	Tube	Stereo
AVA Valve 600R	$3299	300Wpc	Tube hybrid	Stereo
Sanders Sound Magtech	$5500	500Wpc	Solid-state	Stereo
NuForce Ref 20	$7600	175W	Solid-state	Monoblock
Aesthetix Atlas	$8000	200Wpc	Hybrid	Stereo
Berning ZH-230 ZOTL	$8360	36Wpc	Tube	Stereo
MBL Corona C21	$9200	200Wpc	Solid-state	Stereo
Pass Labs X350.5	$11,550	350Wpc	Solid-state	Stereo
Zesto Audio Bia 120	$12,500	60Wpc	Tube	Stereo
Classé CA-M600	$14,000	600W	Solid-state	Monoblock
Triode Corporation TRX-M300	$14,000	8W	Tube	Monoblock
Hegel H30 Reference	$15,000	350Wpc	Solid-state	Stereo
Pass Labs XA100.5	$16,500	100W	Solid-state	Monoblock
Bryston 28B	$19,200	1000W	Solid-state	Monoblock
AVM SA8	$19,880	220Wpc	Solid-state	Stereo
Zanden 8120	$19,990	100Wpc	Tube	Stereo
VTL MB-450 III Signature	$20,000	425W	Tube	Monoblock
Cary 211 FE	$21,995	70Wpc	Tube	Monoblock
Viola Audio Laboratories Concerto	$22,000	100Wpc	Solid-state	Stereo
Audio Research Ref 250	$26,000	250W	Tube	Monoblock
Constellation Centaur	$27,000/ $54,000	250Wpc/500W	Solid-state	Stereo/Monoblock
Rowland 725	$32,800	330W	Solid-state	Monoblock
Lamm ML2.2	$37,290	18W	Tube	Monoblock
CH Precision A1	$37,475 each (depending on config)	350W	Solid-state	Monoblock
Absolare Passion 845	$37,500	52W	Tube	Monoblock
Ayon Vulcan II	$40,000	55W	Tube	Monoblock
D'Agostino Momentum	$55,000/pr.	300W	Solid-state	Monoblock
Soulution 501	$55,500	120W	Solid-State	Monoblock
Soulution 711	$65,000	150Wpc	Solid-state	Stereo
Siltech V1/P1	$75,000	340W	Tube-hybrid	Stereo
Pass Xs300	$85,000/pr.	300W	Solid-state	Monoblock
Boulder 2150	$98,000/pr.	1000W	Solid-state	Monoblock
Lamm ML3	$139,490	32W	Tube	Monoblock
Soulution 701	$155,000	430W	Solid-state	Monoblock

Constellation Audio Altair II
$65,000

An all-out assault on the state of the art in preamplifier design, this two-chassis linestage looks and operates like no other preamplifier, from its monolithic, apparently button-less front panel to the Pyxis whole-system touchscreen controller. The design is also unprecedented in many respects, including extraordinary measures to isolate the audio circuits from vibration and noise. In addition, the Altair imposes no switches or relays in the signal path. The volume and input switching are controlled by light-sensitive resistors that are continuously calibrated to compensate for temperature changes. System control is handled by the supplied Pyxis, a two-handed touchscreen device of great sophistication. The Altair set new standards in transparency, resolution, and sheer realism in RH's experience, coming as close to being a colorless window on the music as he has experienced. constellationaudio.com (215)

Vincent PHO-8
$400

Vincent's phono preamp features moving-magnet/moving-coil flexibility, a massive outboard power supply in an identical aluminum chassis, plus a level of construction quality unusual in this price range. Operation is quiet, the sound liquid, the soundstage vivid and dimensional with just a hint of warmth and transient softness compared to reference efforts. A joy to use, and though not the last word in resolution, you'll need a much bigger wallet to beat it. wsdistributing.com (211)

POWER AMPS

Odyssey Audio Khartago
$995

Although the 130Wpc Odyssey Khartago solid-state stereo amp has been around for better than a decade, it was new to JV until amp-connoisseur Alon Wolf (of Magico) told him he used it in his shop and it was excellent. Wolf was right. Although the Khartago doesn't have all the articulation and transparency of the standard-setting $55k Soulution 710 stereo amplifier, it has a similar balance (albeit a bit warmer and less transparent), no discernible grain, high resolution, and a deep, wide soundstage. Positively, the best budget amp JV has heard (though the $2.7k Odyssey Stratos monoblocks are considerably better). odysseyaudio.com (195)

Rotel RB-1552 Mk II
$999

The RB-1552 Mk II is a 120Wpc Class AB stereo power amplifier with the holistic design and careful parts-selection that have distinguished Rotel's best amps through the ages. The unit is essentially a dual-mono design and accepts both single-ended and balanced connections (the balanced sound way better). 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. 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 RB-1552 Mk II falls decisively into this category, delivering robust dynamics, a broad soundstage, well-placed images, rock-solid bass, infectious timing, and tonal characteristics that sound "right." rotel.com (242)

Odyssey Audio Khartago
$1999/pr.

With the same power rating as the Khartago but a stiffer power supply and wider bandwidth, these solid-state monoblock versions of Odyssey's stereo amp have the same basic sound as the two-channel unit with slightly more resolution, dynamic oomph, top-end air, and channel separation, making for a somewhat wider, deeper, more densely populated soundstage. Like the Khartago stereo, this is a budget monoblock for the connoisseur. odysseyaudio.com (Review forthcoming)

AVA Ultravalve
$1999

According to Frank Van Alstine, the Ultravalve's lineage is traceable to the Dynaco Stereo 70, which he denotes as its "great grandmother." Although not as romantic-sounding as the original, it is far better focused, and in general sounds like a higher-resolution device. It handles bass lines with superb control and good impact and is capable of dishing out plenty of boogie factor. Its ability to retrieve microdynamic nuances allows for the full scope of the music's dynamic intensity and interaction between musicians to shine right through. avahifi.com (204)

AVA FET Valve 600R
$3299

Frank Van Alstine's 300Wpc hybrid amp is based on AVA's patented forward-transimpedance design. A 12AT7 triode front end is coupled to a fully complementary power MOSFET output stage. The stock JJ Electronic tubes are quite musical, so there's no compelling reason to tube roll. No, it doesn't sound like a tube amplifier, but what sets it apart from a host of solid-state designs is its soulful midrange and ability to retrieve music's drama and tension. Tack on decent spatial delineation and you have the making of a successful hybrid design. It's a complete package featuring low distortion, superior speed, killer bass, and superb dynamics. The treble is somewhat closed in, and tonally, harmonic colors are on the dark side of reality, requiring careful system matching. At its best, the 600R can sound much like a $20k power amplifier. World-class power amplification at an affordable price. avahifi.com (225)

Sanders Sound Magtech
$5500

This no-nonsense amplifier was designed to drive any loudspeaker impedance, particularly full-range electrostatics, which can have an impedance of less than 1 ohm in the top octave. The Magtech "sounds as if it had infinite power into anything with total stability," said REG. The fully regulated power supply is unusual. Delivering 500W into 8 ohms and 900W into 4, and fully stable driving capacitive loads, it is the perfect choice for electrostatics. sanderssoundsystems.com (211)

NuForce Reference 18 V3
$7600/pr.

We have reviewed successive generations of NuForce Reference 9-series Class D amplifiers, noting that each has offered worthwhile (albeit subtle) incremental improvements. With the Reference 18 V3, though, NuForce has taken a much more substantial sonic leap forward. Internally, the Ref 18 has a larger, more elaborate power supply than those used in past NuForce amps, necessitating a new full-width chassis. Sonically, the benefits are dramatic, including a more detailed, three-dimensional, and dynamically expressive sound than we've heard from past NuForce monoblocks. Although the Ref 18 has the same published output specifications as the Ref 9, it sounds noticeably more powerful and expressive. Similarly, low-level details and, especially, spatial/soundstaging cues flow more freely and effortlessly from the new amp. The upshot is that the Ref 18 is a forthright truth-teller that keeps faith with recordings, though it refuses to sweeten or embellish their sound in any way. nuforce.com (218)

Aesthetix Atlas
$8000

Aesthetix's first foray into power amps is an unqualified success. Aesthetically, the Atlas is handsome in a brawny but tasteful way. Its front panel offers a convenient menu-system for input selection and crossover point, the latter feature allowing the amp to easily mate with a subwoofer. Sonically, the amp has great resolution and reflexes, making it a snap to follow interleaved melodic and rhythmic lines. The Atlas creates a cloud of air around each instrument, and a deep convincing sense of space. Indeed, its resolution, timing, and imaging are beyond reproach. Tonally, this amp is on the sweet side in a way that is consonant with real music. The Atlas is slightly less incisive dynamically than AT's reference amp, but so is pretty much everything else. Ultimately, the Atlas is a sheer joy—both sonically and musically—to listen to. musicalsurroundings.com (196)

Berning ZH-230 ZOTL
$8360

ZOTL technology has been around for over a decade now. It represents David Berning's approach to severing the Gordian Knot that is a conventional output transformer. The ZH-230 is an update of the venerable ZH-270, albeit with lower power. Most notable changes: The RF carrier-frequency has been increased from 250 to 500kHz, and the source impedance has been reduced for increased damping factor. DO considers the ZH-230 to be a game-changer, in that it optimally combines the best of tube and transistor sound. Control of transient decay is exemplary, facilitating treble nuances that are silky smooth. The overall presentation is startlingly transparent and projects a refreshingly low-distortion signature. In other words, this is one sweet-sounding, smooth, and grain-free amplifier. davidberning.com (210)

MBL Corona C21
$9200

Sounding more like a fine analog amp than the hybrid-switching amp it is, the 180Wpc C21 offers much of the lush sweetness and sonic gravity of MBL's own Reference Line 9011 monoblock. It may not have the 9011's slam, but in most other ways the C21 bears a strong resemblance to the flagship's air and dynamic energy. Its top end, where Class D has previously struggled, is smooth and extended, not glassy. Its low end is elegantly controlled but not over-torqued. Rather it has a bit of dark velvet bloom, imparting the full measure of harmonic and ambient decay and timbral resonance with acoustic music. This is an amp that can proudly stand next to the best in its class—switching or non-. mbl-northamerica.com (228)

Pass Labs X350.5
$11,550

Considerably more than merely good sonic performance awaits owners of this 350Wpc (700Wpc into 4 ohms), Class A/AB stereo amplifier. The X350.5 provides truly compelling listening sessions with any music collection—fatigue-free, imagination-inducing, emotion-filled listening sessions. Its prodigious power, natural tonal balance, incredible bass, and overall liquidity impart a solid foundation to even the most demanding music, while caressing delicate passages with a silky fine touch. Reviewer KM couldn't think of a more powerful and non-fatiguing-sounding amp close to its asking price. passlabs.com (238)

Zesto Audio Bia 120
$12,500

Zesto's new Bia 60-watt/channel Class A all-tube power amplifier, with styling to match the company's Zeto linestage and Andros phonostage, brings the designers the trifecta. As with the preamps, Bia's personality consists in a completely seductive musicality free from all the usual sorts of electronic colorations and artifacts, for a presentation that never, ever sounds electro-mechanical, instead always wholly natural. Dynamic range is prodigious, the Bia even driving PS's inefficient Quad ESL 2805s to clear, clean, unstrained levels (a magnificent combination, by the way). Broadly neutral but not completely accurate, the sound here is more beautiful than real. Luscious, velvety, silken, gorgeous, it's the kind of presentation around which audio cults develop, and it's easy to imagine its owners years, even decades hence treasuring the Bia the way others do classic McIntoshes and Marantzes. zestoaudio.com (244)

Classé Audio CA-M600
$14,000/pr.

This is the best amplifier Canadian manufacturer Classé Audio has ever built. It is also one of the best amplifiers that has ever been built. Seldom has a more devastating piece of amplification been found in such a reasonably sized enclosure. This Classé monoblock, which delivers 600 watts, represents cutting-edge technology married to exquisite sound. A kind of hypothalamus drawn from advanced medical technology monitors the temperature of the amplifier, thereby allowing it to achieve stable bias within twenty minutes. An active but almost noiseless wind tunnel, coupled with an innovative heat-sinking design that relies on tiny fins, ensures that the amplifier never runs hot. The Classé is extremely neutral and pokes further into the recesses of the soundstage than almost any other amplifier. It also possesses near whiplash speed, endowing it with superb dynamics. The CA-M600 is a breakthrough product that offers phenomenal performance at a very reasonable price. classeaudio.com (210)

Triode Corporation TRX-M300
$14,000/pr.

Think of the M300 as a modern version of the Western Electric WE 91A, complete with a 274B rectifier, a pair of 310A receiving pentodes, and a Psvane WE300B. The colossal gain of the original has been reduced to a reasonable sensitivity of 0.8V. The power supply has also increased in sophistication so that the M300 is exceptionally quiet for an SET amplifier. Image solidity, according to DO, can only be described as magical; solid-state amps would kill for it. Bandwidth and transient speed are pretty impressive for an SET. Don't expect bone-crushing bass slam, but prepare to be surprised by its dynamic prowess and the breathtaking acceleration of an orchestral crescendo from soft to loud. The M300 offers a fitting testament to the potency of the first watt and showcases the beauty and dynamic potential of the much venerated 300B triode. Speakers of 96dB+ sensitivity are advisable.
triode.co.jp/english/product.html (236)

Hegel H30 Reference
$15,000

This Norwegian powerhouse of an amplifier (375Wpc into 8 ohms) combines the brute-force bass control and dynamic impact of a dreadnought design with a midrange and treble refinement, delicacy, and sweetness that are reminiscent of a single-ended triode amplifier. The midrange, in particular, is highly vivid and present without sounding the least bit pushy or forward, infusing the presentation with a palpability and directness of expression previously unheard in any amplifier near the H30's price. Perhaps the H30's outstanding sonics and high value can be traced to Hegel's SoundEngine technology, in which dynamic crossover distortion is greatly reduced through a patented circuit, coupled with a rigorous transistor-matching protocol. The H30 can be operated in bridged mode for 1000W (requiring two H30's for stereo operation), but some of the midrange magic disappears and resolution slightly diminishes. A great bargain in high-powered amplifiers. hegel.com (223)

Pass Labs XA100.5
$16,500/pr.

This masterpiece from Nelson Pass offers the glories of Class A in a more efficient package. Virtues include a wonderful palpability, warmth, and truth in timbre through the midrange reminiscent of the best tubed amplifiers. In fact, the XA100.5 monoblock is as close as solid-state gets to the sound of tubes. This isn't to say that it emulates tubes, rather that it lacks solid-state's typical sonic signature. The treble is extremely clean, pure, and totally devoid of grain. Dynamic speed is also one of its strengths; this amplifier combines transient quickness and impact with a sense of weight and authority. In addition to being the best-sounding amps Pass has made, this new series (there are five others using the same circuit but with varying output power) runs cooler than previous Class A designs. Winner of our 2008 Product of the Year Award. passlabs.com (186)

Bryston 28B
$19,200/pr.

Out of the box and with no warm-up at all, this pair of 1000W (!) monoblocks greatly impressed HP. The two top octaves were unusually sweet for solid-state. Tubed gear can achieve such naturalness on top, but not usually this cleanly and purely. Given the amp's thousand-watt rating (into eight ohms), slam-bang bass was predictable, without any special "character" for the ear to hang onto. The noise floor was lower than any other amplifier in HP's experience, to boot. Which meant an increased sense of dynamic range, revealing gradations at the soft end of the dynamic spectrum. Because of the 28B's refusal to clip and thus distort the gradations between levels of loudness, the same was true at the other end of the spectrum. You might analogize the amp's power to a huge engine in a sports car: There was greater ease at every output level. When you come across a component that is better in some significant ways than what you've heard before, the experience tends to derail criticism. For the moment the 28B is such a product—and an incredibly good buy.
bryston.com (190)

AVM SA8
$19,880

The SA8 does have a sonic character—every audio component does. But like some of the best power amplifiers around, that sonic character is exceptionally limited. In fact, almost all of the colorations you'll hear through this amp will come from the other components. In neutrality and transparency the AVM SA8 comes close to delivering the sonic equivalent of the Golden Mean. Its power is rated, with extreme conservatism, at 220 watts into 8 ohms, 450 watts into 4 ohms, and 650 watts into 2 ohms, meaning it can drive any real-world speaker load, including nominal 1-ohm loads. It can also deliver an immense amount of current, delivering up to 60 volts at the speaker terminals, enough to deal with any demanding speaker. An exceptionally neutral and musical product.
avm-audio.com (238)

Zanden Audio Systems Model 8120
$19,990 (optional balanced XLR inputs w/ input transformers $1000)

For JV, this large, beautifully built-and-finished, KT120-tube-based, 100Wpc stereo amplifier from celebrated Japanese manufacturer Zanden is one of the great surprises of this audio season. Why a surprise? First, though scarcely inexpensive, it is considerably less money than Zanden's typical gourmet-audio offerings. Second, though completely tube-powered and tube-rectified, it has none of the image blur, dynamic laxness, ambient grain, and timbral heaviness of typical Class AB KT-120-based push-pull tube amplifiers. On the contrary, it is exceedingly fast on transients, extremely hard-hitting on big dynamic swings, extraordinarily finely detailed (right up there with Soulution, Siltech, and Constellation in this regard), with taut bass that is virtually indistinguishable in grip, definition, and impact from that of much top-tier solid-state, and imaging and staging that are truly wall-to-wall. It is also capable of sounding "real" on any number of well-recorded discs no matter the type of music. One of JV's references. zanden-usa.com (243)

VTL MB-450 III Signature
$20,000/pr.

As the Series III designation indicates, the MB-450 has evolved considerably over the years. The most noticeable change in the amplifier from its direct ancestors is a greater sense of refinement and dynamic punch. The 450 does not cede much to far more expensive amplifiers (though the much larger Siegfried monoblocks offer demonstrably more of everything, but are also priced accordingly). The 450, which produces some 425 watts in tetrode mode, is a fine example of a manufacturer working relentlessly to extract every last ounce of performance from an amplifier. A very nice feature is that the amp possesses a fault-sensing circuit that will shut down the amplifier before a tube can blow and damage it. Sonically, the 450 is not as tight in the bass as solid-state amplifiers, but it delves deeply into the soundstage and has excellent tonality, which comes across in a very attractive fashion on piano and stringed instruments. Coupled with a loudspeaker that is reasonably easy to drive, the MB-450 sounds superb. vtl.com (225)

Cary 211 FE
$21,995/pr.

Cary's CAD-211 FE ("Founder's Edition") is a zero-feedback, all-triode monoblock that updates the classic 211 model Cary produced for 17 years. It's beautifully built and something of a "looker," with a glowing tube array that's like a trip to a tube-geek's candy store: one 6CA7 current source tube, one 6SL7 at the input, two 300B driver tubes, and a pair of 845 output tubes, which operate in push-pull mode to deliver 70W Class A, up to 110W Class A/B, and up to 150W Class B. Sonically, this amplifier has excellent transparency to the source, as well as the tonal naturalness, lifelike sense of instrumental body, weight, and air, and spatial dimensions that convey a sensation of musical time travel. Although the CAD-211 FE is plenty powerful, if you favor large orchestral, hard rock, or Wagnerian drama, it's likely that the CAD-211 FE will run out of juice before you want it to. Otherwise, this "Founder's Edition" amp fully earns its name. caryaudio.com (204)

Viola Audio Laboratories Concerto
$22,000

Although "entry-level" by Viola's standards, the Concerto offers world-class build- and sound-quality. This 100Wpc amplifier can double its power output into 4 ohms, sports a chassis machined from a solid aluminum block, and features circuitry refined over designer Paul Jayson's 35 years of work with cutting-edge amplifier circuits. The Concerto sounds much more powerful than its rating, and delivers some of the deepest and tightest bass RH has heard. But what makes the Concerto so musically compelling is the amplifier's utter transparency, delicacy, and resolution. This is an amp that lets you hear deep into the music without any hint of electronic glaze. The Concerto is a sonic, visual, and functional match with Viola's equally superb Crescendo preamplifier/DAC. violalabs.com (243)

Audio Research Reference 250
$26,000/pr.

The Reference 250 monoblocks are ARC's replacements for the Reference 210s. But "replacement" is too weak a word for these greatly improved numbers. Where ARC's previous 6550-tubed 200-watters always seemed to run out of steam long before they'd used up all their on-paper watts, the KT120-equipped 250s just keep going, and they do so with much better timbre, bass and treble extension, low-level resolution, transient response, imaging, and staging than their wimpy forebear. In the midrange, ARC amplifiers have always been able to "breathe" life into instruments and voices (almost like an acoustic bellows), changing image size, projection, and presence with the ebb and flow of dynamics; the Ref 250 does this trick not just in the midrange but from bottom to top. audioresearch.com (229)

Constellation Centaur and Centaur Mono
$27,000 and $54,000/pr.

Very high resolution and voluptuous tone color generally don't go together in hi-fi gear, and when they do—as in Class A triode tube circuits or Class A solid-state ones—they do so at a price in neutrality. Such amps and preamps seem to have what Raidho's brilliant chief engineer Michael Børresen wittily calls a "bottom-up" kind of sound. That is, their sonic "center of gravity" seems to lie in the upper bass and lower midrange. Though the 250Wpc Constellation Performance Series Centaur stereo amp would probably qualify as a "bottom-up" amp, in that it has a slightly darkish overall balance (though it is not the fullest s-s amp in the bottom-most octaves JV has heard), it doesn't trade off as much upper-midrange and treble-range air and bloom as typical Class A amps do. It has gorgeous color and texture on top, coupled with an uncanny ability to resolve very fine details without etching or "spotlighting" them. Given the right ancillaries and sources, the Centaurs are among the loveliest, highest-resolution, most lifelike solid-state amps JV has yet heard. constellationaudio.com (223)

Jeff Rowland Design Group 725
$32,800/pr.

The Jeff Rowland 725 monoblocks (and the matching Corus preamplifier) are beautiful and beautifully made electronics. But their beauty isn't merely skin-deep; the 725 monoblock amplifiers are extraordinarily expressive and involving. While other first-rate electronics reveal additional sonic details that may or may not translate to greater musical communication, these Rowland amplifiers have unfailingly shown RH nuances of expression and shades of meaning in familiar music that go far beyond mere hi-fi "resolution." They have a sophisticated and refined midrange and treble coupled with a richness of tone color in the bass that make for world-class performance. jeffrowlandgroup.com (228)

Lamm ML2.2
$37,290/pr.

These 18W single-ended triode monoblocks are so magical (with a load-appropriate loudspeaker) that they made RH question the paradigm of high-powered solid-state amplification. The directness of expression, the palpability of images, and the purity of timbres are simply sensational through the ML2.2. These amplifiers make it sound as though the musicians are speaking through time and space directly to you. It's an uncanny quality that must be experienced to be appreciated. The ML2.2 achieves this level of sonics not through a euphonic or tubey sound, but by conveying the virtues of SET amplification without SET colorations. With the right loudspeaker (a big caveat), the ML2.2s don't sound like tubes, SET, solid-state, or any other technology. Rather, they sound like music. lammindustries.com (230)

CH Precision A1
$37,475 each (depending on configuration)

CH Precision, a relatively new but highly pedigreed Swiss manufacturer, has taken the groundbreaking design of its Goldmund ancestors—ultra-fast circuitry, mechanical grounding—and modernized it. The results adhere to the CH gestalt of linearity—in the frequency, time, and dynamic domains—and musicality in equal parts. The result is accuracy in the service of music, with plume-like orchestral colors, visceral transients, locked-down rhythms, and dynamics that range from subtle to epic. The amp makes it child's play to follow musical lines and instrumental interplay. All this makes for a captivating listening experience that few other amps in AT's experience can approach. The A1 is also one of the world's most configurable and adjustable amps (you can optimize it to your speaker's damping characteristics by setting the ratio between local and global feedback). It's worth noting that a single A1 can be configured for stereo operation, delivering 95% of its monoblock performance. ch-precision.com (239)

Absolare Passion 845
$37,500/pr.

These gorgeous, leather-clad single-ended-triode monoblocks deliver the glories of SET circuits in a cost-no-object implementation—gorgeous timbre, a smooth and relaxed treble, tremendous soundstage depth and dimensionality—but do so with enough power to drive real-world loudspeakers to satisfying playback levels. Their 52 watts, coupled with genre-defying bass extension and dynamic impact, deliver qualities that fly in the face of conventional wisdom about SETs. But the Absolare's real magic is in the sense of immediacy—that impression of hearing contemporaneous music-making unencumbered by the electro-mechanical contrivance of the playback system. The result is a deep immersion in the musical expression. absolare.com (234)

Ayon Vulcan II
$40,000/pr.

The Vulcan II is Austrian electronics manufacturer Ayon's cost-no-object, 55Wpc, all-tube, pure Class A, parallel SET, monoblock power amplifier. Combining the speed and verisimilitude of solid-state with the "you are there" holographic midrange of single-ended triodes (plus bandwidth extension, lighting-fast snap, and zero upper-frequency roll-off), the Vulcan II, said reviewer PB, "has the knack of presenting an extraordinary amount of detail without any edginess or sharpness," making it a potential new reference for many music-loving audiophiles. ayonaudiousa.com (211)

D'Agostino Master Audio Systems Momentum
$50,000/pr.

If anyone ever had doubts that Dan D'Agostino was one of the top designers in the high end, the D'Agostino Momentum monoblocks dispels them. D'Agostino is still at the cutting edge of audio design, and his skills have allowed his new company to manufacture products that are major advances in sound quality over what he built at Krell. A compact amp of almost Baroque beauty, the Momentum is capable of delivering 300 watts of power into 8 ohms, 600 watts into 4 ohms, and 1200 watts into 2 ohms. High power, however, does not mean the loss of even the subtlest detail. The Momentum has exceptional deep bass and is as musically realistic in the midrange as the recording permits, with an open and upper midrange to match, and an extended treble without any edge. Soundstage quality will be as excellent in size, depth, and width as your room, the rest of your system, and the recording permit. dagostinoinc.com (239)

Soulution 501
$55,500/pr.

Though these monoblocks from Switzerland are "limited" to 120W into 8 ohms (240W into 4, 480W into 2) don't let the specs fool you. Thanks to their new switching power supplies, these ultra-high-bandwidth Class AB solid-state amps are capable of delivering better than 75 volts and 45 amps into any load at a damping factor of over 10,000, giving them absolutely killer grip, extension, and clout in the bass—and everywhere else. Add to this a welcome newfound density of color in the midrange and an exceptionally sweet (albeit beguilingly soft) treble, and you get what were probably the most lifelike all-solid-state amplifiers JV had heard in his home until the arrival of the Soulution 711 stereo amp. When it comes to dynamics and ultimate SPLs, the 501s' seemingly inexhaustible delivery of power from top to bottom makes speakers, even difficult-to-drive ones like the Raidho C 4.1s, sound as if they were plugged directly into the wall. Simply and unflaggingly thrilling to listen to. axissaudio.com (236)

Soulution 711
$65,000

Soulution's new 711 is the best solid-state amplifier JV has had in his home. Like the 520 monoblocks this massive stereo amplifier is capable of virtually unlimited current and amperage regardless of load. Dark and rich in tone color, blessed with tube-like dimensionality and bloom, sweet and subtle in the treble, standard-settingly powerful and well-defined in the bass, ultra-fast on transients, superb at resolving inner detail, with a soundstage the size of the Ritz, the 711 hasn't any obvious weaknesses. Other solid-state amplifiers will give you different sonic emphases—the Constellation electronics, for example, are a tad higher in resolution and just as fast—and tubes and tube-hybrids (such as Siltech's SAGA System) obviously have their own charms, but in overall presentation JV hasn't heard a transistor amp that is more powerful, beautiful, and realistic than this beastie boy from Zurich. JV's solid-state reference. axissaudio.com (Review forthcoming)

Siltech V1/P1
$75,000

Though the Siltech battery-charged, tube-powered V1 voltage-stage amplifier and its companion P1 Class A solid-state 380Wpc current-stage stereo amplifier must not only be used together, but ideally should also be paired with Siltech's battery-charged, tube-powered companion preamp, the C1 control unit (another $37,500), to complete the package, we have no Buyer's Guide category for a three-unit preamp/power amp combo—and even if we did, the SAGA System would be the only entry, since there really is nothing else like it. Though other manufacturers have offered battery-powered pre's and two-stage amps before, no one that JV knows of has put something like the entire SAGA System on the market. When you throw in the P1's Apollo Light Drive (a photoelectric device that biases the output transistors in "floating" Class A), you get an amp that is said to be capable of 145dB dynamic range. The SAGA's unique combination of very low noise, very high speed, and simply gorgeous (and exceedingly lifelike) tone color makes it extraordinary enough to become JV's new tube (er, tube-hybrid) reference. siltechcables.com (239)

Pass Xs300
$85,000/pr.

AHC has been using Pass Labs amps as one of his references for years, and he had real doubts whether this new design from Pass could sound all that much better than what he was used to. Well the devil lies in the details, and the Xs300 monoblocks provide those details in as neutral and accurate a manner as any amplifier he's heard. It is outstanding in all the usual areas, but the deep bass and transition from the upper bass and midrange truly enhance the musical experience. So does a level of dynamic life and detail that has to be heard rather than described in words. The Xs300 brings out the very best in good recordings and will inevitably be limited by the quality of your speakers. Capable of driving even the most demanding speakers, it produces 300 watts into 8 ohms and 600 watts in to 4 ohm and has a maximum power output of 60 amps. passlabs.com (243)

Boulder 2150
$98,000/pr.

The Boulder 2150 monoblock amplifier is an engineering marvel. It offers a smooth, seductive, and powerful sound that places it in the very highest echelon of solid-state amplification, perhaps superseded only by its big brother in the Boulder 3000 Series. With 1000 Class A watts on call, this amplifier can pretty much deliver limitless power, but it never comes close to running hot, as Boulder employs advanced circuitry to deploy only as many watts as the music demands. The most remarkable aspect of the 2150 is its control—the softest passage is delineated with what appears to be the utmost timbral fidelity. Cymbal swishes hover in the air for what seems like an eternity. And the ease with which you can follow a bass line when delivered by the 2150 is a distinct pleasure. Does it breach the tubes versus solid-state divide? No. The texture and dimensionality supplied by tubes remains a separate province. But the Boulder builds on the many virtues of solid-state to provide an amazingly realistic reproduction of recorded sound. boulderamp.com (Review forthcoming)

Lamm ML3 Signature
$139,490

This four-chassis, 32Wpc, $140k SET may strike some of you as the Poster Child for Audiophile Excess, but the Lamm ML3 Signature monoblock amplifier takes the definition of the absolute sound and turns it on its head. For 30 years, the illusion of live unamplified instruments in space has been what we've been aiming for. Now with this Lamm-attack on the state of the art we can (almost) throw away the word "illusion." The ML3 Signature approaches what we all seek in the reproduction of music—the actual sound of live instruments in space—by reducing or eliminating two of the major sonic colorations that reviewers harp on: electronic haze and midbass overhang. The cost of entry is unquestionably high, but the ML3's performance is even higher. lammindustries.com (208)

Soulution 701
$155,000/pr.

A pair of power amplifiers that cost more than a Mercedes S Class? Yes, but if you have the dough, there may not be a more musically compelling amplifier on the planet. The massive 701s break new ground in sheer dynamic verve and vivid immediacy. Although not forward-sounding, the 701s convey a sensational lifelike presence in both timbre and dynamics that put them in a class by themselves. Instrumental entrances fairly jump from the loudspeakers with hair-raising realism. And then there's the phenomenal bass that must be heard to be believed. These amplifiers have a bottom-of-the-earth solidity and dynamic impact unlike that of any other amplifier. The Soulution 701s are mega-priced, but they also deliver mega-performance. axissaudio.com (Review forthcoming)

INTEGRATED AMPS

NAD D3020
$499

Truly a design for our times, the D3020 is improbably small and portable and loaded. The 30Wpc D3020 offers 24-bit/96kHz-resolution USB computer audio and aptX Bluetooth music streaming. For all its humble size and appearance it's still pure NAD. Firmly midrange-centered, it never over-reaches in the sense of growing shrill in one direction or tubby in another. Yes its lighter overall balance is due to some bottom-octave attenuation, but the D3020 retains an essential presence, a midrange integrity, that sculpts the body of a performance and makes it live in the listening space. There's a little bit of a shaded ceiling over the treble, but not enough to worry about. The other argument in its favor is, hello, $499—making it by most standards a small miracle of packaging and portability, and a delight to use and listen to. nadelectronics.com (239)

JoLida Glass FX-10
$599

This beautiful display-box of an amp is a great music-maker, capable of wonderfully rich yet nuanced playback of all genres. With its stock tubes, budget cabling, and efficient speakers, it makes music one can taste and savor. Its soundstage is deep and wide; its build-quality and ergonomics are terrific; and it sounds even better if you upgrade the tubes and wires. Although the FX-10 outputs only ten watts, those watts are mighty mighty! Highly affordable, compact, great-sounding, upgradable, and entirely attractive, the Glass FX-10 amp is well suited to anyone making the move up from portable sound, or simply looking to put together a quality desktop system. jolida.com (222)

Arcam A19
$999

Need an affordable integrated amp that offers enough inputs for the whole family? Look no further than the Arcam A19, which is built like a tank, outputs a healthy 50Wpc, and employs parts from Arcam's much more expensive integrated amps. With seven analog inputs—including a high-quality phonostage—and preamp outs, the A19 has plenty of room for all of your sources, and won't break the bank. Quality sound, superior build, and affordability are cornerstones of Arcam's design philosophy, and the A19 exemplifies all of them. arcam.co.uk (245)

Rogue Audio Sphinx
$1295 ($1395 with remote control)

Rogue products have, like their moniker, usually gone their own way in design, price, and value. The Sphinx integrated amplifier may be the most roguish of the lot. Tubes? One hundred watts-per-channel (200W into 4 ohms)? U.S. design and manufacture? For $1300? If that's not enough, this is the first Class D amplifier (actually a hybrid with a pair of 12AU7 tubes in the preamp section) that RD feels offers true world-class sonics. It includes a very fine discrete headphone amp and a phono section that is worth the asking-price all by itself. A volume remote is an option. The only snag RD encountered was a complete incompatibility with his Kimber PBJ interconnects, although this did not keep him from purchasing the review sample. rogueaudio.com (236)

Hegel H80
$1995

Those who are (sometimes justifiably) frustrated with escalating prices, take heart; Hegel's 75Wpc, solid-state H80 integrated amplifier with onboard 24/192 DAC answers the call for high-performing audio 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. The H80 delivers a nice measure of musical verve, accompanied by a lack of listener fatigue that one rarely encounters in $3000 integrateds—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, where the H80 is musically involving, well balanced, and surprisingly powerful for its rating. This is the real deal...and a sweet deal, too. hegel.com (245)

Rogue Audio Cronus Magnum
$2195

Differing from Rogue's standard-issue, 55Wpc, EL34-driven Cronos ($1895), the Magnum edition features a quartet of Electro Harmonix KT90 output tubes and generates 90Wpc. Striking a beautiful balance between elegance and power, the Cronos has excellent dynamic scaling—lilting with chamber music, muscular with rock and orchestral—with a fine sense of detail on low-frequency instruments. The Magnum is also remarkably transparent to the source, allowing listeners to "peer" into a recorded performance in a way that is unusual in this price class. The Magnum requires its owner to set and (occasionally) re-set output tube bias. Thankfully, the unit comes with the appropriate screwdriver, which even has its own little nesting spot atop the chassis, making setting bias the proverbial piece-of-cake. rogueaudio.com (209)

PrimaLuna ProLogue Premium
$2399

For PrimaLuna, the Premium Series is the tweener line, geared to bridge the gap between the performance/feature set of the entry-level ProLogue Series and that of the more advanced and costlier DiaLogue Series. Sonically, the 35Wpc ProLogue Premium does not have the rosy, euphonic colorations of traditional triode or SET tube varietals. True, there is a glimmer of romance in its palette, but tonally it's a thoroughly contemporary tube amp that walks a mostly neutral line, yet still reproduces the lowest-level details of music with an almost tender delicacy and resolution that combine the best of the valve and solid-state worlds. There's an inner light to images, plus a huge soundstage and cavernous dimensionality. The ProLogue Premium places the emphasis on ingredients that often elude more commonplace electronics—the liveliness and fluidity of the musical event. primaluna-usa.com (212)

NAD C 390DD
$2599

NAD's C 390DD might perform the same functions as an integrated amplifier with an integral DAC, but looks can be deceiving. Rather than convert digital signals to analog and then amplify those analog signals with multiple conventional gain stages, the C 390DD takes in digital data at any resolution up to 192kHz/24-bit and converts the PCM data directly to the pulse code signal that turns its output transistors on and off. This "Direct Digital Amplifier" technology debuted in the $6000 M2 and now trickles down to the C 390DD. This new unit benefits from 3 years of additional R&D and more features including a modular design in which most of the digital inputs are on replaceable cards to accommodate updates. The C 390DD's software-based programming can be upgraded as well. Throw in an automated program that removes the worst bass peaks and dips and you have an extremely capable and compelling product. Sonic strengths include extremely wide dynamics with a sense of ease on even the most demanding peaks, tight and powerful bass, and a treble that errs on the side of smoothness rather than resolution. nadelectronics.com (224)

Primare I32
$3000 standard; $4750 with MM30

The I32 is available in two versions—the traditional integrated amp or with the MM30 multimedia upgrade module that transforms the I32 into digital media central. Unless you're an analog diehard, go for the digital upgrade. With its 24-bit/192kHz DAC board (USB and Ethernet), the I32 has versatility to burn and becomes nearly future-proof. Sonically this is not an amp that merely scratches the surface of music reproduction. Music's transients are snapped off with the clean report of a starter's pistol, and the bright, crisp edges that are heard from small percussion instruments are resolved as purely as they are by any amp at or near this range. The I32 also offers bass-pitch definition of unusual precision. At 120Wpc, there's plenty of power from one of the most persuasive implementations of Class D NG has yet heard. On balance you'll have to go a long way to match the I32. vanaltd.com (236)

PrimaLuna DiaLogue Premium
$3399

The Premium version of the DiaLogue incorporates select parts such as an ALPS volume control, Takman resistors, and SCR tin-foil coupling capacitors in critical signal-path locations. The front end is now all 12AU7-based. The amp ships with EL34 pentodes, but KT88 and even KT120 beam power tubes may be substituted, which nudges power output to 42Wpc. DO opines that the KT120 produces the best sonics in either ultra-linear or triode modes. Operation of the KT120 in triode mode is a potent option that can work miracles with some speaker loads, though output power is halved. You can hardly do any better when it comes to user-friendliness and operational flexibility. It is a tube roller's delight as it dispenses with the bother of having to deal with biasing issues. primaluna-usa.com (233)

Lyngdorf TDAI 2170 Digital Integrated Amplifier
$3500

The Lyngdorf TDAI 2170 is in effect a whole system except source components and speakers in one elegantly styled, not especially large box. It accepts every kind of input, digital or analog (no phonostage), and amplifies digitally, with volume control included. And it offers the sophisticated RoomPerfect room-correction system. Moderate price, compact size, convenience, flexibility, and truly remarkable sound are all right there at the touch of a few buttons. lyngdorf.com (Review forthcoming)

Ayon Orion II
$3910

Tubes done right! RD knows tube amplifiers can sound great but fears their downsides. Enter Ayon, self-appointed ambassador of tube amplification who run a five-point test on every tube it ships, including plate current, trans-conductance, heater-to-cathode leakage, gas ion current effects, and microphony. The Orion II takes over from there, incorporating Ayon's Auto-Fixed-Bias (AFB) system, which at the push of a button adjusts bias and checks for tube failure, noting which tube has failed via an LED. The system will also automatically "break-in" new tubes. Oh, and the Orion II sounds lovely, readily serving all the kinds of music. Ratings in pentode (60 watts) or triode (40 watts) seem optimistic, and RD encourages care in the choice of loudspeakers, recommending a nominal load of 8 ohms or above. ayonaudiousa.com (232)

Audio Research Corporation VSi60
$4995

Transparency is the great strength of ARC's VSi60. One never has the sense that this hybrid-integrated amplifier imposes its own voice on the music; rather it acts in service to it. This doesn't mean that the Vi60 doesn't have its own sonic signature—in a nutshell: pristine, grain-free, open, detailed, dynamically nimble—but the overall qualities of this integrated convey a very close link to each recording's provenance. It sports a passive, microprocessor-controlled linestage, a JFET input, coupled with a pair of 6H30 driver tubes and, as with other ARC designs, KT120 output tubes, two per-channel. And at a mere 14" x 8" x 16" and 35 pounds the VSi60 also presents no serious domestic challenges. Note that its 50Wpc may be a bit light for certain speakers (like Magnepans), but the right speakers should make for a match made in heaven. audioresearch.com (242)

Hegel H300
$5500

On paper the H300 numbers are not unusual for a high-power, line-level integrated amp. A dual-mono design, it outputs a hefty 250Wpc into 8 ohms. The flat black exterior is seriously Spartan. But then things get interesting. The H300 is uncommonly versatile. The H300 adds a 32-bit DAC stage to its toolbox along with five digital inputs, including USB. Sonically it is strictly neutral and quiet, opening a transparent, harmonious window on the sound, with superb edge definition and high micro-dynamic liveliness. And the DAC stage is stunning, producing startlingly well-focused images without any soundstage phasiness or image smearing. A product that represents the high end at its most rewarding. hegel.com (233)

Pass Labs INT-150
$7150

Pass Labs' first foray into the ultra-competitive integrated amplifier arena has brought to market sixty pounds of 150Wpc, solid-state, aluminum-machined majesty. This powerhouse, which doubles its output into 4 ohms, brims with a neutrality tempered with a pleasing warmth quotient. It has an ease and fluidity that are not euphonically tube-like but emblematic of solid-state with a strong Class A bias—a prime feature of this amp. The midrange has a sweetness and romance that are disarming. The INT-150 fleshes out vocalists and reveals the full physicality of power-singers, from deepest bass-baritone to lilting coloratura. Bass response is well-defined and highly controlled. NG, expecting a bit more bloom, wondered whether the amp might be too tightly controlled, but it's got the precision "thing" down perfectly. It bear-hugs images and exhibits a deep-space resolving-power that Stephen Hawking would admire. Dynamically it reproduces micro- and macro-level dynamics with an ease that takes the rest of your system a rung higher. Audiophiles who maintain LP and SACD collections will be especially rewarded by the INT-150's wealth of micro-dynamics, fluidity, and a spatiality that really play to the strengths of these enriched formats. It's a musical force of nature and arguably about as good as it gets in the here and now. A powerhouse design with a heart that should make anyone re-think the "separates" option. passlabs.com (184)

Simaudio Moon 600i
$9000

Priced at $9000, the 125Wpc 600i would never win the "most-watts-per-dollar" contest, but it would win just about any other contest that judges design, build-quality, and fit 'n' finish. The 600i is impeccably made in every way, from its fully balanced dual-mono architecture (unusual in an integrated amplifier) down to the feel of its hefty machined-aluminum remote control. The 600i is also software-controlled, imbuing the amplifier with a host of convenience features. The sonic presentation hits all the audiophile criteria—outstanding dynamics and bass, low levels of timbral coloration, spectacular soundstaging—but the 600i goes beyond these specific performance attributes to deliver a truly compelling listening experience. Music is highly dimensional, with a soundstage that is richly layered, with depth portrayed along a continuum and a real sense of bloom around images. The 600i's resolution of low-level instruments, along with the outstanding clarity of timbre, fosters the impression of a richer and denser canvas and, along with it, a greater sense of life and vibrancy. The bass is tuneful, dynamic, rock-solid, with visceral grip and propulsive power. If you want the sound quality of a separate preamplifier and power amplifier in a compact, beautifully engineered package, the Simaudio 600i is a great choice. simaudio.com (210)

Devialet 200
$9650

It's fair to say that there's not another audio product in the world like the Devialet 200. For starters, it delivers 200Wpc (into 6 ohms) from a patented output stage that combines a Class A voltage amplifier with a Class D current amplifier. The inputs and output can be configured just about any way you want via Devialet's Web site. You can even tailor the 200 to better drive your particular loudspeakers via the company's Speaker Active Matching technology. A built-in wireless streaming DAC and configurable phonostage round out the package. Sonically, the 200 has a big and robust sound, a dead-silent background, and tremendous clarity and resolution. This combination of capabilities, technology, updateability, and sound quality make the 200 a compelling package. audioplusservices.com (Review forthcoming)

MBL C51
$11,200

With its soft, understated lines, svelte controls and connectivity, and jewelry-like finish it's easy to misjudge the depth, complexity, and sonic resolve of the C51—a 180Wpc, modified Class D tour-de-force. It has the touch of the classicist in terms of the emphasis it places on the finest, inner details and its resolution of acoustic space is almost eerie in its specificity. Its top-end is top notch—airily extended with none of the early-era Class D darkness that often constricted and cloaked these octaves. Designer Reis' hybrid topology known as LASA is open, airy, and sweet where appropriate, yet highly charged and aggressive when called upon. The main impression that listening to the C51 leaves you with is the way it integrates individual criteria–frequency, imaging, dynamics, transients–and weaves them into a seamless tapestry of reproduced sound. A triumph in its category. Even separates should beware. mbl-northamerica.com (243)

Vitus Audio SIA-025
$30,000

Exemplifying the best of seps in a single, trim, and seriously-hyper-massaged chassis, the 25Wpc pure Class A SIA-25 is the pinnacle of a breed never again to be underestimated. The sonic results speak for themselves—a liquid presence, a three-dimensional stage, and the finest gradations of micro information and dynamic contrasts. If all other elements in the system chain are strong, you'll hear less system and more space—each component seems to settle and calm and in so doing achieves a wider expression, greater intimacy, and a rich vibrancy at even the lowest levels. With watts more precious than gold, calling the SIA-025 a bargain is a stretch but after a few minutes of listening you may begin to reconsider. vitusaudio.com (218)

Rogers High Fidelity EHF-200 Mk2
$15,000

One of the major drawbacks of tubed integrated amplifiers has always been a lack of power and damping to drive or control large speakers—especially electrostats. Thirty, fifty, or even sixty watts was about as good as it got, until the Rogers High Fidelity EHF-200 Mk2 hit the streets. The EHF-200 Mk2 produces 112W of pure Class A power in Ultralinear mode, and a whopping 80W in triode mode, thanks to the insights of aerospace engineer Roger Gibboni. The EHF-200 Mk2 uses either four KT120 or KT150 tubes to produce all that power, features four RCA inputs, a preamp/sub output, and includes a sleek, heavy-duty remote. Specifically designed for 4-ohm speakers (though it can drive any speaker from 2–32 ohms), the EHF-200 Mk2 is more than just another tubed integrated amp; it's a standard-setting achievement. With all that power, fans of electrostats and low-sensitivity speakers are no longer stuck with solid-state. And with a lifetime transferable warranty, this is an integrated amp you can pass down through the audiophile generations. rogershighfidelity.com (242)

Vitus Audio RI-100
$15,000

When NG's review of the Vitus Audio RI-100 integrated was originally published, he characterized this 300Wpc mega-amp as "the sledgehammer with a heart." His opinion remains unchanged. The RI-100 is capable of extracting the highest highs and most dynamic lows and pretty much everything in between. Although it may not offer all the fluidity and beauty of the superb Vitus SIA-025, the brawny RI-100 is virtually unrivalled in its breathtakingly tight-fisted grip on the low octaves. Keeping it fresh in 2013, VA will soon offer an optional DAC and phono module. vitusaudio.com (232)

Integrated Amplifiers Specs & Pricing

Integrated Amplifiers	Price	Output power	Inputs	Phono	Type
NAD D3020	$499	30Wpc	4	No	Solid-state
Jolida Glass FX-10	$599	12Wpc	2	No	Tube
Arcam A19	$999	50Wpc	6	Yes	Solid-State
Rogue Audio Sphinx	$1295	100Wpc	4	Yes	Tube/Hybrid
Hegel H80	$1995	75Wpc	7	No	Solid-State
Rogue Audio Cronos Magnum	$2195	90Wpc	3	Yes	Tube
PrimaLuna Prologue Premium	$2399	35Wpc	4	No	Tube
NAD C 390DD	$2599	150Wpc	5	Optional	Solid-state
Primare I32	$3000 standard; $4750 with MM30	120Wpc	7	No	Solid-state
PrimaLuna DiaLogue Premium	$3399	43Wpc	5	No	Tube
Lyngdorf TDAI-2170	$3500	170Wpc	4	No	Solid-state
Lyngdorf TDI 2170	$3500	170Wpc	8	No	Solid-state
Ayon Orion II	$3910	60Wpc	4	No	Tube
ARC VSi60	$4995	50Wpc	5	No	Tube
Hegel H300	$5500	250Wpc	10	No	Solid-state
Pass Labs INT-150	$7150	150Wpc	4	No	Solid-state
Simaudio Moon 600i	$9000	125Wpc	4	No	Solid-state
Devialet 200	$9650	200Wpc	7	Yes	Solid-State
MBL Corona C51	$11,200	180Wpc	6	No	Solid-state
Rogers EHF-200 Mk2	$15,000	112Wpc	4	No	Tube
Vitus Audio RI-100	$15,000	300Wpc	5	optional	Solid-state
Vitus Audio SIA-025	$30,000	25Wpc & 100Wpc	2	No	Solid-State