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GUIDE TO

PREAMPLIFIERS AND POWER AMPLIFIERS

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High-Definition **USB** Audio is coming to the **USA**

Universe of Superior Audio

To the tune of Leonard Cohen's magnificent
(and magnificently caustic) anthem "Democracy is coming to the USA"



Once upon a time, the shift to dot-matrix printers meant new-found versatility, but lousy looking type, then came laser and inkjet. Once upon a time, the shift to digital music files meant new-found opportunities, but ...

Now the digital sun has come out. Possibly the best quality consumer audio ever available, on planet Earth anyway, has finally appeared in the form of 24/96 and 24/192 audio files, transferred through USB to a new generation of superb DAC's (Digital Audio Converters), whether built into today's best receivers and amps, or stand alone components.

To ensure that your favorite music is transferred with minimal corruption (jitter), AudioQuest offers 5 models of USB cable, featuring better metals, better geometry, Dielectric-Bias System, Noise-Dissipation System ... All of AudioQuest's expertise and proven techniques for delivering superior digital audio, whether through coax, balanced cable, HDMI, Ethernet, 1394, and now USB.

Whether you're playing 128K files, or lossless 44.1 (CD quality), or 24/96 ... it's a clear and sunny day in the audio world!



PREAMPLIFIERS AND POWER AMPLIFIERS

FROM THE Editor

Welcome to the 2010 Preamplifier and Power Amplifier Buyer's Guide, brought to you by *The Absolute Sound* and *Hi-Fi+* magazines. You'll find your next preamplifier, power amplifier, mono power amplifier or a combination of the two, whether totally tubular or singularly solid state... it's all here. We'll also bring you a heads-up of what the best-dressed equipment tables will be wearing amp-wise in 2010, as well as exciting features on what the next decade may bring in audio amplification, how to choose the perfect amp to drive your speakers and more.

Let's start with a question – why? Why should anyone buy a separate preamplifier and power amp, when an integrated amplifier does all you need today? Although one-box amplifiers have moved on extremely far, to the point where a good integrated can match a reasonable pre/power combination, by separating the key components of an amplifier into physically individuated units, you can improve the overall performance significantly. And an integrated amplifier can be broken down into individual preamplifier and power amp – even mono power amp – sections, all fed by the same power supply.

Simply by moving each section into its own case and giving it its own power supply, an integrated amplifier divided into pieces sounds better than the integrated whole. You can even sub-divide from there – Krell's Evolution One and Two amplifier combination is a dual mono preamp with mono power amplifiers, each having its own distinct power supply, making eight boxes in total. Few have the resources and shelf space for such an amplifier, but even giving the preamplifier and power amplifiers their own boxes and power supplies helps significantly.

Power amplifiers in particular allow the user potentially vast amounts of wattage at their disposal, far more than could ever be realistically delivered from an integrated design. Whether it's to fill a big room,

driving a particularly difficult loudspeaker or merely to have plenty of power in reserve and at your command... a big muscle amp is hard to resist.

In no other section of the audiophile arena can we find such a diverse arrangement of old, new and state-of-the-art designs on offer. Where else could you have a full-function tube preamplifier that would be thoroughly understandable to an electronics engineer of 50 years ago partnered with a Class D amplifier that is built entirely from integrated circuits? The joy (and some of the confusion) of building a good pre/power combination comes with trying to take full advantage of the range of products on offer. Why confusion? Because there's always another combination of amplifier components on offer.

Which is where this Buyer's Guide comes into its own. A distillation of the last year's worth of the best products reviewed in both magazines, we have broken the subject down into one-manufacturer combinations of preamplifier and power amplifier, separate preamplifiers, solid-state power amplifiers and tube power amps. The one-manufacturer combination should not be considered locked in place; it's perfectly possible to use a preamp from the combinations and use it with one of the power amplifiers reviewed separately. Or not. The choice is yours!

Alan Sircom

Click here to turn the page.



Hard on the heels of the DSi200 integrated amplifier, **Audio Research** is introducing the latest amp in its Definition Series, the DS450. The 450Wpc (8 ohms), 56-pound amp uses the same proprietary switching power-supply technology developed for the integrated but adds a much larger power supply, doubles up on the output FETs, and increases channel regulation.

Price: \$7995.

audioresearch.com

ON THE HORIZON

A Sneak Peak at New Preamplifiers and Power Amplifiers Coming Your Way

Neil Gader, Jim Hannon, Robert Harley and Dick Olsher

Musical Fidelity is roaring back this year with a sophisticated yet simplified lineup, using an adaptation of the cutting-edge circuit found in Musical Fidelity's mighty Titan monoblocks. The M6 preamp (Price: \$2399) and M6 power amp (Price: \$3499) are fully balanced designs.

The preamp offers balanced inputs and outputs, an internal mm/mc phonostage, and a USB DAC. The big M6 outputs 260Wpc via a dual-mono, choke-regulated design. The entry level hasn't been forgotten either—look for the non-USB, 70Wpc M3i (Price: \$1499) very soon.

Prices: \$2399, \$3499 and \$1499.

musicalfidelity.com



ON THE HORIZON - A Sneak Peak at New Preamplifiers and Power Amplifiers Coming Your Way

Audience, best known for its AC conditioners and signal cables, has expanded into the preamplifier, power amplifier, and loudspeaker markets. The company has been developing a preamp and Class D power amp for several years, and showed the first production versions at CES. The WaveMaster preamp's volume control sets different taps on a transformer. The \$12,000 unit incorporates a high-end headphone output along with an Audience Teflon power conditioner. The WavePower power amplifiers (\$14k per pair) are based on a UCD amplifier platform, switching output stage coupled with a discrete front-end and power supply built from first-rate parts. The amplifiers, which ship in September, deliver 200W into 8 ohms and 400W into 4 ohms. The Audience system sounded wonderful driving Audience's new \$5000-per-pair 2+2 loudspeaker, which uses four 3.0" custom drivers run full-range.

Prices: Pre-amp \$12,000, mono power amps \$14,000/pair, loudspeaker \$5000/pair.
audience-av.com



LAMM is introducing an ambitious new preamplifier that complements the company's \$139k-per-pair ML3 power amplifiers. The new LL1 Signature is a four-chassis unit that is Vladimir Lamm's ultimate statement in preamplifiers. The all-tubed LL1 sells for \$42,690. At CES, the new preamp and the ML3 power amplifiers with the Wilson MAXX 3 sounded absolutely wonderful—spacious, delicious in tone color, and wonderfully dynamic.

Prices: \$42,690.
lammindustries.com



Good, better... LAMM



The Lamm LL1 *Signature*
preamplifier

LAMM INDUSTRIES, INC.
www.lammindustries.com

Jeff Rowland has been busy judging from the introduction of three new **Rowland Research** models. The first is a flagship power amplifier, the 925, that uses an entirely new output-stage topology. The massive, two-chassis 925 delivers 400W into 8 ohms. The second chassis contains a switch-mode power supply with full active power-factor correction built into the unit. The \$48k per-pair 925 ships in April. The same overall architecture has been scaled down for the 625, a 300Wpc stereo amplifier. It shares the 925's output-stage topology, but incorporates the switch-mode power supply in the same chassis. That chassis is machined out of a solid block of aluminum, which allows it to be partitioned as though it were two chassis. The third new Rowland product is the Corus preamplifier (\$10,800), a single-chassis version of the flagship Criterion preamp.

Prices: \$48,000/pair and \$10,800.

jeffrowland.com



Karan Acoustics, the company founded in Yugoslavia (now Serbia) in 1986, has a new North American distributor, Canada's Westside Music & Cinema. At CES, Westside demonstrated a wide range of Karan products, including the KA S 180 stereo amplifier (180Wpc, \$9700), the dual-chassis KA L Ref Mk.II preamplifier (\$17,500), and the KA M 1200 monoblocks (1200W, \$57,500 per pair). The massive KA M 1200 amplifiers can deliver 2000W into 4 ohms and 3600W into 2 ohms. The system, which included Avalon's Time loudspeakers, Cardas cabling, and a Zanden 2500 Signature CD player, sounded superb.

Prices: from \$12,500 to \$50,000/pair.

karanacoustics.com westsidemusic.ca



Being a loudspeaker company hasn't stopped **TAD** from introducing an ultra-high-end power amplifier and disc player. The M600 monoblock amplifier (\$26,500 each) is built on a 75 pound cast-iron chassis that looks like an isolation platform. The platform actually contains the circuitry, which is built around a single voltage-gain stage. Each M600 is hand-made, including hand-winding of the transformers. The matching disc player is also priced at \$26,500. A companion preamplifier will be available next year at a price of . . . you guessed it, \$26,500.

Prices: \$26,500 each, \$26,500 and \$26,500.

pioneerelectronics.com

ON THE HORIZON - A Sneak Peak at New Preamplifiers and Power Amplifiers Coming Your Way



Krell is premiering updated “E” versions of its Evolution Series amplifiers. The new models are part of Krell’s “green” initiative to reduce power consumption. Not only are they more efficient, reputedly they also sound better. The new version features a more elaborate power supply, including a separate transformer to feed the digital-control circuitry. The supply also benefits from substantially greater capacity in the power-supply reservoir. The output stage uses matched quartets of output transistors rather than the usual complementary pairs, with the transistors sharing the current load. In Standby mode, the new model consumes just 2W of power compared with 370W for the previous version. Warm-up time is a little longer, but users can easily switch between two Standby modes for faster warm-up.

Price: \$24,000/pair, \$37,000/pair, \$50,000/pair, \$12,500, \$18,500, \$25,000
krellonline.com

Music should move you

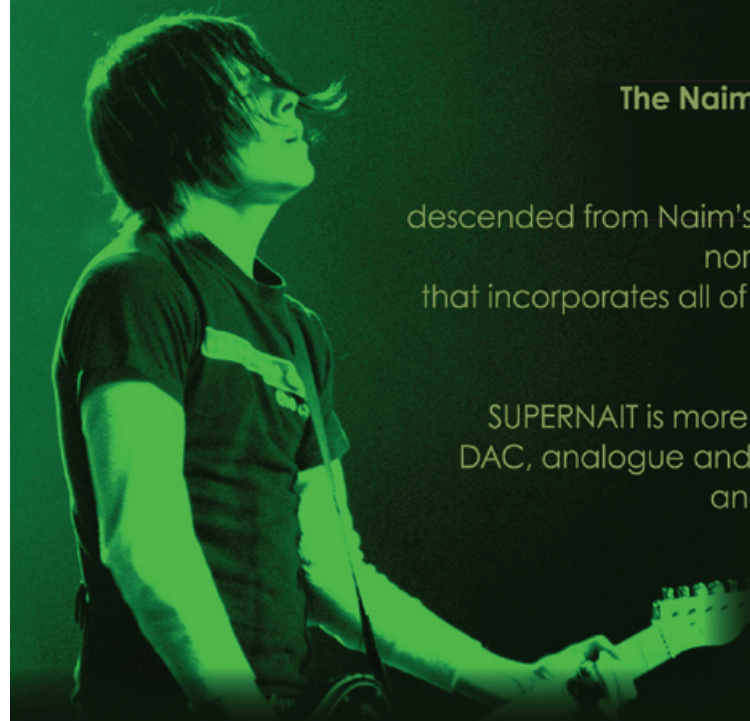


The Naim SUPERNAIT Integrated Amp.

It isn't just a preamplifier descended from Naim's superlative reference series, nor is it simply a power amplifier that incorporates all of what makes owning a Naim such a musical experience.

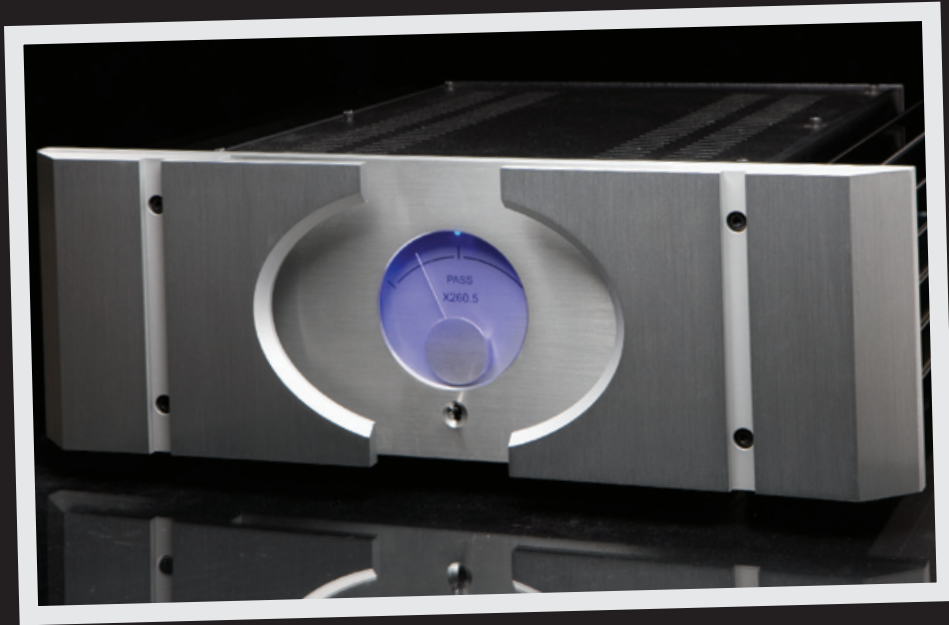
SUPERNAIT is more than just the sum of its parts: DAC, analogue and digital inputs, 80W amplifier, and upgradable power supply.

It's your path to the music.



world class sound...

ON THE HORIZON - A Sneak Peak at New Preamplifiers and Power Amplifiers Coming Your Way



Pass Laboratories has expanded its amplifier line with the X260.5, a 260W monoblock based on Pass' existing "X-Series" amplifiers. The \$11,000-per-pair X260.5 incorporates improved power transformers, greater storage in the power supply, and better EMI filtering.
Price: \$11,000/pair.
passlabs.com



Lindemann of Germany has launched the 882 power amplifier with dual-mono power supplies, fully balanced signal paths, and an innovative circuit that continually adjusts the bias to the output transistors based on their operating temperature.

Price: \$16,700.
lindemann-audio.de
aaudioimports.com

Burmester has introduced a wide range of new products and has created its own North American marketing and distribution arm, based in Vancouver. The move will give Burmester greater access to the U.S. market, as well as a platform to promote its relationship with Porsche. Burmester worked with Porsche for five years developing the audio system for the Porsche Panamera and plans to use this association to expose its products to affluent music lovers who might otherwise not know about high-end audio. Burmester's three new products showcased at CES were the 088 preamplifier (\$28,995), 089 belt-drive CD player (\$28,995), and B30 loudspeakers (\$15,995). The preamplifier is part of the Top Line series and is derived from the Reference Line 077. The dual-mono unit is fully modular and balanced from input to output. The modularity allows the 088 to be fitted with a phono card or D/A converter.

Prices: \$28,995, \$28,995 and \$15,995.
burmester.de



ON THE HORIZON - A Sneak Peak at New Preamplifiers and Power Amplifiers Coming Your Way



Conrad-Johnson unveiled its first-ever limited edition product—the ART monoblock amplifier (\$33,000/pr.). Only 125 pairs will be built. The ART uses four pairs of 6550 output tubes to produce 275 watts into its rated load. Expect nothing but the best passive parts (Teflon caps, Vishay resistors, and Transpectral output transformers) in addition to C-J's superb craftsmanship. Also new is the LP125M (\$8500/pr.), essentially a monoblock version of the LP66S reviewed recently in TAS, offering twice the power output.

Prices: \$33,000/pair and \$8,500/pair.
conradjohnson.com

Valve Amplification Company's (**VAC**) Kevin Hayes has been wondering lately what would happen if VAC were to remove all design constraints and build an amplifier without regard to cost, size, and weight. The answer turned out to be the VAC Statement 440—a four-chassis affair with a retail price tag of \$72k, weighing in at about 500 pounds total weight. Power output is rated at 440 watts RMS (880 watts peak power) per monoblock. Six pairs of KT88 power tubes are used per side, biased for extended Class A operation. Key design elements include newly designed output transformers with a remarkable 750kHz bandwidth, point-to-point wiring, and isolated power supplies.

Prices: \$72,000.
vac-amps.com



ON THE HORIZON - A Sneak Peak at New Preamplifiers and Power Amplifiers Coming Your Way

Balanced Audio Technology showcased the REX Power amplifier, the successor to the VK-75SE/VK-150SE series. The amp is available in both stereo (80Wpc) and monoblock (160Wpc) versions (\$15,000 per chassis). REX Power retains BAT's all-triode, zero-feedback, fully symmetrical design elements. BAT continues to be a firm supporter of the Russian 6C33C-B power triode on the basis of its ability to push several amps of current into a load. Other noteworthy features are the use of custom oil-filled caps in critical areas of the power supply and the elimination of power-supply rail fuses from the signal path. Electronic protection circuits are provided for each power tube.

Price: \$15,000/chassis
balanced.com



audience

Available Soon!



Wavepower power amplifier

Wavemaster buffered autoformer pre-amplifier

the absolute sound

HP's Workshop - April/May 2010

"I thought the sound I heard there as magically 'right' as any I have heard at any show. I forgot to listen to the sound and listened to the music. A joy."
Harry Pearson - THE Show, Las Vegas - *The Absolute Sound*, Issue 202

ON THE HORIZON - A Sneak Peak at New Preamplifiers and Power Amplifiers Coming Your Way



Canadian-based **Raysonic** has established its own electronics manufacturing facility in China and all of its products are manufactured there under their own quality control procedures. The Reference 23 monoblock power amplifier (\$9990/pr.) produces sweet triode power using eight Russian KT88s per side operated in triode mode for a power output of 100Wpc RMS.

Prices: \$9990/pair.
raysonicaudio.com

The much decorated **Atma-Sphere** M-60 OTL amplifier and MP-1 preamp are now available in Mark 3.1 iterations. The M-60 Mk 3.1 improvements result in increased bass authority, lower noise, smoother overall presentation, improved soundstage, increased low level detail and enhanced tube life over its Mk. 2 counterpart. The MP-1 Mk 3.1 sports redesigned line and phono sections for lower noise, higher phono gain, enhanced transparency, and wider dynamic range.

Prices: \$6800/pair, \$11,500, \$12,900 (w/phono).
atma-sphere.com



You may recall that **Vincent's** SP-331 amplifier won a TAS "Power Amplifier of the Year" Award for 2007. Chris Martens regarded it as one of the sweetest deals in high-end audio. A high-end version of the SP-331 is now available. The SP-331MK (\$2199) features tube regulation and better caps and resistors.

Price: \$2199
vincent-tac.de



Esoteric has introduced a matching model A-03 Class A power amplifier to complement its new C-03 line stage preamplifier. Both feature very short signal paths and other design techniques to help keep the signal pure. The voltage amplification stage of the A-03 is a single-stage (many other amplifiers in the market use dual or triple stages), and this feature contributes to reduce the amount of feedback needed. Likewise the A-03 features dual-stage current amplification rather than the more common technique of using three stages to get more output power. Compared to other low-feedback Class A amplifiers, the A-03 has extremely controlled bass with a damping factor of 1000. This moderate output Class A amplifier is reported to be capable of driving any loudspeaker, as the output power is only slightly reduced to accommodate Esoteric's direct path implementation.

Price: \$14,000
esoteric.teac.com

New for 2010 from **Mystère** are the pa21 and ca21. The ca21 (\$2195) is a full-size chassis line preamp featuring tube rectification, DC filament supplies, zero global feedback, a high-quality 24-step volume attenuator, an SRRP gain stage, and a modified White cathode follower output stage for low output impedance. The pa21 (\$2995) is the ca21's matching amplifier, nominally a 55Wpc KT88-based power amp, although it may be easily switched to EL34 use. The adaptive autobias board allows one to run either tube at its optimal bias.

Prices: \$2195 and \$2995.
mystere-usa.com



NuForce is about to introduce its most ambitious power amplifier yet. The Reference 18 V3 Mono Amplifier offers even more power than the Reference 9V3SE, and the amplifier board has been split into three sections with extensive metal shielding, separate power supplies, and regulations for critical components. Release is scheduled for June, 2010, with an MRSP (est.) of \$8,000 per pair.

Prices: \$8,000/pair.
nuforce.com



Tomorrow's World – the future of amplification

Alan Sircom

Audio has undergone some significant and substantial change recently. The way we obtain, keep and replay our music has seen the sort of paradigm shift not seen since the birth of CD some three decades ago. In the rush to understand and cope with those changes to the front end, as well as significant improvements in the design and development of loudspeakers in recent years, it's easy to overlook the importance of the amplifier and the profound change that's taking place here too.

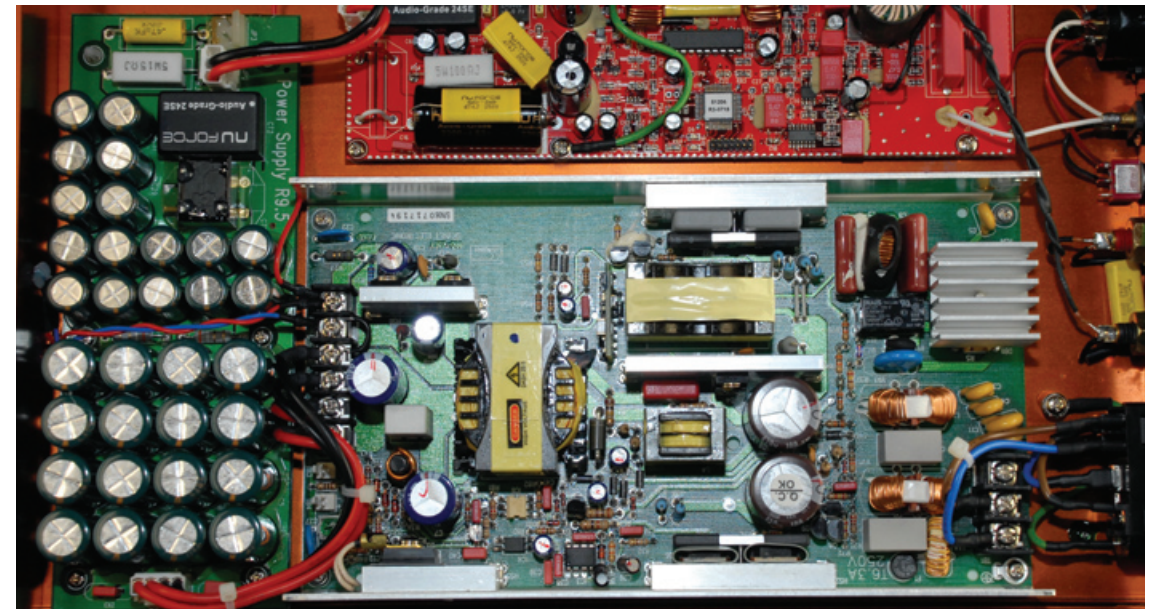
Separated into their own distinct stages, the standalone preamplifier and power amplifier arguably represent the standard-bearer for audiophiles; everyone's got a CD player, an amplifier and a pair of loudspeakers, but to subdivide the amplifier up into its component control and power sections... that's a sign of dedication and a statement of audiophile intent.

It's also a statement that is under threat in some circles. A small audiophile minority, but one that is both vocal and growing in numbers, has begun to question the need for a preamplifier in an increasingly all-digital audio chain. Freed from the requirements of phono inputs for turntables, line inputs for FM tuners and analog tape monitor circuits, the built-in digital attenuation and source selection found in many digital audio sources can completely replace the preamp. In theory, at

least; the reality is that digital attenuation systems frequently use bit reduction processes that can in many cases deliver an audible loss of signal quality at low volumes.

However, the DAC with a built-in limited function preamp (or a preamplifier with built-in DAC; the distinction is sometimes hard to spot) is a very different beast. Many of these devices perform digital-to-analog conversion before moving to a conventional analog preamplifier stage. This means that although the DAC and preamp share the same case, the two component parts are distinct and turning down the volume does not compromise the sound quality.

Other recent changes to preamp design have been the widespread removal of the built-in phono stage and the inclusion of remote control. The separate phono stage has risen in popularity, in



part because vinyl-free audiophiles no longer want to pay an excess for a built-in phono stage they may never use, and because those who take their LP seriously recognize the importance and potential for better vinyl sound from a standalone phono stage. Aside from the built-in DAC becoming the natural phono stage replacement, a handful of companies are building advanced DSP room correction systems into their amplifiers to help minimize the influence of the room on the sound of the system. This remains a minority interest at this time, but may prove a popular adjunct with tomorrow's audio enthusiasts.

One aspect from the past that may see resurgence is the use of tone controls, often in partnership with digital signal processing. The reason for this is simple; current recordings are actually getting worse, as they are mixed to

sound good through cheap headphones and MP3 players. Some subtle tailoring of the tonal qualities of the recording might help restore a more 'natural' tonality of the recording. Although this deviates somewhat from the goal of accurately reproducing the recording and while tone controls will not improve a sound compromised by 'loudness war' compression, if the recording needs some tone shaping to make the recording sound more like the original instruments, the net result is ultimately better. It's a sad indictment of the state of modern recording, but a pragmatic one nonetheless.

Thinking further ahead, what will tomorrow's preamplifier do? The likelihood is that a preamp returns to its original classification as 'control' amplifier, but with a distinct 21st Century feel. The preamp may likely act as controller for networked sources, interacting with the home server's music

player software, as well as a streaming client for internet radio and online music discovery sources like Last.FM. This will mean a preamplifier with a screen capable of handling the metadata (album covers, track details, etc) with some very competent digital processing behind the screen to bring out the best of a diverse range of audio material. As at the moment, one of the big hurdles to overcome in listening to new music is the audio quality content; a system that can adapt to make the best of such recordings without compromise elsewhere is a strong proposition. It's already possible to use a preamplifier as a hub in a house-wide multiroom network, but some preamps of the future will interact with other aspects of the home audio and audio-video system on a deeper level than today's systems.

Interestingly, the reverse is also true for tomorrow. Indeed, with the rise of more complex preamplifiers, there has been renewed interest in passive preamplifiers. These models do not even require power, and just use a series of high-quality attenuators to reduce the output from the source before feeding it into the power amp. Despite limitations (with no active preamp gain stages in place, even short increases in cable length can have a marked effect on treble attenuation), these unsullied connection between player and amplifier are proving popular as a alternate puritanical approach to audio.

So much for the preamp... what changes are likely to hit the world of power amplifiers over the next few years? Power amplification has already seen significant change in design ideologies over recent years, with low-power designs going toe-to-toe with behemoth solid-state designs. This clash of concepts shows no signs of change; if anything, the differences look set to widen. An increasing number of 'indie' brands now include

low-powered 'gainclone' chip amps and flea-power single-ended triode designs, while over the last half decade, companies including Bryston and Krell have released mono power amps that can deliver up to a kilowatt. These very different designs do not appeal to the same customer, nor are they likely to be used with similar loudspeaker designs, but both can turn in a performance that is impressive and enticing.

An increasingly common discussion when it comes to big amplifiers is environmental concerns. Audio Research and Cambridge Audio have already signed up as EnergyStar partners and expect others to follow suit. In addition, legislation in some regions may force manufacturers to follow schemes that physically change the design of some products – Europe banned the sale of products that used lead solder in the manufacture of any electronic component in mid 2006, and this meant many companies needed to radically change the way they build products, or stop selling to Europe. While it seems unlikely any government would take the trouble to try to outlaw vacuum tubes or hot-running class A amplifiers, many manufacturers

are now actively promoting more efficient designs on the basis of their eco-friendliness; this may become an active part of the buying decision for future audiophiles.

Amplifier designs broadly break down into 'classes'. Class A designs pass all of the signal through a single output device or set of output devices. This makes the amplifier less complex, free from crossover distortion and subsequently good sounding, but does make the amplifier inherently inefficient; Class A loses at least half its power and this makes the amplifier hot-running. Class B ('push-pull') uses two sets of output devices; one set for each half of the input wave-cycle. The point where the output devices cross over potentially undermines the performance, but the amplifier is more efficient (a variant called Class AB increases the bias, so that a small amount of the signal is conducted at all times by the output devices, which cuts back on crossover distortion without the inefficiency of Class A). Until recently, most high-end amplifiers used one of these two amplifier classes.

Class D (often incorrectly called a 'digital amp')

originally started life as a motor control amplifier. It converts the signal into a series of high voltage output pulses, usually 10x that of the highest frequency from the input signal. This allows an extremely high efficiency amplifier, often needing far less heat dissipation through heavy metal heatsinks. Class D was not initially well received by audiophiles (its first audio applications being strictly limited to subwoofers and low-end micro systems), but the low-power Tripath 'Class T' amp on a chip and Bang & Olufsen's ICEpower systems soon changed that. With companies like Micromega and Jeff Rowland successfully adopting Class D designs, it's likely to prove a significant alternative to Class A and AB in future.

There are also two company-specific variants; Class XD by Cambridge Audio and Class ADH from Devialet. Class XD works in Class A at low levels and Class B elsewhere – but unlike conventional Class AB, the amplifier does not take place at 0V (perhaps the worst possible place for an amplifier to switch). The other new method is the new Class ADH from Devialet. This is effectively a small Class A amplifier sitting on top of a more powerful Class D design, like a 21st century version of Quad's current dumping circuit. Whether these designs gain wider acceptance depends on whether these designs are licensed to other companies, but expect that there will also be other designs from other amplifier companies.

One design that has spread almost virally is the 'gainclone'; 47 Labs simple Gaincard circuit uses a very short signal path and a handful of components (the amplifier itself is a single op-amp chip). This has proved to be a popular choice among self-builders wanting to make a good-sounding amp for peanuts, and for indie designers needing a distinctive but not complex low-power amp. Gainclines are following broadly the same



path as those who re-discovered 50+ year old single-ended triode amplifier circuits (virtually consigned to history) in the 1980s.

The 'advantage' for both the gainclone and Class D amplifier designs is they can fit into extremely small cases, and this might prove to be a trend through the 2010s. The big, heavy power amplifier sitting on the floor between the loudspeakers may well be replaced by smaller, more elegant designs of similar power, consigned to the rack with all the preamplifier and other components.

This represents a significant potential change in the way a system's cables are deployed. Traditionally, audiophiles (especially US audiophiles) have used long interconnects and short speaker cable runs. The impedance of the preamp output and power amplifier input – and the use of balanced connections – has reflected the demands of this type of layout. Smaller, cool running power amplifiers can be placed nearer the preamplifier, in the manner often used by European audiophiles with their lower powered amplifiers and generally smaller room dimensions.

Despite all these statements, the power amplifier is the component with the most diverse possibilities and predicting the future of the device is incredibly difficult. Will tubes continue to dominate, and if so will they be big single-ended triodes or push-pull pentode devices? Is the future in powerhouses or lower power, higher speed designs? Will there be a change of class forced by legislation or will big really remain beautiful? In truth, we suspect all these options and more will be open five years from now and beyond.

We are in a golden age for power amplifier design. The tolerance of the materials that are used in the construction of power amplifiers are better than ever, there has never been a wider

range of circuit options and a market willing to accept such options and the availability of high-performance products at new low prices only serve to make the world of power amplifiers more exciting and diverse. Better still, with the small, budget end of the market improving, so true high-end designs are delivering more power than ever, but with a performance that raises the bar high. Our guess is that your next power amplifier will be smaller and more powerful than its predecessor, unless you are seeking the indie route when it will be smaller and less powerful. In both cases, this is a good idea.

One thing is clear, though. The shape, design and architecture of the preamplifier and power amplifier may have already been through significant change with a lot more to follow, but the importance of the design and the quality and flexibility these components bring is still as vital as ever. **tas**

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YOUR JAW WILL NEED SOMETHING SOFT TO LAND ON.



www.audioresearch.com

The hand-crafted dual chassis 40th Anniversary Reference Preamplifier. Prepare to be astounded.

audio research

How Much Amplifier Power Do You Need?

Robert Harley

The first question to answer when shopping for a power amplifier or integrated amplifier is how much output power you need. Power output, measured in watts into a specified loudspeaker impedance, varies from about 20Wpc (watts per channel) in a very small integrated amplifier to about 1000W in a monoblock. Most high-end power amplifiers put out between 80 and 250Wpc.

Choosing an appropriate amplifier power-output range for your loudspeakers, listening tastes, room, and budget is essential to getting the best sound for your money. If the amplifier is under-powered for your needs, you'll never hear the system at its full potential. The sound will be constricted, fatiguing, 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 is by far the biggest determining factor in choosing an appropriate power output. Loudspeaker sensitivity specifies how high a sound-pressure level (SPL) the loudspeaker will produce when driven by a certain power input. A typical sensitivity specification will read "88dB SPL, 1W/1m." 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. Although 88dB is a moderate listening volume, a closer look at how power relates to listening level reveals that we need much more than one watt for music playback.

Each 3dB increase in sound-pressure level requires a doubling of amplifier output power. Thus, our 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. The higher-sensitivity speaker simply converts 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 60 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 amplifier power: 5W. The Klipschorns are so sensitive (an astounding 105dB SPL, 1W/1m) 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.

We've seen that every doubling of amplifier power yields a volume increase of 3dB. Consequently, there is a 3dB difference between a 10W amplifier and a 20W amplifier, but also between a 500W amplifier and a 1000W amplifier. Although the output power is vastly greater between 500W and 1000W than between 10W and 20W, the difference is still 3dB. That's why we must consider the ratio of output powers, not the number of watts difference, when comparing amplifier power ratings. **tas**

Excerpted from *The Complete Guide to High-End Audio*, third edition. © by Robert Harley. hifibooks.com



EQUIPMENT REVIEWS

Pre/Power Combinations



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Arcam C31 preamp and P38 power amplifier

Understated Elegance

Ian Harris

While Arcam has been an undeniably potent force in British hi-fi for many, many years, its integrated amplifiers have always had a higher profile than its pre-power combinations. However, notwithstanding the rise of the 'high-end integrated', the Cambridge (UK, not MA!) company believes there is still a market for the pre-power approach, as its FMJ series offers the C31 pre along with both stereo and mono power amp options, in the shape of the P38 and the P1 respectively.

OK, the FMJ components may not be the most obviously styled on the market, but their classically simple design themes look as fresh today as they did when the series was first launched, and will probably continue to age a lot better than their more outre contemporaries. In terms of construction, they might not offer the sheer bling factor of some of the Far-Eastern competition, but finish is admirable, and the casework feels solid and well-damped for their price point (which certainly makes a nice change from half-inch thick facias fronting folded steel casework of gong-like resonance).

If styling is understated, the C31's feature count is anything but. Connectivity includes no less than seven single-ended inputs (including two tape loops); one balanced and two single-ended

pre-outs (one buffered for long cable runs, one direct); headphone output plus an optional MM/MC phono stage. Functionality includes balance, individual trimming of inputs plus three switchable levels of volume resolution. In fact, the only hint of hair shirt is the lack of a tone control, which will be many buyer's preference anyway. While there is some duplication of function between the fascia's two ranks of buttons, the labeling and purpose of all controls is highly intuitive. So intuitive, in fact, that the C31 is that rarest of beasts, a feature-rich component which can be quickly and easily set up without even a cursory glance at a manual. All functionality can be managed via the on-unit controls or the comprehensive remote handset (which, happily, is almost as intuitive as the unit itself).



Visually, the P38 is minimalism personified, with only Arcam and FMJ logos plus power-on and speaker select buttons adorning the fascia. Connection-wise, there are single-ended inputs only (the C31's balanced output being aimed at the suitably equipped P1 monoblocs). Single-ended pre-outs for bi-amping purposes plus two sets of Arcam's bananafriendly binding posts complete the rear panel furniture, while claimed power output is a none-too-shabby 105 Watts per channel.

First impression of the combination was of a 'polite' and refined sound. If that sounds like damnation with faint praise, it would be doing the pair a serious injustice. Underneath their undeniably cultured presentation, the Arcams were providing a beautifully balanced

performance, with no little excitement where appropriate. Mid/high frequency reproduction seemed to lack nothing in terms of transient impact or detail, yet was totally immune to any sense of brittleness or edge, even when dynamic and frequency peaks coincided. At times, the production of Eva Cassidy's 'Time After Time' (Hot Records) treads a fine line between clarity and brightness, but the C31 and P38 navigated the challenge with a refined grace which presented Eva's vocal dynamics in a wonderfully fatigue-free manner. While logic suggests that such smooth presentation must be filtering out some degree of detail, my ears told me that the Arcams were actually digging out considerably more nuance and atmosphere than many more overtly up-front and apparently detailed components.

EQUIPMENT REVIEW - Arcam C31 preamp and P38 power amplifier



At the opposite end of the frequency spectrum, bass character was a little tougher to call. While it was undoubtedly both rhythmically tight and gratifyingly detailed, the over-riding feeling was of virtuous neutrality. What I can say with confidence is that there was sufficient grip to make my Focal Micro Utopias sound considerably larger than they have any right to. The rumbling sousaphone in Eric Bibb's 'Get It While It's Hot' (*Just Like Love*, Opus 3), had a tremendous sense of multi-layered resonance, and presented a weightily impressive presence in the room, which belied the speakers lone 165mm mid-bass drivers. Joining the two extremes, the midrange displayed just a hint of warmth but, as with the high-frequencies, there seemed to be no attendant loss in impact or detail. A case in point was Elvis Costello's 'Alison' (*My Aim Is*

True). While there was definitely a beguiling hint of richness to the overall presentation, every nuance of that multi-faceted buzz-saw of a vocal was faithfully reproduced. A slightly more mellow test was supplied by 'The Way We Were', where the utter precision of Barbra Streisand's voice was vividly highlighted. The Arcam casting a vivid spotlight on the last lingering phrases of the song, where I could clearly hear the gentle ebb and flow of the last held note as it gently faded away. More impressive still was the fact that the residual breath remained audible long after the note finally died, demonstrating the singer's almost supernatural levels of vocal control. Drilling a little deeper than a broadbrush summary by frequency, it was this amazing level of transparency that really surprised me. If my previous experience of Arcam amplification has

been that this aspect of performance was good rather than outstanding, the C31 and P38 were definitely reversing that view, at their price point, really something quite special. Initially, the fine levels of transparency were most apparent some way back in the mix, with backing instruments and vocals, at times displaying quite staggering levels of timbral discrimination. Happily, there was never a sense of background musical themes being unduly emphasized; rather, they kept their proper place in the mix, just with a greater sense of realism and life than I would normally expect at this price level. In terms of primary vocals and instruments, the main beneficiary was a terrific sense of life-like presence, which provided very solid and atmospheric imaging. In terms of sound-staging, size and precision were realistic rather than being cavernous or millimetrically precise, but this was entirely in keeping with the units' overall character – subtle rather than in-your-face but, particularly with intimate material, all the better for it. Upping the tempo a little with AC/DC's 'Hell Ain't A Bad Place To Be' (*Let There Be Rock*) there was a definite spring in the Arcam pairings' step. While I have heard this guitar driven masterpiece reproduced with a touch more weight and impact, there was a tremendous sense of musical energy. Once again, levels of detail were surprising with Malcolm and Angus Young's loosely synchronised guitars displaying myriad variations in instrumental timbre and technique while Bon Scott's characteristically, erm, enthusiastic vocal provided an impressively solid central image. At all comfortable listening levels (and some way beyond), musical themes remained satisfyingly independent of each other,

meaning quite exhilarating volume was possible without the sound becoming oppressive. Sticking with AC/DC material, Hayseed Dixie's wonderfully manic "rockgrass" interpretation of 'A Whole Lotta Rosie' (*Let There Be Rockgrass*, Cooking Vinyl) repeated the themes of a vivid

SPECS & PRICING

C31 Pre-Amp
Inputs: 7x line-level (optional MM/MC phono)
Outputs: 1x single-ended 1x balanced 2x tape
Dimensions (WxHxD): 430 x 110 x 370mm
Weight: 9.3kg

P38 Power Amp
Inputs: 1x single ended
Output power: 105 Watts/8 Ohms
Dimensions (WxHxD): 430 x 110 x 370mm
Weight: 9.3kg

U.S.	U.K.
C31 Pre-Amp	C31 Pre-Amp
Price: \$1599	Price: £1,480
P38 Power Amp	P38 Power Amp
Price: \$1599	Price: £1,020
ARCAM	ARCAM LTD
American Audio-Video	+44 (0)1223 203203
American Music and	arcam.co.uk
Sound, LLC	
5304 Derry Avenue #C	
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EQUIPMENT REVIEW - Arcam C31 preamp and P38 power amplifier

sense of musical energy combined with well-drawn and highly detailed vocal and instrumental images. Reproduction of the fastest fiddle passages confirmed that the Arcams' deal with rapid tempo with both clarity and poise. However, they did not reach the absolute pinnacle of fluidity, with just the last iota of temporal detail being glossed over.

Overall, the units' performance with Rock material was highly enjoyable, with a premium being placed on detail and verve, perhaps at the expense of ultimate weight and impact. Of course, the relatively small two-way Micro Utopias are never going to reproduce infrasonic frequencies, but the C31 and P38 are not components which are likely to beat you around the head with the frequency extremes. To my ears, their performance was extremely well balanced, but an audition with the partnering speakersto-be should, of course, be part of the buying process.

Inevitably, the Arcam combo did concede a little ground to higher priced kit in certain aspects of their performance. One such area would be grace under (extreme) pressure. While at no time could I provoke the P38 into any harsh clipping behavior, the amp lost just a little of its grace and refinement when confronted with the triple whammy of dynamically challenging and musically congested material, played at genuinely high levels. The effect was fairly subtle, but as the amp reached its limits, there was just a little less control of individual musical themes than that provided by the real solid-state powerhouses. That said, for listeners with typical European-sized listening rooms (particularly those of us who suffer the tyranny of party walls), the P38's output and speaker control would be wholly adequate for

the vast majority of the time. If four-figure output behemoths (with price tags to match) have the genuine capability to recreate musical events at life-like volumes, the Arcam is more about providing a modulated version, at sound-pressure levels more appropriate to domestic locations. By this criterion, it retained its composure well up to the onset of serious 'party' volumes. At which levels, a mild case of musical congestion within the most challenging material is forgivable and, perhaps, almost inevitable with sensibly priced and sized amplifiers.

The C31/P38 pairing definitely leans towards the musical end of the spectrum, as opposed to the overtly hi-fi. While they are undoubtedly talented all-rounders, my feeling is that they are marginally better matched to the mellow among us rather than the manic. However, I should stress that this statement is more a reflection of their lightness of touch than an indication that they are lacking in either power or drive.

If Arcam set out to create a pairing that would be more than competitive in terms of both build-quality and performance, then it has hit the bull's-eye – despite the congested market place. With their beguiling mix of transparency and musicality, the C31 and P38 are fine ambassadors for the prepower approach, and worthy figure heads for the FMJ stereo range.

While there are numerous talented alternatives, especially at the units' combined cost, if you need the Arcams' high feature count and longevity allied to a refined and musical sound, they will be hard to beat at the price. +



Aesthetix Janus Signature preamp and Atlas power amp

Heavenly Match

Alan Taffel

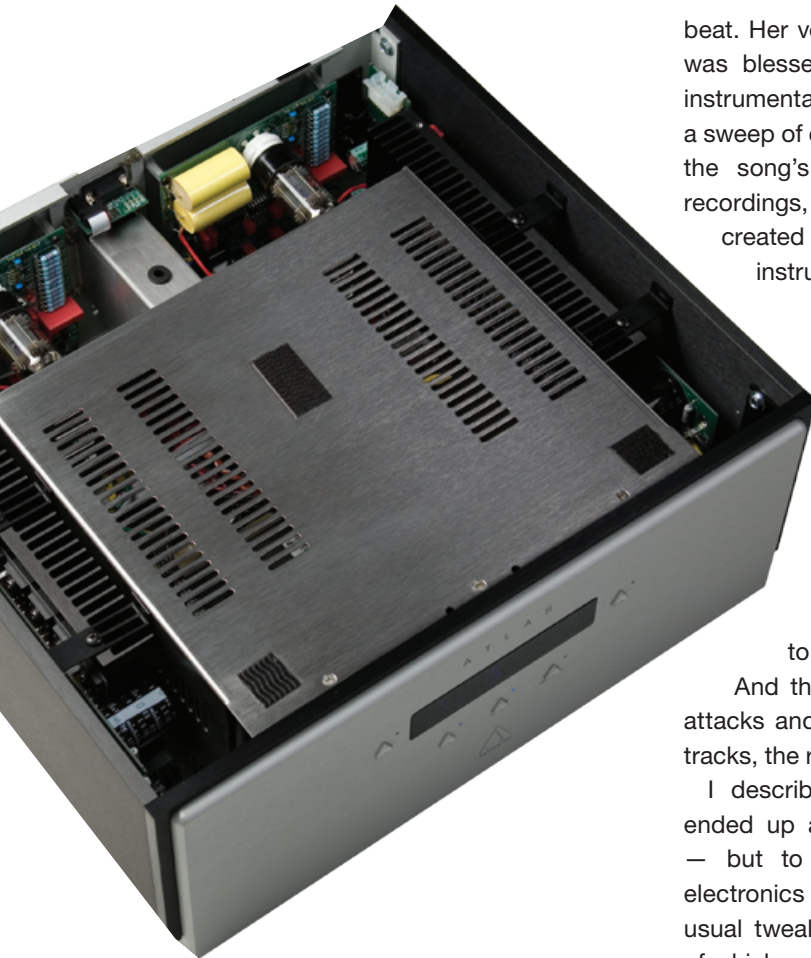
Sometimes reviewers enter a project having no idea what to expect, as was the case with my research into the sound of USB audio (TAS Issue 194). Other times, we do have expectations based upon word-of-mouth, a manufacturer's reputation, or prior experience – expectations that are subsequently confirmed or dashed depending upon the product's actual performance. In the case of the new Aesthetix Atlas stereo power amp and Janus Signature preamp, I felt I knew them before I played a single note.

Back in January at CES, a mono version of the Atlas contributed to the stunning debut of Richard Vandersteen's forthcoming Model 7 loudspeaker. Clearly the 7 could not have produced the level of resolution and life heard on that occasion without a similarly capable amp. As regards the preamp, several years ago Robert Harley and I gave the Aesthetix Calypso lineage two big thumbs up. The Signature version of that same unit, along with a similarly tricked-out edition of the Rhea phonostage (reviewed separately by RH), nestles within the Janus Signature.

Naturally I wanted nothing more than to connect these two beauties together and enjoy the music. But a reviewer is obliged to report on the sound of individual components, so first I dropped the 200Wpc tube/solid-state hybrid Atlas — Aesthetix' maiden foray into power amps—into my Goldmund-based reference system. I played a few tracks: the 'Overture' from Peter McGrath's benchmark recording of Handel's *Water Musik*; the percussive 'Reckoner' from Radiohead's *In Rainbows*; Mary Gauthier's atmospheric 'Falling Out of Love' from *Mercy Now*; and, perhaps most tellingly, the 'Tin Pan Alley' bonus track from the stupendous remix of Stevie Ray Vaughn's classic *Texas Flood*.



EQUIPMENT REVIEW - Aesthetix Janus Signature preamp and Atlas power amp



beat. Her voice, recorded very close to the mic, was blessedly free of spit or sibilance. Every instrumental flourish—a sigh through a harmonica, a sweep of cellos—had impact yet did not disrupt the song’s overall momentum. On all these recordings, but especially on Stevie Ray, the Atlas created a mushroom cloud of air around each instrument and a deep sense of space.

Yet all was not well. My reference amp’s ability to localize images more precisely than the Atlas gave instruments greater solidity, authority, and just plain realism. And while I liked the Atlas’ rich full timbres, I did not like the upper-bass bloat that was making pianos and bass guitars entirely too plump. Dynamics lacked the ability to “startle” when called upon to do so.

And the Atlas seemed to be both blunting attacks and truncating decays; on faster-paced tracks, the result was a timing train wreck.

I describe these failings not because they ended up applying to the Atlas — they didn’t — but to illustrate what can happen when electronics are mismatched. You see, I tried the usual tweaks to correct these problems, some of which, such as a good set of cones under the amp, helped significantly. But ultimately I had to think that, despite Jim White’s design goal of building an amp that will work with pretty much anything (see the accompanying interview), the Atlas just might not be compatible with my preamp. And so I discarded the noble scientific notion of changing just one variable in the system, jettisoned my reference preamp, and inserted the Janus Signature. What I heard then was

nothing short of a transformation. In my listening notes, underneath the aforementioned catalog of complaints, I wrote, “Never mind.”

With the Janus Signature (and later the Calypso) driving it, the Atlas exhibited no trace of timing confusion, no blunted attacks, no bass bloat, and no fuzzy imaging. Indeed, its resolution, timing, and imaging were beyond reproach. Tonally, the amp was still on the sweet side—gold to my reference’s silver—but this was an appealing character, and one that was consistent across the musical spectrum, making the amp fully coherent. The Atlas was *slightly* less incisive

dynamically than the reference, but so is pretty much everything. In any case, I suspect this would only be noticeable in a direct comparison and with extremely revealing ancillary gear. In sum, the Atlas ultimately proved to be a joy — both sonically and musically — to listen to, living up to the promise it displayed at CES.

At this point, I turned to the Janus Signature, trying, as I had with the Atlas, to isolate its sound. To do so, I connected it to my Goldmund amp. I was not too concerned about this arrangement because the Calypso, years earlier, had always been a fine match for the Goldmund. As it turned

OPERATIONAL PERKS AND PEEVES

Both the Janus Signature and Atlas are a delight to behold—brawny and handsome, yet supremely tasteful. Their exteriors attest to the quality of construction that continues within. And for the most part, these components are also brilliantly conceived from an ergonomic standpoint. The Atlas offers a nice menu system via its front-panel display for input selection and crossover point. A crossover in a power amp? Yes. The Atlas includes a 6dB/octave high-pass filter with the crossover selectable from 40-200Hz. This feature makes the Atlas a snap to mate with powered subwoofers.

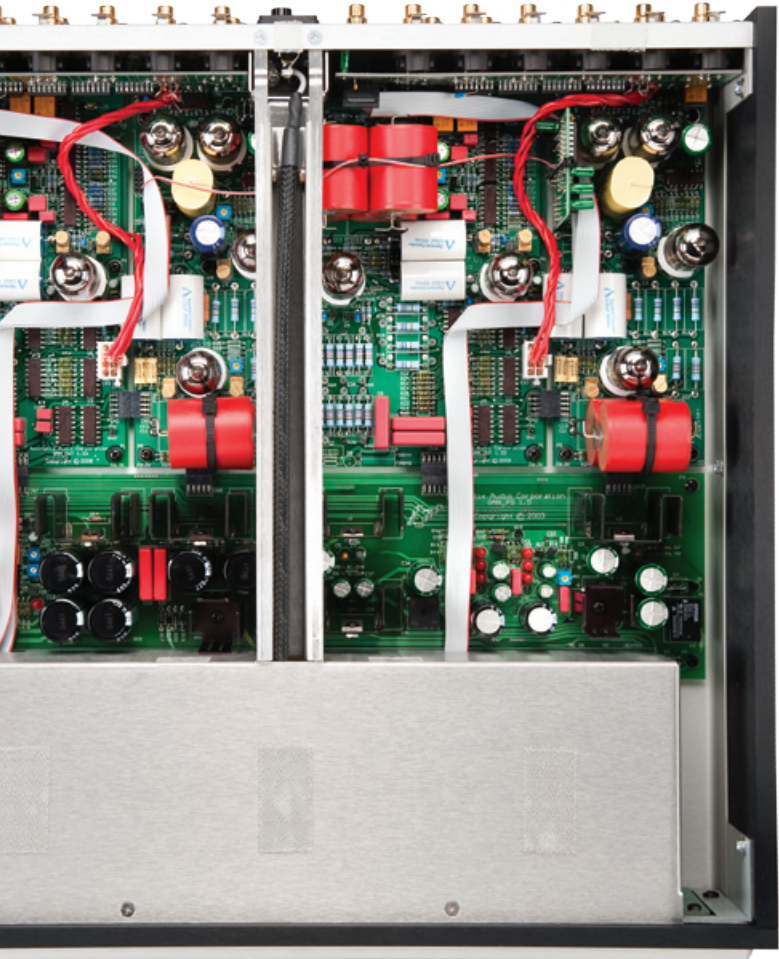
The Janus Signature, like the Calypso and original Janus before it, is a couch potato’s dream. From the comfort of the listening positioning, one can use the remote to control volume, balance, source selection, phase, even

cartridge-loading. A nice large front-panel display lets you know what’s happening, and its brightness is also under the user’s control. (Hint: Completely off sounds best.)

My only operational complaint has to do with the function switches on the Janus. The buttons have a nice positive feel and emit a reassuring click as feedback, but they also send an audible pop through the audio chain, such as when changing sources. No doubt this annoyance was exaggerated on my system, which includes speakers of unusually high sensitivity. Nonetheless, I prefer silent switching.

Glitches aside, in their looks, features, operation, build-quality, and sound, the Janus Signature and Atlas amply deliver the pride of ownership that characterizes the very best audiophile gear. They also deliver a level of value that is far rarer in this echelon. **AT**

EQUIPMENT REVIEW - Aesthetix Janus Signature preamp and Atlas power amp



sounds a lot like the wonderful Calypso linestage on which it is based, and a lot like the Atlas, too. Fast and detailed without being analytical; extended highs without a glint of shrillness; a low noise floor that makes it easy to listen ‘into’ the music; precise, pulsating rhythms; dynamics that are only a skosh less lively than the reference; and a laid-back (Row J versus Row C) perspective. The quiet background, freedom from in-your-face dramatics, and smooth highs add up to long hours of glorious, fatigue-free listening.

Of course, there are differences between the original and upgraded linestages. The normal Calypso/Janus soundstage is big, but not huge; it stops just shy of the speakers’ inner edge. Moving up to the Signature version, the

soundstage enlarges to fully equal that of my far more expensive reference preamp, extending to the outer edge of the speakers and beyond. The Signature also delivers a richer portfolio of instrumental timbres, making the original seem slightly pale in comparison (but only in comparison). The

Sig also offers more air, and decays with longer tails. And just as Robert Harley found in comparing the Rhea phonostage to its Signature iteration, opting for the Signature linestage reaps bass that is distinctly more defined and fleshed out.

However, I found one characteristic of the Signature that not everyone will deem an improvement. Unlike the Atlas, the Janus really does have an upper-bass bump, one that is entirely absent in the non-Signature version. This narrow spectral exaggeration is partially responsible for the Signature’s pleasantly warmer cast, but it also imbues the sound with a thickness that affects both timing and timbre. For instance, the *Water Musik* overture through the non-Signature Aesthetix is appropriate bouncy, but through the Signature it feels slightly bogged down. Further, on tracks with strong bass to begin with, such as the Mary Gauthier, the Signature can gild the lily.

I believe the choice between the Signature and non-Signature model will come down to personal preference. The regular version is more strictly neutral and ‘lighter on its feet’ though not as timbrally rich or complex. C, the original Calypso remains a steal. The Signature will appeal to those who favor a more euphonic sound, a bigger soundstage, and significantly fuller bass. Both units offer superior performance, quality, and value. Hearing the Calypso again reminded me why my anticipation for the Janus Signature had run so high. Happily, the Janus, like the Atlas, handily met those lofty expectations. **tas**

out, the Janus proved equally amenable. This setup allowed me to get a clear handle on the Janus’ sound. However, the preamp was clearly happier when paired with the Atlas; when I reunited these two components, I could almost hear them cry out a “Thank you!”

Through either amp, the Janus Signature

SPECS & PRICING

Janus Signature Preamplifier

Inputs: One RCA stereo phono, five RCA or balanced stereo analog, one RCA or balanced tape
Outputs: Two RCA or balanced stereo analog, one RCA tape
Dimensions (WxHxD): 17.875" x 4.375" x 18"
Weight: 40 lbs.

Atlas Stereo Power Amplifier

Inputs: Single-ended and balanced stereo analog, RS232, 12V trigger
Power Output: 200Wpc into 8 ohms, 400Wpc into 4 ohms
Dimensions (WxHxD): 18" x 8" x 19"
Weight: 70 lbs.

U.S.

Janus Signature Preamplifier
Price: \$10,000
Atlas Stereo Power Amplifier
Price: \$8,000

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Janus Signature Preamplifier
Price: £9,700
Atlas Stereo Power Amplifier
Price: £7,700

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BAlabo BC-1 Mk-II preamp and BP-1 Mk-II power amp

More than skin deep

Jonathan Valin

The BC-1 Mk-II linestage preamplifier and the BP-1 Mk-II 500Wpc stereo amplifier from celebrated Japanese audio engineer Fumio Ohashi of Bridge Audio Laboratory (BAlabo) are the most exquisitely beautiful sounding audio components I've yet heard—tube or solid-state. Thanks to the fact that they are among the highest-resolution preamps and amps I've heard, they are also among the most persuasively lifelike. That said, let me quickly note that the BAlabo's brand of realism is a bit sugarcoated. The 'trouble,' if you want to call it that – and I don't, as you will see – is that the BP-1 and the BC-1 (in particular) tend to make *everything* sound beautiful, even poorer recordings. In this regard, they are highly reminiscent of the TW-Acoustic turntables—and for good reasons.

Like the TW Raven AC-3, the BAlabo electronics are audibly superior at reproducing the full durations of notes, at spinning out the harmonic series of any instrument at any pitch in a way that makes timbres sound exceptionally dense and lifelike in color. Some amps and preamps—particularly Class A/B solid-state—tend to condense the harmonic series, giving you more starting transient and fundamental and less steady-state tone and decay. The BAlabo gear isn't quite the polar opposite of this, since it is also superb at transients (particularly in the midband and the bass), but it is close to the opposite. The BC-1 and BP-1 unfold a note as if it were a piece of origami, only instead of a paper tiger or flower or bird you get a clarinet, a piano, a human voice. Just put on any recording with a stringed instrument



EQUIPMENT REVIEW - BALabo BC-1 Mk-II preamp and BP-1 Mk-II power amp

SET-UP NOTES AND FURTHER THOUGHTS

The BALabo BC-1 Mk-II and BP-1 Mk-II are relatively easy to set up. Since they are both extraordinarily beautiful items with extensive built-in resonance controls, you will want to display them prominently in your room. You will also want some help uncrating them and moving them around. At 57 pounds, this is one heavy preamp, and in spite of its compact good looks the amp weighs in at 165 pounds. As noted in the review, BALabo has gone to some pains to eliminate hum and noise that may arise from differences in the grounding potential of amp and preamp. To that end, you will have to connect a special cable between the ground-plane connector on the preamp and the ground-plane connector on the amp. Although this cable costs \$2k, it is, IMO, worth purchasing, as it does what BALabo says it does: audibly reduces noise and increases resolution.

These BALabo items are built with fanatical attention to detail and beautiful cosmetic/functional touches—you certainly will not feel cheated of your money if you buy them. For instance, the RCA inputs on the preamp and amp have little “doors” that collapse inward and upward when you plug an interconnect into them and keep out dust when the jacks aren’t being used. The amp has a six-position attenuator switch on the back, which allows you to hit the “sweet spot” on the preamp’s volume control (roughly between 11 and 3) by matching output levels to input levels. (I have

to admit that I preferred the sound of the amp when the attenuator was set to max.) There are also two very cool-looking, lighted, power indicators on the front panel of the amp, which rise and fall with the power outputted by the BP-1. (As trick and useful as they are, once again I think the amp sounds its considerable best when the power indicators are turned off.)

Though I didn’t discuss this in the review proper, I did try the amp out with different preamps and it is clear to me that the BALabo’s signature “darkness” and timbral richness is coming, primarily, from the preamp. Fed by a Soulution 720 linestage, the BP-1 Mk-II sounds remarkably like a Soulution 700 amp, albeit with considerably more power (for those of you who like to play loud, the thing is virtually inexhaustible), a bit less soundstage dimensionality, and sweeter timbres.

Of course, the primary reason for buying BALabo gear, IMO, is its absolutely gorgeous tone colors, so mating it up with another manufacturer’s preamp doesn’t make a lot of sense. As I note in my review, this is a package designed for a certain kind of listener (who also has a lot of moolah). I found it enormously appealing and satisfying—and so did my listening panel (it was their favorite). If you want a different, more audiophile-neutral presentation, there are other options.

— from Joan Baez’s guitar on her incomparable eponymous first album to Joni Mitchell’s dulcimer throughout Blue to Nadia Salerno-Sonnenberg’s violin in the Prokofiev First Violin Sonata—and you will instantly and unmistakably hear tone colors expand as they do with the TW-Acoustic ’tables (and as they so often do in life, particularly if you’re seated close by the instruments). It’s as if everything is being played *sostenuto* and being recorded with Neumann M-49 triode-powered ribbon mikes.

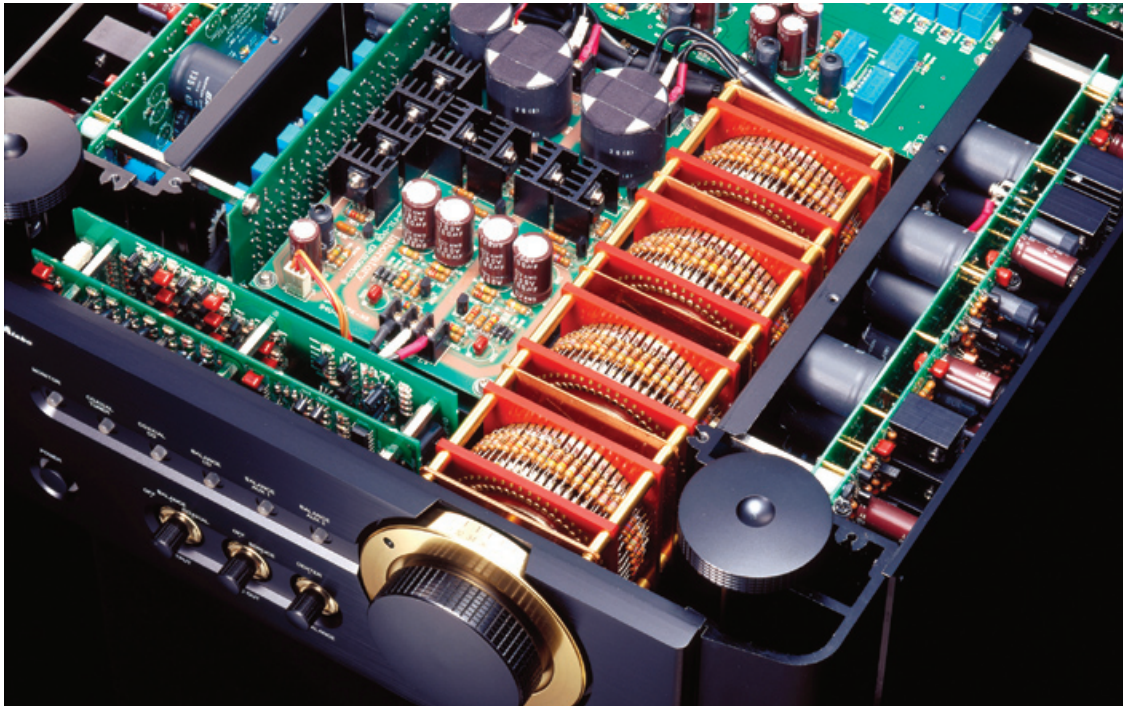
To be fair—and once again like the TW-Acoustic ’tables—even as they get richer and more voluptuous, you will also hear tone colors darken with the BALabo components, as if the instruments sounding them were playing in a pit orchestra or a small club rather than on a large open stage. This overall darkness is not a matter of veiling in the treble, although the BALabo’s top end is just a little softer and sweeter and less explosively dynamic than that of, oh, the dead-center-neutral Soulution gear I raved about a few issues ago (or than the equally dark and very nearly as lovely-sounding MBL electronics). Nor is it a question of a humped-up bass—the BALabo’s grip, definition, and realism in the low end are (alongside the MBL 9011) standard-setting in my experience. And it is certainly not a result of any kind of midrange opacity. As noted, the BALabo electronics are among the highest-resolution audio components I’ve ever heard, retrieving fresh low-level details about dynamics, tone colors, and instrumental textures from every disc in rather the same way that the Soulution gear does, although, here, the details don’t add up to an entirely new gestalt as they did with the Soulution 720 and 710/700. (At the time that I reviewed them, I’d never before

heard anything that sounded quite as transparent-to-sources as the Soulution components; in the MBL electronics, I have heard gear that sounds similar to BALabo’s offerings, although, perhaps, not quite as voluptuously beautiful or as finely detailed.)

There could be all sorts of technical reasons for the BALabo’s overall Class A-like richness and darkness, from bandwidth to transistor-biasing. Whatever those reasons are, I’m certain that the BC-1 and BP-1’s “yin” tonal palette was a deliberate design choice. Ohashi simply wanted his gear to sound ravishingly beautiful—the way music often sounds in life and almost always sounds in our memories.

How he achieved this unstinting gorgeousness appears to be more than just a matter of using the highest-quality parts in exceptional circuits. Ohashi seems to have laid equal emphasis on lowering noise of every kind. Both amp and preamp use “unique” internal grounding schemes to eliminate stray intra-channel currents. Signal ground-plane connectors on amp and preamp, which require the use of a specially designed (and, at \$2k, very expensive) grounding wire, reduce differences in the ground potential between preamp and amp, while the built-in power-line filters and rectifiers lower AC line noise and the massive, superbly built, constrained-layer (aluminum/steel/polymer) chassis disperse mechanical resonances. Everything that could be done to control the propagation of noise generated from outside and from inside the preamp and amp has been done. Add this to the generous use of custom-made caps and resistors, a “post-attenuation scheme” in the BC-1 MkII preamp that amplifies line-level signals

EQUIPMENT REVIEW - BALabo BC-1 Mk-II preamp and BP-1 Mk-II power amp



at the input stage (before they reach the volume control), and the preamp's absolutely heroic (and positively gigantic) 58-position volume attenuator that looks like something from Captain Nemo's Nautilus, is said to be accurate to 0.2dB at every position, and uses thick copper plates between each of its eight sections to shield against noise and absorb vibration, and you get a preamp and amp that achieve S/N ratios of >110dB. That's little short of astonishing.

BALabo may not have gone about it in quite the same way as Soulution did with the Switzers' very-high-speed, very-high-bandwidth, very-high-negative-feedback circuits (and it may not have achieved quite the same astonishingly low

noise floor that Soulution did in its 720 preamp and 700/710 amps), but Ohashi's goal was the same as Christoph Schürmann's—to reduce noise, increase low-level resolution, and improve musical realism. In my opinion he has succeeded across the board.

Starting in the bottom end, the BC-1 and BP-1 are simply the best I've heard at controlling and articulating the bass of the mighty Magico M5s. Here they narrowly edge out the Soulution combos, which are just a tad "bigger," fuller, and not as tightly defined (although some might find the Soulution's size, weight, and bloom more natural). As a result, you hear more bass-range detail, both transient and timbral, a bit more

clearly through the BALabo gear. (At least you do if you use Magico M5s.) Drums doubling electric bass, cellos doubling violas, harps doubling contrabasses (as, for instance, in the Passacaglia of the Lutoslawski Concerto for Orchestra), any bass-range instruments playing similar pitches simultaneously are very clearly delineated by the BC-1 and BP-1, as are individual instrumentalists in orchestral choirs. And, of course, you get the added bonus of the BALabo's gorgeous reproduction of timbres.

The BALabo's midrange is a thing of utter beauty—so sweet, so finely detailed, so rich and fully articulated, so much like the real thing (heard close by). It is also fast, startlingly dynamic in impact (snapped strings or pounded piano chords or rim shots will astonish you), and, yes and for all its virtues, definitely on the dark side. That darkness does not keep voices and instruments from sounding real, BTW. However, it also, at the same time, tends to make them sound a bit more like hi-fi. To put this differently, a tonal balance that is as skewed toward the dark and rich side as that of the BALabo gear (or the MBL gear, for that matter) won't prevent you from thrilling and delighting to the music in precisely the same ways that hearing real musicians in a real acoustic thrills and delights. But the "sameness" of the presentation—the beautification of every recording—tends to remind you that you're listening to a stereo. There is "real" and there is "hi-fi real." The BALabo leans towards the latter.

The treble range of the BALabo is, as noted, sweet, soft, and, like the rest of the amp and preamp's tonal palette, dark. Indeed, minus the darkness and softness it is a bit like the treble range of the Magico M5 (as was that of the

SPECS & PRICING

BALabo BC-1 Mk-II

Inputs: Two RCA (BNC optional), three balanced (XLR)

Outputs: One pair RCA (BNC optional), one pair balanced (XLR)

Dimensions (WxHxD): 16.75" x 17.5" x 7.5"

Weight: 57 lbs.

BALabo BP-1 MkII

Inputs: One pair RCA (BNC optional), one pair balanced (XLR)

Power Output: 500Wpc into 8 ohms

Dimensions (WxHxD): 16.75" x 28.5" x 10.6"

Weight: 165 lbs.

U.S.

BALabo BC-1 Mk-II

Price: \$59,500

BALabo BP-1 MkII

Price: \$77,500

U.K.

Not distributed in the UK

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EQUIPMENT REVIEW - BALabo BC-1 Mk-II and BP-1 Mk-II

Soulution gear). You're simply not aware that there is separate treble information in the music until a piccolo comes flitting along or a cymbal gets struck—and then, like it's popped up out of nowhere, you get the whole instrument, its dynamics and its timbre and its decay, albeit slightly more sweetly and darkly than what you'll get from the Soulution gear.

The BALabo's soundstaging is quite good, but not great. (For great, see the Soulution review.) It is just a little bit narrower in width, a little more laid-back in depth, a little more closed-in in height than the very best I've heard.

Despite all this talk about "hi-fi real" and "darkness," I don't want to leave you with the wrong impression. I love the sound of the BALabo gear. I love listening to equipment that makes beautiful music sound beautiful, and I'm more than willing to overlook those few occasions where I know the BALabo is making a record sound lovelier than it ought to sound. I know this is not very "audiophile" of me, but I'm a music lover before I'm an equipment reviewer and though it is necessary in my trade to use the gear that most clearly reveals things about other equipment, if I want to listen for sheer pleasure I quite honestly enjoy listening to the BALabo just as much as I do the equipment from Soulution. (There is a third contender for Top Honors in my little pantheon of solid-state—the amps and preamp from Naoto Kurosawa of Technical Brain, which I reported on recently in *TAS*, along with summarizing how each of these great amps and preamps from Japan and Switzerland compare and contrast.)

I'm going to end this review as I ended my Soulution review. The way I see it there are three

kinds of listeners (though these types tend to overlap): first, those who primarily want recorded instruments and voices to sound like live music—what I call the 'absolute sound' type; second, those who want to hear exactly what has been recorded, whether it's lifelike or not—what I call the 'fidelity to mastertapes' type; and third, those who could care less about the absolute sound or mastertapes and just want to hear their music sound thrilling and beautiful—what I call the 'as you like it' type. If you fall, primarily, into the third group—the 'as you like it' type—but also lean *strongly* toward the first group—the 'absolute sound' type—then the BALabo equipment is tailor-made for you.

Frankly, as I've already said, in certain moods and with many recordings it is tailor-made for me. I've never fully understood why a piece of gear has to periodically make records sound 'bad' to pass audiophile muster. As long as the equipment also sounds persuasively lifelike—as the BALabo most certainly does—what's wrong with gorgeous? In my opinion, nothing. Hence, the BC-1 Mk-II and BP-1 Mk-II get my highest recommendation if they fit your listening biases. Without question, they are the most consistently beautiful-sounding electronics I've ever heard. **tas**

Design Excellence meets Absolute Performance

"...simply and staggeringly gorgeous sounding."

Jonathan Valin, The Absolute Sound



BALabo
Bridge Audio Laboratory

www.balabo.com

Cambridge Audio 840E preamp and 840W power

Cambridge Graduates

Neil Gader



It's serious business striving to be taken seriously. Even when you've been producing exceptional electronics for years, as Cambridge Audio has, the moniker "value high-end" is a stigma that tends to stick. But some companies refuse the pigeonhole and won't submit to a slot in the pecking order. Cambridge Audio is one such company. And to substantiate this claim, its engineers hereby submit into evidence the Azur 840E preamplifier and 840W power amplifier—separates that make no apologies and stand ready to silence the snobs.

By any high-end standard, the Azur 840E and its 200Wpc partner, the 840W, are elegantly and conservatively styled—appropriate to the segment they aim to compete in. The acoustically damped casework is absolutely first-rate with a heavy 7mm front panel of extruded aluminum and aluminum side-panels. Every finished edge is satin smooth, with tight seams corner to corner. In the case of the 840W, the designers implemented some creative crosshatched venting to aid the amplifier's thermal efficiency. Substantial heat sinking lurks beneath.

The front panel of the 840E preamp is dominated by an LCD display (adjustable for intensity), which is flanked on each side by a vertical row of input buttons. The large volume-control knob is in actuality an attenuator-type. It's a premium resistor-ladder design with 1dB increments and is

relay-based with gold-plated contacts—far more precise and stable over the long run than the typical wiper-style volume pot. This mechanism isn't quiet. It ratchets up and down with the clatter of a socket wrench but at the end of the day its precision is reassuring. Via the "Mode" button there are treble and bass and balance controls, but this circuitry can be bypassed with a push of the "Direct" button. In another nod to pushing the high end forward, Cambridge Audio decided to forgo the ubiquitous op-amps normally used for driving low-level gain stages and designed and manufactured its own proprietary TerraPin (signifying ten-pin) discrete modules.

The 840W amplifier uses Cambridge Audio's proprietary XD topology—the object of a pending patent. This circuit enables the amplifier to run in Class A at low levels and transition to an

EQUIPMENT REVIEW - Cambridge Azur 840E Preamplifier and 840W Power Amplifier

BATTLE STATIONS

The Cambridge Audio Azur 840E and 840W are a marriage of old guard audiophile sensibilities and the hardscrabble lessons gleaned from the home-theater experience—specifically the demands of enhanced connectivity and custom-installation priorities. For purists, this duo can be connected in the traditional fashion—find the appropriate input and give the volume control a twist. But the 840E also allows tailoring the preamp to individual preferences via the system-configuration menu found when toggling through the “Mode” feature. Items like input naming, input gain trim, IR, display, and volume ramping are there for optimizing. Also the level for any input can be set at fixed gain for front L/R speaker integration into a multichannel system using an AV controller. Direct settings can also be specified for each input. The back panel houses eight inputs, and inputs One and Two can be toggle-switched between balanced XLR and unbalanced RCA. There are both balanced and unbalanced pre-outs to an amplifier. And don’t forget the front-panel 1/4” headphone jack.

The level of connectivity that the Azur 840E and 840W offers reminds us why separates are sometimes the only way to fly. With four IR outputs, 12V triggers, and an IR emitter at the ready, and the availability of optional Cambridge Incognito A-Bus

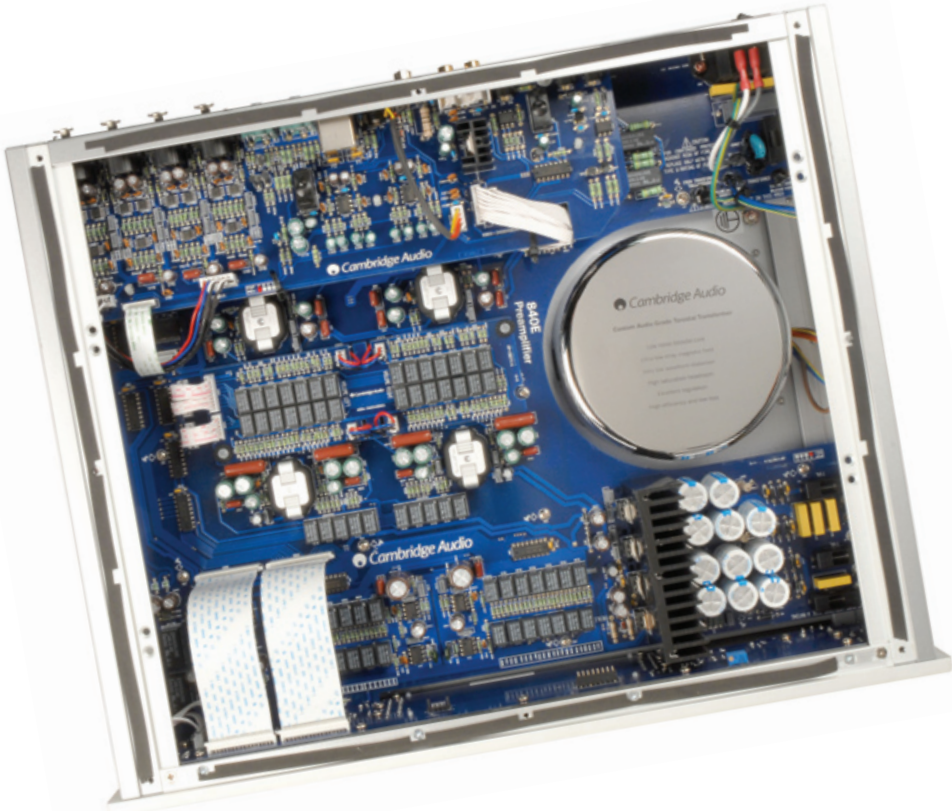
“enhanced” Class B without the typical crossover distortion normally associated with Class AB designs. In heat output it splits the difference between Class A and AB, which is to say it verges on the uncomfortable to the touch. Its carbon footprint at idle is 180W, not bad when you consider the Pass Labs INT-150 idles at 225W.

THE SOUND OF ONE HAND CLAPPING

So often first impressions invariably set the table for the entire meal. Which is to say there is generally an aspect or two of performance that immediately speaks to me. And so it was with the Azur components. They are exceedingly, even weirdly, quiet and settled. In the absence of music it is a quality felt as much as heard, like the

texture (and this is crucial) of an *unbroken* curtain of ambience and atmosphere hanging over the venue itself. I heard this during cellist Pieter Wispelwey’s *Kol Nidre* [Channel Classics, SACD] and then in the opening moments of Shelby Lynne’s “How Can I Be Sure” [Lost Highway]. Once this was established in my mind, other virtues seemed to fall like dominoes. Like the Hubble telescope, the focus of the 840E/W on images is decisive and crystalline deep. There’s a wealth of low-level resolving power, easily heard when I listened to Billy Joel’s “Angry Young Man,” which was recorded live at Carnegie Hall in 1977. What’s remarkable about the track—beyond the obvious virtuoso musicianship—is the hand clapping of the audience. The complexity of low-

level resolution radiating from the responsive crowd could easily be overwhelmed by the high-octane output of the musicians on the stage, but these electronics capture every micro-dynamic nuance. Similarly there’s a passage towards the



SPECS & PRICING

AZUR 840E

Inputs: Two balanced XLR, seven unbalanced RCA, one record input
Outputs: One balanced pre-out, one unbalanced pre-out, subwoofer out, two record out
Dimensions (WxHxD): 4.5” x 16.9” x 15.2”
Weight: 19.1 lbs.

AZUR 840W

Power Output: 200Wpc @ 8 ohms; 500W @ 8 ohms (bridged mode)
Inputs: One pair balanced, one pair unbalanced
Dimensions (WxHxD): 5.8” x 16.9” x 14.4”
Weight: 33 lbs.

U.S.

AZUR 840E

Price: \$1699

AZUR 840W

Price: \$2499

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AZUR 840E

Price: £799.99

AZUR 840W

Price: £1,199.99

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EQUIPMENT REVIEW - Cambridge Azur 840E Preamplifier and 840W Power Amplifier

keypads and power supply, Cambridge has taken all the guesswork out of the nightmare scenario known as multi-room/custom-install integration. Power-synching is available between units via the control bus I/O aboard each component and there's an RS232C port for external control of the preamp and software updates from Cambridge personnel.

The Azur 840W uses Class XD topology, a Cambridge exclusive. "XD" stands for Crossover Displacement. In a white paper describing the technology Cambridge writes that XD "enables the smoothest possible transition between single-ended Class A and push-pull Class B for dramatically reduced distortion," significantly below typical Class B level or Class AB. And Cambridge adds that there's also a wider range of Class A before

crossing over to Class B operation. In essence it combines the linearity of Class A and the economy of an optimized Class B. The 840W is switchable between stereo and mono by way of a bridged-mode switch. In mono, the 840W outputs a fire-breathing 500W. Both balanced and unbalanced inputs have loop outputs to permit two or more amps to be used as monos or in biamped operation. On the back panel, twin sets of heavy-duty speaker terminals are installed. Additionally, the Azur 840W also features separate transformer secondaries for the left and right channels, and twin rectifier and separate PSUs (power supply units) for dual-mono operation. No doubt about it, Cambridge Audio clearly has its eye set on powering audiophile systems at the very highest levels of the high end. **NG**

end of Norah Jones' "Sinking Soon" [Blue Note] where she is joined by a second voice at a level so low that it veers toward the inaudible. It has the character of a distantly mewing cat, but it is clearly doubling Jones' voice. I'd previously been missing it. And during Evgeny Kissin's performance of "The Lark" these electronics also eerily suggest the voluminous, lower-midrange harmonic weight of a grand piano on stage, including an accurate sense of its orientation to the audience. This is performance that would be impressive at any price.

The sonic character of the 840E/840W combo is neutral in tonality, but in the upper octaves leans a touch towards the cooler end of the spectrum. (On its own, apart from the 840E, the 840W

amplifier comes off as a bit darker, bloomier, and more relaxed on transients. It settles back a row or so in perspective and conveys more of the familiar and buttery pure Class A vibe.) Their collective attention to detail, wide full-blown soundstage, and micro-management of dynamics is unwavering, but they show less initiative reproducing the physical dimensions of midrange images or the liquidity of a violin or the air in a soprano voice. Transient speed was no problem but during a song like Jennifer Warnes' "If It Be Your Will" I felt a hint of hardness creeping in as Warnes' transitioned into her head tones. On the other hand, bass response is exceptional. The combo holds onto piano sustains and decays in an utterly natural way—an issue that also

speaks to the general low degree of electronic background noise, which permits more of the decay to be heard.

As fine a system as the 840E and 840W make, it's the amplifier that comes up the stronger of the two. It has more upper-frequency bloom and air than the 840E. Its personality is bolder and more robust. Images improve in dimensionality and the representation of space immediately around them. For most solid-state amplifiers tonal neutrality is by and large a done deal. However, like every exceptional amplifier I've encountered it's the little things that the 840W does that loom so large. For example, the new Sonus Faber Cremona M (\$12,800/pr.) is not a difficult speaker to drive, but its superior resolution makes it a tough speaker to exact full potential from. It can go deep, but with the wrong amp it can sound loose and a little imprecise. There are levels of beauty that the Cremona doesn't reveal with just any amplifier—especially in the lower mids and bass range and on top. And it's not merely all-out extension that the 840W improves; it's more about the inner dynamic life of music. The tiny dynamic shifts of an orchestra, the differences between a *mezzoforte* and a *fortissimo*, for example. When it reproduced Sting's plummeting fretless bass during "Tea in the Sahara" [A&M SACD], it found another gear, and I mean a really *low* gear—a seismic groan that I'd never heard out of the Cremona's before. In terms of timbre and control it came down on the Cremona like a drill sergeant—the entirety of the low-end suddenly stood at attention, complex passages were defined, harmonics focused, coherence tightened, and dynamics spring-loaded.

By any standard the Cambridge Audio Azur

840E and 840W rank as excellent components and at roughly \$4200, a supernatural deal. They should only further complicate the debate about what defines "serious" as opposed to "value" audio. However, there should be no doubt which side of this debate I come down on. Do the superstars of the industry have anything to fear? Let me put it this way—I wouldn't suggest they ignore the footsteps coming up behind them. This pair from Cambridge has graduated with honors and is ready to take on the world. **tas**





Conrad-Johnson ET2 preamp and LP66S power amplifier

Entry-Level Magic

Dick Olsher

Entry-level may mean different things to different manufacturers, but at C-J it definitely does not denote a major sonic penalty relative to its ultra-high-end products. Cost containment may be implemented through circuit simplification, judicious passive part substitutions, or watered-down cosmetics. Well, since C-J's design philosophy already emphasizes simplicity—"circuits should be kept as simple as possible"—that mostly leaves the other two cost-cutting avenues open. The ET2 with its acrylic tube cage is surprisingly far more upscale-looking than one would expect from its price tag. The LP66S power amp, on the other hand, does project a Spartan appearance, especially with its tube cage off. But as you will soon discover, component quality—a major factor in any C-J product—is still extremely high.

A major part-selection decision was necessary in the case of the ET2's volume control. According to C-J's Lew Johnson, a discrete stepped attenuator would have ideally been the top choice in a pecking order in which a standard potentiometer defines the lowest step on the totem pole. He

opted for the middle ground, a high-performance Burr-Brown volume-control-chip. One advantage this chip affords is the ability to remotely control volume without the need for an on-board motor. Another is the ability to adjust volume in 0.5dB steps, while most discrete stepped attenuators

EQUIPMENT REVIEW - Conrad-Johnson ET2 preamplifier and LP66S power amplifier

can only do 1dB steps. Because this is a stereo control, it is possible to adjust left and right channel volume independently to obtain balance control. The preamp's sensible front-panel layout displays volume settings with sufficient size to be easily discernible (at least with my glasses on) from across the room. I found the modest-looking remote control to be perfectly adequate. Two external processor loops are provided, one of which is designed expressly for the addition of a surround-sound processor to a two-channel system. The other is conventional and allows the connection of a tape deck or equalizer.

Lew Johnson was kind enough to describe for me the basic circuit topology for both products under review, and what follows is based on this information. The ET2 linestage features a single gain stage. Following the volume control, the signal is applied to the grid of a Mullard M8080 medium-mu triode, which was billed by Mullard as a reliable RF power triode. The gain stage is direct-coupled to a high-current MOSFET buffer circuit to achieve low output impedance, and this arrangement comprises C-J's Enhanced Triode (ET) circuit.

The optional phonostage's input is a 12AX7 dual triode operated in parallel for reduced noise. It is coupled through a passive RIAA equalization network to a second gain stage which deploys a single section of either a 12AX7 (high-gain version) or a 12AU7 (low-gain version). As with the linestage, the signal is direct-coupled to a MOSFET buffer stage for low output impedance. The high-gain phonostage is best suited for low-to-medium-output moving-coil cartridges with a rated output of 1.0mV or less. The low-gain phonostage is recommended for cartridges with a nominal

output above 1.0mV. No global loop feedback is used in this product. Due to the linestage's single gain stage, the ET2 inverts signal polarity on all of its outputs.

Separate discrete regulated power supplies are used for the linestage and phonostage plate circuits. It's worth emphasizing that resistor and capacitor choices are top-notch—no skimping here! A peek inside the chassis is worth a thousand words! Plate resistors for all stages are large Vishay metal-foil resistors, while all other resistors are precision metal-film types. Plate power supplies use polypropylene capacitors with Teflon bypasses (0.15uF) exclusively. Output coupling

capacitors are a composite of polypropylene and Teflon, while the RIAA network capacitors are polystyrene types.

The LP66S is rated at 60Wpc into 4 ohms, and the output transformer is wired that way by default. There is only a single set of binding posts, so there's no selection of impedance taps for a particular speaker load. However, the amp may also be ordered with 8- or 16-ohm load connections. This amplifier's circuit is also about as simple as can be. The input voltage gain stage (half of a 6922) is direct-coupled to another 6922 which is configured as a coupled-cathode phase splitter and also provides the drive voltage for two pairs of

Russian 6550 beam power tubes operated push-pull. The output stage is connected in ultralinear (UL) mode to the output transformer. Even over 50 years after its invention, UL remains a popular alternative to pure pentode mode, and that's what the LP prefix in the model name refers to: Linear Pentode. A limited amount of loop feedback is used to obtain a reasonable damping factor and to minimize distortion levels. Plate supply voltages for both the input and phase-splitter circuits are regulated. You won't find electrolytic caps anywhere in this amplifier. This is most unusual (and an added expense) for any amplifier, let alone an entry-level product. All caps are polypropylene and polystyrene types, including the main power-supply storage reservoir, which is polypropylene. All resistors are metal film. The output transformers are the same wide-bandwidth designs used in the more expensive LP70S amplifier. Bias adjustment is a piece of cake due to built-in LED bias indicators which allow the user to properly set the bias using only a supplied screwdriver.

Initial listening tests were conducted with both amp and preamp in the system. Later, they were auditioned separately to assess their individual performance attributes. It didn't take me long to determine that the sonic character of the duo was being dominated by the power amp. Therefore, let me start with the ET2 preamp and give it its moment in the sun before returning to the power amp. Used as a linestage, the ET2 won me over pretty dang quickly, garnering excellent marks in several key areas. I'm not going to mince words when it comes to the bass range; pitch definition was remarkable, and bass lines in general were resolved with a precision rivaling that of any linestage I've auditioned to date, regardless of



EQUIPMENT REVIEW - Conrad-Johnson ET2 preamplifier and LP66S power amplifier

cost. The treble range, while fully under control, sounded a tad laid-back and short of air. There was never a hint of brightness or upper-register bite. Transients unfolded with plenty of speed and were allowed to decay delicately into a recording's noise floor. The overall presentation was clean, smooth, and highly detailed, with an emphasis on harmonic accuracy. The ET2 was capable of revealing low-level nuances without sounding analytical. But it refused to add fat to the midrange, and harmonic textures were free of euphonic upper-midrange coloration. As a result, timbres were allowed to bloom without any sonic makeup. The truth and nothing but the musical truth is what the ET2 is all about. For me it was a joy of discovery, as the ET2 was able to zoom in on a particular voice or instrument and nail its timbre with authenticity. On the other hand, if you're looking for a linestage to spice up or glorify your system, then the ET2 is probably not for you. It is not a romantic, lush, or assertive preamp. It's not overtly tubey, but then it was not meant to be.

Please don't misunderstand me. The ET-2 is an engaging linestage with plenty of kinetic energy and rhythmic drive. It has all the tools, the technique if you will, but it can also dish out the music's passion and drama. It's just that it does not sound like a vintage tube preamp. Going back as far as the 80s, I have yet to audition a C-J preamp that did not excel in imaging, and the ET2 was no exception. It erected a soundstage with a convincing

depth perspective and fleshed out image outlines with almost palpable presence. The gift of imaging seems to be a family trait of the C-J preamp line.

My sample of the ET2 was outfitted with the optional low-gain phonostage—a good match for my Grado Reference moving-iron cartridge. My conclusion was that the phonostage, with only a couple of minor exceptions, complemented the ET2's strong sonic suites. Its solid imaging, very good detail retrieval, bass definition, and low noise floor made for a pleasurable vinyl playback experience. The only negatives noted were a touch of textural grain, which may be a function of the Russian 12AX7s, and a slight dynamic reticence in scaling loud passages. Nothing serious, in hindsight, and the optional phonostage strikes me as a cost effective way to expand the functionality of the ET2.

In contrast with the ET2, which could best be described as intent on accuracy, the LP66S came across sonically as a swashbuckling romantic. Tonal emphasis was squarely on the lower midrange. It painted a much more convincing vintage tube impression. Harmonic textures were slightly liquid and warm, complimentary to violin tone, not excessively lush, but just enough to let you know that you're listening to a tube amplifier. The treble range was laid-back, and in general, the overall presentation lost a bit of transient speed and tension. Despite dishing out 60Wpc from a pair of 6550s, there was no gratuitous upper-octave brightness

and very little evidence of odd-order harmonic distortion products. The combination of these factors resulted in a mellow, relaxed presentation. Although the amp came across as somewhat broad-brush in character, there was still an abundance of low-level detail. The lack of multiple impedance taps made it impossible to experiment with optimizing bass damping. Bass definition was just OK with the Esoteric MG-20 loudspeaker, but improved to decent while driving the Basszilla Platinum Edition DIY speaker. These findings suggest the need for a careful audition in the context of your own system. When it comes to imaging, the LP66S evinced plenty of tube magic. Image outlines were solidly anchored within the soundstage. When partnering the ET2, it easily kept pace in this respect, giving full scope to a deep and spacious soundstage.

Entry-level? I don't think so! Sonic compromise? Not so much. Despite its entry-level label, the ET-2 is a low-distortion, high-resolution device that delivers timbral accuracy on top of phenomenal bass control. It can certainly hold its own in elitist company. The optional phonostage can also be confidently recommended. If you're in the mood for mellow tube sound with an exceptionally low listener-fatigue factor and plenty of imaging magic, be sure to give the LP66S an audition. It would make the perfect partner for a bright-sounding loudspeaker. **tas**

SPECS & PRICING

ET2 line preamplifier Inputs: 7 line level; 1 phono (optional) Outputs: Main, tape and theater Dimensions (WxHxD): 13.75" x 19" x 3.315" Weight: 15 lbs.	LP66S Power Amplifier Power Output: 60Wpc, 30Hz-15kHz at no more than 1.5 % THD or IMD, both channels driven into 4 ohms (also available connected for 8 or 16 ohm loads) Dimensions (WxHxD): 16" x 19" x 6.38" Weight: 45 lbs.
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U.S. ET2 line preamplifier Price: \$3800 ET2 Optional Phonostage Price: \$1250 LP66S Power Amplifier Price: \$4300 CONRAD-JOHNSON DESIGN, INC. 2733 Merrilee Drive Fairfax, VA 22031 (703) 698-8581 conradjohnson.com	U.K. ET2 line preamplifier Price: £3700 ET2 Optional Phonostage Price: £1100 LP66S Power Amplifier Price: £4250 AUDIOFREAKS 15 Link Way, Ham, Richmond, Surrey, TW10 7QT +44(0)208 948 4153 audiofreaks.co.uk
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Opera/Consonance Reference 50 Mk II preamp and Cyber 880 power amp

A rose by any other name

Alan Sircom

It's hard not to get a little impressed by Consonance. The products – designed and made in China by Eric Liu and known by the Opera brand outside of Europe – cover a wide and useful range and combine practicality with high quality audio. The Reference 50 Mk II preamp and the Cyber 880 power amp are beautifully made, look the part and sound fantastic. And they aren't that expensive either. What's not to like?

Starting with the Reference 50 Mk II preamp, that brushed silver front panel with shiny chrome buttons and curved wooden top-plate is distinctive, but elegant. It's a line-only valve design with four inputs, a volume a choice of two gain settings from the front panel and a bewildering remote. It's a 20dB gain product, using a shunt-regulated push-pull architecture with no global negative feedback. The circuit design is all hard-wired point-to-point, instead of PCBs (very old school, commonly selected as the best choice by hard-core valve users). Circuit boards are used, but essentially as a support frame for the components. The circuit's wiring itself is all done beneath the circuit board. Opera Consonance has chosen Auricap capacitors in the signal coupling circuit (perhaps

little wonder then that the two amps work so well with Audience's power conditioner and the cables, as they both come from the same provider), while the filtering capacitor is a high-quality metallised polypropylene Solen MKP design.

The silicon steel EI power transformer and choke regulation are shielded from the main circuit, and the choke is designed to deliver good high quality high frequency response. Yet, for all this hardcore audio quality, the Reference 50 is one of the easier valve products to drive. It comes with a useful remote and powers up gently, giving time for the pair of 12AU7 triodes and the EZ80 rectifier tube to come up to speed.

Moving over to the Cyber 880, this is a 100 watt all valve design, that's wonderfully elegant looking,

perfectly matching the look of the Reference 50, thanks to the aluminium front panel and top panel finished in a hand-rubbed metallic silver lacquer and the matching wooden top plate.

Using four 6550 beam power tubes for the output stage, an ECC82 input triode (plus a third as phase splitter) and a 5687 low-mu octal driver per side, that equates to a lot of heat and a not inconsiderable amount of power consumption at full burn.

Biasing is easy, using a combination of screw holes on the top plate and a meter on the centre of the back panel where the transformers live. Output matching taps are provided for four and eight-ohm loudspeakers and the design uses a modicum of global negative feedback.

There's a lot of bedding in needed to make these amps come on song. We're talking hundreds of hours to turn good; it's pretty fine from the outset, but as those valves season they get better and better. According to the manual, by the time of the review, we were barely one-third of the way along the tube conditioning process, but the amp was already in something of a sweet spot. Consonance recommends a minimum of 3.5m and a maximum 20m for loudspeaker cables. There's no such recommendation for pre to power amp cable length, and for good reason; I found it worked well with relatively short runs of interconnect cables (up to about 3m), but some mild high-frequency attenuation kicked in when used with really long leads. This means the



EQUIPMENT REVIEW - Opera/Consonance Reference 50 Mk II preamplifier and Cyber 880 power amplifier



Consonance duo work best in the typical British configuration (short interconnects, long speaker leads) than the American (long interconnects, short speaker cables). As there are many who think the best thing between a pair of speakers is air and nothing but, the Consonance layout has its merits.

These are incredibly well behaved valve amplifiers. There's always going to be a higher background noise level from 'hollow state' components, but the noise floor here is admirably low in both products, a sure sign of good designs behind the mask.

Starting with the preamp, this exposes the 'valves sound warm' cliché as bankrupt. The preamp is not warm, cold, brown, round, vanilla or deep-fried Camembert sounding. It simply is a preamp. It does what it says on the tin. It selects the right source and makes the signal slightly larger or smaller for the power amplifier to turn into loudspeaker movements. It does this with very little in the way of coloration,

dynamic compression or detail obfuscation. What deviations from the original are there, live mostly in the soundstage (which is slightly less wide and not as deep as expected) and a tiny amount of thickening in the upper bass region. This should be considered the bare minimum for all good preamplifiers; sadly, not all reach this mark.

Moving over to the power, I so wanted to draw analogies to 100 watt Marshall stacks, but this isn't that sort of amplifier. It's got the power to drive speakers, but it's a refined power, not brute force. That makes the Cyber 880 the star of the show, because the combination of power and grace don't come cheap in valve amps; usually you get one, or the other. There are a few exceptions (the c-j LP66S and Audio Research VS60 being obvious ones), but even here they are usually lower powered (both 60 watt designs) or less beguiling.

"With great power comes great responsibility," said Spiderman's Uncle Ben, before dying of an enlarged plot device. The Cyber 880 was listening. The amplifier is one of those that never shows its

power until it's needed. It doesn't burble along, menacing the music and it doesn't act like the audio equivalent of a boat anchor. The music is surprisingly upbeat, fast and exciting, just with a lot of power on tap when you need it. In other words, it's like having a 25 watt amplifier with a really big friend waiting to take over whenever needed.

Okay, the Reference 50 Mk II lacks some of the character of a good conrad-johnson preamp

or the sheer musical integrity of the some of the best solid-state models, but remember that this is a relatively low cost preamp. It's sins are mostly those of omission, lacking the vanishing quality of the best in breed, but at least the preamp is not adding its own faux coloration (a potential failing of valve preamps, especially those rare ones at this price). As such, the Reference 50 Mk II offers remarkable value for money, set against most valve preamplifiers. It's whisper quiet in

'It doesn't burble along, menacing the music and it doesn't act like the audio equivalent of a boat anchor. The music is surprisingly upbeat, fast and exciting.'



EQUIPMENT REVIEW - Opera/Consonance Reference 50 Mk II preamplifier and Cyber 880 power amplifier

operation, looks and sounds the part and is as unfussy as a preamp gets.

The Cyber 880 is equally well sorted, but if anything faces even stiffer competition. It rises to the challenge. Once again, like the Reference 50 Mk II, its sins are mostly of omission, and in this case it's the omission of extending that typically solid-state like control over the lower tenor region down into the lowest notes of the bottom octave. For

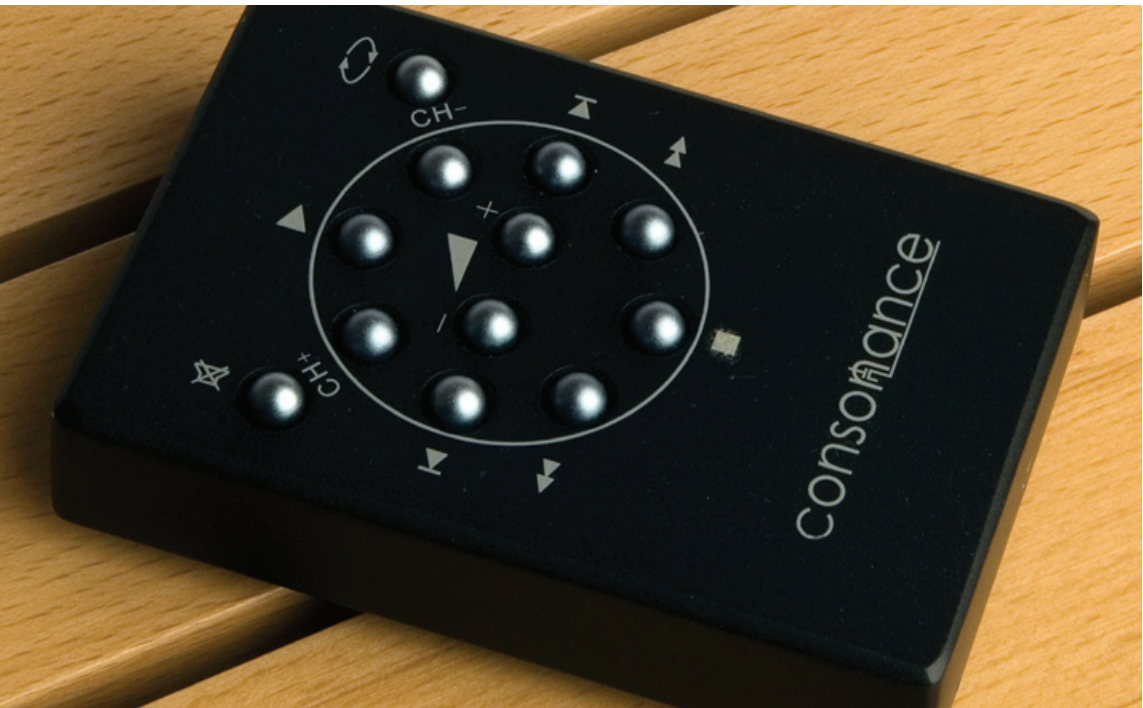
most users and for most music, this is not a problem. Organ lovers and those wanting to be punished by Tool (not meant to be as rude as it sounds) through difficult speaker loads might disagree, though. For the rest of us, the 'remarkable value for money' quote applies just as equally here.

Split up, the two can show their limits somewhat more easily, although this more shows how well the duo work as a team than

showing up glaring flaws in the performance. The preamp doesn't have that sort of effortless dynamic range or open transparency and the power amplifier is more velvet glove than mail'd fist, sounding slightly soft at the frequency extremes. But it's always musically on form. Perhaps the difference between the two is that the preamp could be improved still further with judicious tube-rolling, but the amount of potential upgrade to the power amp is ultimately limited by the transformers. You should still be able to squeeze out more from the Cyber 880 though, and best of all, unless you start scouring eBay for top-price vintage NOS tubes (which can cost a small fortune), you'll still come in under the price of its direct performance rivals.

There's no such thing as a 'bargain' in high-end audio, in my opinion. Sorry, bargains are 5lb tins of Azerbaijani peaches (best before date: this afternoon) on sale for a few cents. You get what you pay for, but sometimes you get that little bit more for your money; products that do their job better than rival products at their price point and beyond. Both the Reference 50 Mk II and the Cyber 880 fall comfortably into that category. This is one of the best five figure valve pre-power combinations you can own... for a lot less than a five figure sum. How can you resist that kind of value? +

"For the rest of us the 'remarkable value for money' quote applies just as equally here."



SPECS & PRICING

Consonance Reference 50 Mk II preamp

Inputs: 4x line-level stereo phono

Outputs: 2x stereo phono

Dimensions (WxHxD): 32x21x44cm

Weight: 12kg

Cyber 880 Power amplifier

Inputs: 1x stereo phono

Power Output: 100 watt x 2, RMS 1kHz (Ultra-linear)

Dimensions (WxHxD): 43x19x45cm

Weight: 35kg

U.S.

No US Distributor/factory direct

U.K.

Consonance Reference 50 Mk II preamp

Price: £1,095

Cyber 880 Power amplifier

Price: £2,895

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Electrocompaniet EC4.7 preamp and AW180 mono amps (& ECC-1 CD player)

The Vikings are coming!

Anthony H. Cordesman Photography by Adam Voorhes

Most American audiophiles are probably too young to remember the time when small European firms like Tandberg and Electrocompaniet were familiar names in the high end. At least some, however, will remember that Electrocompaniet was one of the first manufacturers to really understand and address the new types of distortion caused by the switch to solid-state, and that it introduced some of the first transistor amplifiers that preserved much of the liquidity and natural lower-midrange warmth and realism of the best tube designs.

I can remember reviewing the 25-watt Electrocompaniet amplifier designed by Dr. Matti Ojala and Jan Lohstroh, and it was a real breakthrough for the time. I also can remember a series of Electrocompaniet products that followed. As with Tandberg, however, unfavorable exchange rates, dealer and distribution problems, and a failure to keep up with the trends in the American market caused Electrocompaniet to fade from the U.S. audio scene.

Well, Electrocompaniet is back, and back with some truly excellent equipment. The items under

review include the ECC-1 CD player, the EC 4.7 preamp, and the AW180 monoblock power amplifiers, and they are only part of the story. Electrocompaniet has a range of more expensive top-of-the-line stereo electronics, a lower-priced line, and surround-sound equipment as well. It also hasn't lost its touch over the years. I may have some qualms about the ergonomics and pricing of some of the units—it's hard to export competitively to the U.S., given European costs—but I have no qualms about their sound quality.



EQUIPMENT REVIEW - Electrocompaniet ECC-1 CD Player, EC 4.7 Preamp, and AW180 Monoblock Power Amplifier

ECC-1 CD PLAYER

There are reasons why many audiophiles buy their electronics from the same manufacturer. While purists may talk about straight wires with gain, the reality is that every active and passive component is to some extent a filter altering the sound of whatever passes through it. This filtering process is both interactive and cumulative. If you mix the filtering effects of the products of different firms and designers, the end result is generally negative.

Each component from a different source alters the sound in a slightly different way and subtracts different nuances. This is particularly true if there are any interface problems in impedance, bandwidth, digital processing, speaker loads, etc.

Well-designed equipment from a single firm, however, is virtually always designed to “voice” equipment to produce consistent sound qualities. This rarely is a deliberate effort to produce coloration. It is simply a product of the fact that

every designer, like every audiophile, has his or her own particular ideal when it comes to what is neutral and musically natural. The better the “ear” involved and the more consistent the voicing of each item of equipment, the more synergy in the “filter effect” and the less alteration in overall sound quality.

This shows up clearly in the ECC-1 CD player. Taken by itself, the ECC-1 is simply another very good CD player. It does not offer some dramatic new approach to digital design, and it does not offer the added resolution from a CD that cutting-edge digital designs like the Boulder 1021, Meitner CDSA, and PS Audio Perfect Wave players do. It also sells for \$3650. A number of cheaper units that are top-rated by this magazine (try the Cambridge Audio Azur 840C), as well as moderately priced units like the better Marantz and NAD CD players, offer similar overall sound quality—albeit with a slightly different set of sonic nuances—for less money. Some also offer more features, such as SACD compatibility.

In saying this I don’t mean that the ECC-1 is not an excellent design. It uses 24-bit/192kHz DACs from Cirrus Logic, and has a precision fully balanced analog-output stage that operates in Class A. It has an anti-vibration system modified from Electrocompaniet’s EMC-1 UP top-of-the-line player, and offers both balanced and single-ended outputs, as well as a coaxial digital output.

While Electrocompaniet provides few details about the technical features of the ECC-1’s circuitry, it does state that the analog-output filter is optimized to reduce phase shift at higher frequencies, thereby leaving high-frequency musical information intact. It provides no

indication that this filter is particularly advanced or cutting-edge, but it is clear from listening that the ECC-1 is exceptionally well-engineered in regard to upper-octave energy and detail—an area where the aging Red Book standard and 44.1/16 digital technology are not kind or gentle to music.

Audiophiles buy as much for sonic nuance as for overall sound quality. And the ECC-1 has an unusually good analog output stage for any CD player, one that emphasizes the natural warmth of music. There is less hardness in the treble through the ECC-1. Dynamics and bass are also unusually good. Digital technology is only part of the story in any CD player, and a really good analog section is crucial to giving it the musicality that makes it a pleasure to listen to.

These nuances make the ECC-1 an exceptionally good match for the EC 4.7 and AW180. The preamp and amp are “voiced” in the same way as the CD player. They both provide the same natural midrange warmth. They both get upper-midrange and treble right, bringing out the natural detail and top-octave energy of acoustic instruments without spotlighting or exaggerating it and without adding hardness to female voice, woodwinds, string, or brass. They both provide very good midbass and deep bass with a nice balance between energy and detail, but without the slight exaggeration of the deep bass that some manufacturers build into their designs.

While all three units also worked very well with my reference Pass Labs equipment—and the EC 4.7 and AW180 work well with my Meitner, PS Audio, and TacT digital front ends—there was an audible synergy when I used all three Electrocompaniet units together. This showed



EQUIPMENT REVIEW - Electrocompaniet ECC-1 CD Player, EC 4.7 Preamp, and AW180 Monoblock Power Amplifier

up clearly in imaging and soundstaging, and particularly in preserving the same illusion of depth with good recordings.

Together, the Electrocompaniets produced a natural mix of stable, lifelike imaging and soundstage depth and width. They do well at giving large, complex orchestral music and opera all the realism you can achieve in a home audio system, and they provide about as convincing an illusion of live music in reproducing chamber pieces, smaller jazz groups, soloists, and lead singers as anything approaching their price. They get both the timbre and the dynamics of woodwinds, brass, and complex strings right—and far too few high-end components do.

EC 4.7 PREAMP

The Electrocompaniet EC 4.7 has all of the aforementioned sound characteristics and, when I used my analog front end and far more expensive reference digital equipment, showed that it was very clean and transparent, to boot. It is also exceptionally quiet and has significantly more extended bass and high-frequency response than many competing units. It is a very good preamp by any standard, and its price of \$3495 makes it highly competitive.

The EC 4.7 is a DC-coupled, fully balanced, remote-controlled preamplifier. It has one fully balanced and five single-ended inputs. There are one balanced and one single-ended line output and two fixed single-ended outputs for recording. Electrocompaniet states that the preamp's motorized volume control was developed to "neither influence nor degrade the sonic performance of the EC 4.7." Electrocompaniet also says, with a touch of Norwenglish, that

"volume control and input sources can easily be navigated from the remote control, or via the Navigator touch buttons on the front panel. The Navigator window displays the selected source, and the volume position is indicated by a blue bar. The combination of a toroidal transformer and a reservoir of capacitance far beyond necessary will guarantee full control of your system. The EC 4.7 contains only high-quality discrete components."



A word about "full control." The styling of all three items of Electrocompaniet equipment is vaguely retro—gold lettering and finish on a push-button-driven set of controls with black panels and cabinets and fairly subdued blue lighting. The effect is stylish and distinctive, and the layout is intuitive enough that it takes all of three minutes to master the front-panel push-button features, particularly if you are hard-wired to never glance at an instruction manual.

Seriously, one friend of mine did complain for virtually all of the two minutes it took for him to

get the control features right, simply because they were slightly different. If you are truly determined to be dense and inflexible, I should note that the remote control—which appears to be a rebranded video-electronics control that can be used for both the CD player and preamp—is labeled and laid out in the far more common Japenglish format, so an audiophile who is too rigid to learn new tricks doesn't actually have to do so with the remote.

I am, however, going to make two serious complaints about the EC 4.7. First, I find I consistently need two balanced or XLR inputs to feed today's digital and analog front ends. The EC 4.7 only has one. Second, the EC 4.7 also does not have a balance control, and this I find to be a serious defect. Dave Wilson pointed out in his reviewing days—before he got a real life making speakers—that a balance control should be called an "imaging control" because it has to be set just right for any given recording to lock in the soundstage, get the best depth and width,

and make the imaging as realistic as possible.

I don't buy audio equipment for simplicity, theory, or "purity" at the expense of musical realism, which is the general rationale for minimizing key control features. I fully recognize that some highly respected designers and manufacturers do feel such minimalism provides benefits worth their cost, and that other audiophiles do find such preamps fully satisfactory. I regularly, however, do adjust the balance control on my preamps to get the soundstage right, just as I adjust the volume to get the most musically natural sound, and I find a balance control to be essential. I would not buy a preamp or integrated amplifier without a balance control. Moreover, I have found that many top designers do get truly outstanding sound out of a preamp with such controls. To me, the absence of a balance control will always be a sign of design oversight, not design purity.

AW180

If that is a bit of a downer, let me give you an upper. The AW180 monoblock power amplifiers are the "jewels" of this Electrocompaniet trio. They sell for \$4795 each, but they feature Class A input and driver stages coupled to a Class AB output stage that delivers 180 watts into 8 ohms, 350 watts into 4 ohms, and 625 watts into 2 ohms. This is the kind of power into low-impedance loads that many high-end speakers really need in spite of their nominal impedance ratings, and it shows up clearly in comparative listening.

I tried the AW 180s with a range of speakers—Magnepans, Quad 2905s, and a truly demanding set of early Apogee ribbon speakers—as well as with a range of speaker cables. They proved to be some of the least interface-sensitive amps

EQUIPMENT REVIEW - Electrocompaniet ECC-1 CD Player, EC 4.7 Preamp, and AW180 Monoblock Power Amplifier

I've worked with in awhile, as well as some of the most consistent in delivering the same sound quality into a wide range of loads.

Unlike the CD player and preamp—where Electrocompaniet furnished some of the least informative technical literature I have encountered, as well as some of the smallest owner's manuals—the manufacturer makes technical claims about the amps that may help explain why their sound is so good:

Traditionally, designers increased feedback to make a larger portion of the output signal control the amplifier's response. Our listening tests showed us that simply applying more feedback was not the answer. In fact, as one kind of distortion went down, other parameters would be adversely affected, leading to an overall degradation of sound quality. We knew that the other conventional design approach of eliminating feedback completely was not the answer either, because this would cause high distortion levels, and as a result would produce a "woolly" sound.

The answer to the dilemma was found in a novel approach to feedback theory. We developed a feedback concept that allowed local feedback to be applied around individual stages of the amplifier circuit. This approach allowed us to avoid the sonic disadvantages of overall feedback from output to input. The concept was further developed to reduce phase and interphase distortion between stages of the amplifier as well. We were able to concentrate the loop feedback on the stages of the amplifier where it resulted in audible improvement.

Stability margins were also expanded

because feedback no longer affected the frequency response. The use of this concept of individual gain blocks—complex in design but simple in function—allowed us to reduce distortion to minute values in all the products. The amplifier is divided into two separate sections or gain blocks. The input block is a transconductance amplifier without overall feedback. This avoids large output current being fed back to the input, and mixed with the minute input signal. The output block is a transresistance amplifier with parallel feedback. This is done to prevent higher frequencies than the feedback loop can handle from entering the loop. An approach like this will prevent Transient Intermodulation Distortion (TIM) and Slewing Induced Distortion (SID), eliminating the need for an extremely wide bandwidth.

All stages work in Class A with an efficiency of less than 0.1%. The power supply of the AW180 consists of one 650VA toroidal transformer. Furthermore, the power supply consists of a 60,000 microfarad reservoir divided into six 10,000 microfarad capacitors in parallel with 4.7 and 0.1 microfarad polycarbonate and polypropylene capacitors... Electrocompaniet AW180 features a balanced link to additional amplifier(s) for bi-amping. It can easily be used in bridged mode, delivering up to four times the power.

I have yet to find an amplifier circuit topology that is more important than the overall quality and judgment used in executing that circuit. Electrocompaniet is, however, one of the pioneers in solid-state amplifier design, and the sound of the AW180 is outstanding enough that its

technical literature is clearly worth considering.

We reviewers tend to talk about solid-state designs that have a tube-like sound character. Given the vast variety of tube amplifier sonic nuances, and the fact that many have something less than stellar sound quality, this analogy can be less than helpful. What we normally mean, however, is that the solid-state amplifier's lower midrange and upper bass are not lean, that there is no artificial spotlighting of the upper midrange, and dynamic contrasts are musically natural. In short, what we are really saying is that a given solid-state amplifier does not have the more common failings of the more mediocre solid-state designs.

By that standard, the AW180 is "tube-like." It provides a very natural timbre and exceptionally realistic upper bass and lower midrange. Both low- and high-level dynamic contrasts are excellent, and it does an equally excellent job of handling the upper registers of the violin, clarinet, flute, and female voice without exaggeration or any trace of hardness that is not clearly on the recording. There are many solid-state designs that also do this well, but few that do it as well.

The AW180 does an excellent job of reproducing all acoustic

instruments, including demanding brush and percussion sounds and deep bass details. The sound of brass is unusually natural in every respect, and if you are into horn concertos, you will truly appreciate just how accurate the AW180 is with French horn. At the same time, the AW180



EQUIPMENT REVIEW - Electrocompaniet ECC-1 CD Player, EC 4.7 Preamp, and AW180 Monoblock Power Amplifier

really gets the sound of solo cello, lower woodwinds, and piano right. This is not simply a matter of providing exceptionally realistic timbre. It is also a matter of exceptional dynamic contrasts, detail, and musical subtlety. Moreover, the AW180 does not become any less outstanding as music gets larger and more complex. It does equally well with large jazz bands, opera, or dense orchestral passages involving demanding instruments like the flute.

It also provides the warmth and romance of music along with musical detail. With a good recording, you will really hear the differences between instruments in the upper bass and lower midrange—areas where subtleties get slightly blurred far too often. It is a musician’s amplifier: Acoustic instruments come through as clearly and realistically as the recording, the rest of the system, and the room permit.

The AW180’s power shows clearly in the deep bass. Trot out your Telarcs, Reference Recordings, and other bass spectaculars. Try out the depths of the bass synthesizer and bass guitar. The AW180 won’t drive a truly low-sensitivity speaker in a large room to the point where your ears bleed, but it can meet all of the demands of the acoustically sane. It also does very well, indeed, with sharp bass-drum strokes and with complex deep organ passages. Bass power and bass detail are both much better than in most amps of this rated power.

As for the soundstage, the AW180 has the same strengths as the CD player and preamp. Imaging is as stable and realistic

as the recording and system permit. The same is true of soundstage depth; it does not alter soundstage dimensions or instrumental timbre to create the “front row” effect of some solid-state amps. It won’t add depth where it is lacking, but it also won’t try to usher you forward when the recording has a more midhall sound.

I should also praise the sheer consistency of the AW180’s musicality. Virtually all good high-end equipment brings out nuances that differ at least slightly from the nuances of other equipment. A couple of comparative listening sessions using any familiar recording, and you will always hear something different. Far too often, however, these differences have no real aesthetic relevance. One sound is not more musically natural than the other; the sound is just slightly different—as it is in every hall or seating position in the same hall. What counts is being able to hear a lot of natural musical nuances in a very wide range of recordings and with a minimum of listening fatigue. It is consistently hearing all you should hear rather than simply hearing something different. This is an amplifier for the hours, and not just for the moment.

I do, however, have some minor gripes about ergonomics. The AW180 has the advantage of being relatively compact and light enough that moving it does not turn into a weight-lifting contest. However, it has no remote AC-power-control features, and the power switch is in back. There is no power light on the front panel; the light is on the top. This can be annoying

in a number of installations. It also follows a growing European tradition of having second-rate speaker connectors that are too close together and hard to tighten. About all I can say in the AW180’s defense is that its terminals are better than those on the Quad 2805 and 2905 electrostatics—but then everything is. Scarcely the end of the world, just a minor gripe about an otherwise great design.

SUMMING UP

I may have reservations about the features and ergonomics of the EC4.7 and AW180, and comparative price is always an issue with European imports; however, all three Electrocompaniet components have a musical realism that is often lacking in today’s high-end electronics. The midrange has lifelike warmth rather than exaggerated upper-midrange energy. The bass is tight and deep without exaggeration, and the treble is clean without any etching of detail or transient attack. Imaging is as realistic as recordings permit, and the soundstage has natural depth rather than added width.

If what you want is musical realism, rather than drama or hi-fi effects, Electrocompaniet delivers some of the best solid-state sound available. **tas**

SPECS & PRICING

ECC-1 CD Player

Frequency response: (20Hz-20kHz) +/-0.05dB
Digital/analogue conversion: 24-bit, 192kHz
Dynamic range: 120dB
Compatible formats: CD, HDCD, CD-R, CD-RW, MP3-CD, WMA-CD
Dimensions: 19" x 3.7" x 15.2"
Weight: 19.8 lbs.
Price: \$3,650/£2,290

Balanced 30 V p-p
THD: (1 V in, 1 V out, 1kHz) < 0.002 %
Dimensions: 19" x 4.5" x 16.1"
Weight: 17.6 lbs.
Price: \$3,495/£1,890

AW180 Monoblock Power Amplifier

Frequency response: 0.1Hz-100kHz
Damping factor: >1000
Maximum peak current: >120 A
Rated output power: 80W @ 8 ohms; 350W @ 4 ohms; 625W @ 2 ohms
Dimensions: 8.5" x 18.5" x 11.4"
Weight: 48.5 lbs.
Price: \$4,795/£2,590 each

EC4.7 Preamplifier

Frequency response: 0.1Hz-150kHz
Output impedance: 100 Ohms
Output level: Single ended 15V p-p /

U.S.

System Price: \$16,735

ELECTROCOMPANIET INC.

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System Price: £9,320

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Masterwork!

Esoteric A-100 Stereo Power Amplifier

Dick Olsher

If someone had told me a year ago that TEAC's Esoteric Division was about to release a KT-88 tube amplifier I would have dismissed the news out of hand. After all, Esoteric has made its reputation refining high-end digital products and solid-state amplification. In hindsight, it's clear that I have misjudged Esoteric's passion for and commitment to tube amplification. The A-100 is the inaugural product in what has been dubbed the Master Sound Works (MSW) Amplifier Series. Esoteric, which has had a long history of developing magnetic tape recording and data storage, believes that original mastertapes provide the highest-fidelity approach to the live musical event. The goal of the MSW amplifier line is nothing short of reproducing the full scope of authority and beauty captured in original analog mastertapes as well as digital masters. That means being able to precisely reproduce a master's dynamic nuances and harmonic colors. The fact that the job has been entrusted to an all-tube amplifier pleases me no end.

Ostensibly, the A-100 is yet another push-pull amplifier generating a minimum of 45Wpc from one-pair-per-channel of KT-88 beam tetrodes in ultra-linear connection. It should be clear at the outset that this is a reference product—in reality an epic endeavor to make the venerated KT-88 sing like never before. It was conceived and executed without compromise. From a rigid H-frame chassis and through passive parts selection and circuit design, the ultimate arbiter was sound quality. A star attraction is a newly designed output transformer that uses silver-plated copper foil for

the secondary winding. Very tight coupling is said to have been achieved between the primary and secondary. All stages, except the KT-88 output stage, are powered by fully regulated power supplies. With the exception of the power tubes, filament supplies are DC, which is said to reduce hum.

Whereas other designs seek to skimp on costly active stages, the A-100 goes the extra mile by introducing cathode followers ahead of and following the phase splitter. The input stage uses a 12AT7 dual triode for voltage amplification

EQUIPMENT REVIEW - Esoteric A-100 Stereo Power Amplifier

and as a cathode follower. A single 12AU7 (per channel) is configured as a classic paraphase phase splitter. Although not as popular these days as a split load or a long-tailed pair, the paraphase was chosen on the basis of its sonic merits in this application; the overall sound of the A-100 was simply more natural with this topology. The phase-splitter stage is followed by another 12AU7 configured as a cathode follower. Recall that the output impedance of a cathode follower is low and that it makes for an ideal driver stage. Interestingly enough, the last three stages are DC-coupled—that is, there are no capacitors in the signal path between the phase splitter, cathode follower, and the output stage.

The KT-88s used by Esoteric are manufactured in Slovakia, presumably at the JJ electronic factory. Tube quality is strictly controlled: Tubes are aged for an incredible 250 hours before being matched in pairs. Output stage bias is under the control of an advanced active-biasing circuit. This circuit automatically compensates for fluctuations in bias voltage by detecting cathode current and output level demand. The bias circuit works in tandem with a zero-DC-level circuit that balances the push-pull sections of the output stage. The end result of maintaining optimum bias voltage and balance is improved output stage linearity and reduced distortion, even under high-power drive conditions. Two bias settings (A or B) are selectable from a back-panel switch. The A setting offers slightly reduced bias current and may be preferred (according to Esoteric) with some types of music (e.g., classical) due to enhanced detail. The B setting is characterized as Reference Mode, though it is emphasized that preference for one setting or the other is totally

subjective.

There is presently no official guidance on how often to re-tube the amplifier since the A-100 is brand new. My guess is several years under typical use, though Esoteric plans to establish a guideline at a later date. Note that in order to maintain warranty coverage tube replacement is only to be performed at an authorized dealer or at the factory. Do it at home and you void the warranty. The reason given for that is that the biasing process is complex and adjustment is required even after re-tubing with an Esoteric matched set of tubes. Esoteric understands that this process is inconvenient and incurs shipping costs to the dealer, but cannot simplify the process without sacrificing product quality. From Esoteric’s perspective this ensures that a customer will enjoy the A-100 with the original production and sound-quality levels even after tube replacement.

Functionally, the A-100 may be configured as either an integrated amplifier for line-level inputs or as a basic stereo power amplifier via a switch on the back panel. When the amp is set for Direct input, a single RCA input bypasses the input selector switch and volume control. When switched for integrated amplifier operation, three unbalanced (RCA) inputs and one balanced (XLR) input may be selected, and these are routed through a high-quality 10k Ohm motorized volume control. An illuminated remote control is included. Speaking of parts-quality, nothing but the finest here: RCA input terminals are WBT-0201 and speaker binding posts are WBT-0710Cu nextgen. Even the AC power socket is rhodium-plated and treated cryogenically.

My first listen, as well as a significant fraction

of subsequent auditions, was conducted using the Direct input and B bias setting. Initially, even with a modest front end of the PrimaLuna Eight CD player and First Watt B1 buffer preamp (driving the Esoteric MG-20 loudspeakers), it was a case of love at first listen. The A-100’s lyrical presentation evoked instant ecstasy. The PrimaLuna Eight’s tube character came through in spades, remarkably authentic in terms of instrumental colors. Mids were not only pure and sweet but the lower midrange was reproduced with authority. Recordings with a big tonal balance were reproduced with their tonal weight intact. The A-100 did not indulge in obvious tube euphonics. Midrange warmth was a function of the recording and not a chronic condition. The soundstage was huge, transparent, and nicely layered, with a cavernous depth perspective. The real “show-stoppers,” however, were image outlines—as three-dimensional in extent and as reach-out-and-touch-them palpable as I’ve ever experienced. A case in point is *Oldarra: Le Chant Basque* [Detour CD], a wonderfully atmospheric recording made under concert conditions of a male choir in a church acoustic via a single 3-D microphone (presumably a Calrec Soundfield mike) and no additional mixing. The resultant sense of space was absolutely breathtaking and speaks volumes for the synergy of the A-100 and MG-20 combo.

After the initial shock of discovery subsided, I began to take note of a couple sonic issues. The treble was a bit recessed as in muted cymbals and brass, making for too civilized a sound. As a consequence, the overall tonal balance was laid-back and dark sounding. It occurred to me about this time that I had hooked up the MG-20 to the

A-100’s 8-ohm taps, which may not have been the optimum choice. Connected to the 4-ohm taps, the MG-20 sounded dramatically better balanced; livelier, more forward, with greatly improved treble air and detail. This experience highlights the importance of experimenting with the available impedance taps because they present different source impedances. A low source impedance is ideal in minimizing amplifier/speaker interactions and improves the woofer damping factor. But it is a difficult objective to achieve without large amounts of global negative feedback. In the case of the A-100, the source impedance at the 8-ohm taps is said to be 4 ohm, while that at the 4-ohm taps is 2 ohms—exactly what you would expect from a low-feedback design. Hence, the 4-ohm

SPECS & PRICING

Esoteric A-100 Stereo Power Amplifier

Power output: 45Wpc (1kHz, 4 ohms/8 ohms, minimum)

Dimensions (WxHxD): 15 1/16" x 9 7/8" x 19 1/16"

Weight: 88 lbs.

U.S.

Price: \$19,000

U.K.

Price: £13,495

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EQUIPMENT REVIEW - Esoteric A-100 Stereo Power Amplifier

taps would be expected to provide better bass damping and less interaction with a speaker's impedance curve. The 4-ohm taps continued to provide outstanding resolution of spatial nuances. And there was plenty of low-level detail. Transient speed for a tube amplifier is often a problem due to limited bandwidth, which results in an overly liquid and soft sound. Not so with the A-100. It propelled musical lines forward with excellent pace. The bass range, usually a liability for a tube amplifier, was well defined in the upper bass and almost as well defined in the midbass. The A-100 was able to generate a respectable level of bass punch and certainly sounded much more powerful than its nominal rating would imply.

I did take the time on a couple of occasions to compare the A and B bias settings. And in both cases I preferred the normal B setting, as the A setting appeared to shrink soundstage depth and slightly diffuse image outlines. Though I freely admit that these findings may be both system and music dependent. Thus, you should take the time to experiment in the context of both.

Next in store for the A-100 was the Final Sound 1000i electrostatic loudspeaker. This is a difficult load for any amplifier, but the A-100 was clearly up to the task. It did not lose its composure, apart from for a slight compression of the macrodynamic range when being driven from soft to loud. Microdynamics were realized with conviction. Bass lines were tightly defined. Effortless transient attack and controlled decay—attributes electrostatics are famous for—were very much in evidence. As I feared, however, the tonal balance was canted toward the midrange at the expense of the extreme treble. Had the speaker's impedance magnitude been reasonably

flat through the midrange and treble, the A-100's source impedance would not have significantly altered the speaker's frequency response. But when you're driving a capacitive load with a decreasing impedance-magnitude that drops to about 1 ohm at 20kHz, there are consequences. Measurements of the 1000i's frequency response when driven by the A-100 (4-ohm taps) showed about a 4dB dip above 10kHz.

The coupling of the A-100 with the Venture Audio Excellence III Signature loudspeakers

resulted in a fairly neutral tonal balance with a full-bodied and emotionally expressive lower midrange. Harmonic textures were luxurious and free from electronic glaze. Instrumental timbres were both vivid and authentic in color saturation. Orchestral music was allowed to soar effortlessly from soft to loud. Again, the A-100 excelled in recreating a believable acoustic space. There was plenty to like at both frequency extremes. In particular, acoustic bass lines were tightly delineated and kick drum was quite gutsy for a

tube amplifier. The A-100 was very revealing of the sonic character of front-end components. It was surprising to observe clear differences in imaging and harmonic textures when switching from tube to solid-state preamplification. In contrast, vintage amps tend to impose a thick euphonic signature over the soundstage making it harder to differentiate substitutions further up the signal chain. I spent some time with the Weiss Engineering Jason CD transport and Medea DAC, driving the Medea directly into the A-100 configured as an integrated amp. The squeaky clean and highly-detailed presentation of the Medea was not lost on the A-100. It responded with intense harmonic purity and clearly demonstrated that it is a high-resolution device.

Only a handful of amplifiers on this planet are as revealing as the Esoteric A-100 of a recording's origin and acoustic signature. Those of you, who like me, crave tube magic in the form of vivid harmonic colors, palpable image outlines, and a spacious soundstage, may rest assured that the A-100 delivers the goodies. In fact, I don't know of a more synergistic match for Esoteric's exceptional MG-20 loudspeaker than the A-100. Yet it goes further than any other medium- or high-powered tube amplifier I've auditioned to-date. The A-100 amplifier breaks through the traditional barriers of tube amplification: low-distortion harmonic textures, transient speed, and resolution are integral to its reproduction of music. Now you can have your sonic cake and eat it too! I submit to you that the A-100 represents the state-of-the-art in medium-power tube amplification. It's as good as it gets. *tas*



Unadulterated Amplification



A-03 Class A Power Amplifier

- Pure Class A implementation
- Shortest possible signal path/lowest possible noise floor
- Dedicated dual-mono design
- High capacity triple toroidal power supplies
- Stereo or bridged (BTL) operation
- Single-stage voltage amplification
- Dual-stage current amplification



C-03 Line-stage Pre-amp

- Reference grade active drive
- Shortest possible signal path/lowest possible noise floor
- Dedicated dual-mono design throughout
- Microcomputer decouples after adjustment
- 6N and 8N copper used throughout
- System Remote Control



E-03 Dual Input Phono-stage

- L+R dual mono design including transformer, power & audio boards
- All discrete circuitry with high voltage output for RIAA & output buffer amplifiers
- Dual MC inputs or single MM + MC inputs
- 3 load capacity options and 7 impedance positions
- Demag function for step-up transformers and cartridge



A-100 3-stage Tube Amplifier (Hybrid)

- Direct mode or integrated operation
- Directly coupled triple stages and custom output transformer
- Dual layer foil (Copper + silver, as the 2nd order coil)
- DC powered tube heater and stabilized power supplies
- Unique active bias circuit with selectable bias modes
- System Remote Control



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Micromega PA-20 Preamp and PW-400 Amplifier

Welcome Back

Neil Gader

There is no greater feel-good story in audio than a company that, having fallen on hard times, manages to pull itself up by its boot straps, reorganize, and re-enter the competitive marketplace. Micromega is one such company. A little background. Since the 1980s, Paris-based Micromega was a highly regarded and innovative player in the high end. For example, in 1987 Micromega launched the CDF-1 Hitech, the industry's first top-loading CD player. This was followed a year later by the first CD player with a separate transport and D/A converter from a high-end company. Subsequent years saw creative introductions in digital applications of audio and video products for both hi-fi and home theater. Flagging finances caused Micromega to abandon the North American market for a few years, but it has been rejuvenated by new owner and CEO Didier Hamdi, a former world champion motorcycle racer turned entrepreneur (go figure). Micromega has since struck a deal with Audio Plus Services, a leading North American importer/distributor of premium audio, video, and home-theater products, and will be sold through the Audio Plus network of specialty dealers.

Still manufactured in France, Micromega's new HD Audio lineup is completely redesigned and engineered and comprises a full panoply of models for both two-channel audio as well as home cinema. Micromega is also dedicating considerable time and research to the ongoing shift to music servers. The upcoming AirStream, an Apple-licensed wireless DAC, is designed to integrate with an iTunes-equipped PC or Mac over a WiFi 802.11 home network. AirStream will also be compatible with any high-resolution streaming content whenever iTunes makes that option available.

However, in the two-channel universe the PA-20 solid-state line-level preamp and PW-400 amplifier will be key two-channel players for Micromega. They feature low-profile aluminum chassis with clean, elegant styling. Ready to do battle in the 21st century, the PA-20 preamp sports front-panel analog inputs for both headphones and portable music players. There's a PRO ON selector that serves as a bypass for a processor. And there's even a subwoofer output for running in 2.1-channel mode. Micromega offers an optional iDock docking station, which when connected to the RS232/DB9 rear-panel connector, will charge



the iPod and take full command via the remote control. Finally in a nod to the home-theater crowd, inputs are nameable and the display is large and readable from a respectable distance.

The PW-400 amplifier trumpets 400 watts per channel of power from its Class D modules. That's an earful, but this rating is also into 4 ohms rather than the customary 8 ohms—the real-world 8-ohm figure is undoubtedly less. Rated power notwithstanding, the amp has dual transformers, a huge one for the power supply, and a separate one for the input board and the display. It has dual pairs of speaker posts for biwiring and is also capable of being bridged. And then there are those interior LED running lamps—in pairs, red for standby and red/blue when powered on. An allusion to the national colors of France, *n'est-ce pas*? The preamp and amp also have a STANDBY link I/O to synchronize power-on/off—a feature that can be daisy-chained if you're running multiple amps.

There are a couple of ergonomic speed bumps. In order to select XLR or single-ended operation you need to flip the amp over and shift the small slider switches near the rear footers to the preferred mode of operation. Someone

obviously missed the memo suggesting that a rear-panel toggle would be more appropriate in an amp of this price range. Also in the yea/boo department, the amp can be bridged (yea!). However you'll need to flip the amp over to reach the appropriate bridge jumpers (boo). Also in a time where mechanical and airborne resonances are routinely addressed by robust, seamless casework I thought the wrap-around panels at the rear of each component should have been better implemented. And, the degree of flex from the top plate was in my view a detail not commensurate with the performance.

Sonically, however, there is nothing lightweight about the Micromegas' musicality. Whether considered as a pair or individually, they perform well, although I believe the preamp holds the overall edge. As I often do, I began my listening session with one of my favorite symphonic shakedown LPs—the Solti version of Beethoven's Ninth [Decca] is a wonder for its naturalistic orchestral perspective, imaging, and rendering of acoustic space. The PA/PW immediately registered as clean, balanced, and controlled. They were able to easily hold position on soloists and delineate complex choral

EQUIPMENT REVIEW - Micromega PA-20 Preamp and PW-400 Amplifier

groupings. Percussion cues, deep in the acoustic space, emerged with transient immediacy and resonant decay intact. Overall, the personality of this tandem is a cooler one, leaning just a shade toward the clinical. It doesn't suggest the weight or colossal soundstage of a Pass Lab or Plinius or one of my mid-priced amp faves, the Cambridge Audio 840W, nor does it have the dark brooding power of an MBL. It truly is its own animal. The midrange is as solid and penetrating as a Klitschko jab, the treble clean but in need of just a little more bloom. Transients are fully up to speed in this price range. Soundstage width is excellent overall with just a slight contraction in depth and a bit of a lower ceiling.

Inner detail, however, is a consistent strong suit of the Micromega pre/amp combination. Norah Jones' "Sinkin' Soon" on *Not Too Late* [Blue Note] is a kitchen-sink arrangement (yes, with pots and pans) of found-sound oddities and clatterings. It's my go-to tune for its splendid low-level information and micro-dynamics. Paired with the new ultra-resolution Magico V2 speakers, the Micromegas had the opportunity to reveal the very specific percussion transients from this track and it didn't disappoint—including a few heretofore undiscovered taps of reverberant

information which consistently seemed to travel diagonally from the front-right of the speaker back on an angle to the center rear. I'd never heard that one before, but there it was, deep in the stage but unmistakable.

I finally concluded that the PA-20 and PW-400 were especially good at letting the inherent properties of a system come to the fore without slipping in additives of their own. They introduced only fairly minor subtractions and these were revealed primarily at the frequency extremes. A softening of the lowest bass cues for example, or a mild shading in the treble octaves. During Jen Chapin's "Alone Together" from *reVisions* [Chesky], bass was well controlled but lacked that last bit of extension that gets the floorboards to tingle the soles of your feet. Similarly, there's a moment during Rutter's "Praise Ye The Lord" from *Requiem* [Reference] where at the close the organ wells up as if on its hind legs and lets loose a huge volley from its deepest ranks. It should sound as if some subterranean beast has just swallowed up the hall but the Micromega couldn't quite get its power supply around this one. As the instrument descended, which it does often during this track, the sound seemed to pale and lose reverberant energy—not so played back

through the voracious 300Wpc Plinius Hiato.

Specific to the PW-400 is a trait that has been consistent with my own observations of Class D amps. During Judy Collins' "Send In The Clowns" the oboe lacked the vibrant "lift" and air that accompany good acoustic recordings, and the sense of a lowered acoustic "ceiling" that I referred to earlier is largely manifested by the PW-400, not the PA-20. I also felt the amp fell short trying to reproduce the warmer harmonic energy that allows the Turtle Creek Chorale to fully bloom during *Lux Aeterna*, or to cover the symphonic ground of Korngold's Concerto for Violin and Orchestra [DG] with sufficient dynamic octane. Finally, vocal peaks tended to sound drier through this amp and brass and wind instruments didn't retain the full measure of their earthy textures

In the final analysis my time with the Micromega gear was often enjoyable but resulted in a mixed decision. The PA-20 preamp really captured and riveted my attention and allowed me to lose myself in the pleasure and passion of the music. The amp, solid and workmanlike throughout its midrange, left me wanting a bit more opulence and juice in the treble and greater dynamic fury at the bottom.

Any self-respecting audiophile should be thrilled to welcome Micromega back to the high-end neighborhood. But it's also a tougher and more crowded 'hood than the one Micromega left. Fortunately the company's sonic bona fides are solid and the products currently in the pipeline look exciting. Whether these will hasten a full-on revolution for this French firm, only time will tell. But this is a company on the move and from this reviewer's vantage point its future looks to be a bright one. *tas*

SPECS & PRICING

PA-20

Inputs: Four analog RCA (phono, processor bypass, subwoofer, tape loop)
Outputs: Single-ended and balanced, subwoofer out
Dimensions (WxHxD): 16.9" x 11.8" x 2.75"
Weight: 13.2 lbs.

PW-400

Input/Output: One pair single-ended RCA, one pair balanced XLR
Power output: 400Wpc into 4 ohms
Dimensions (WxHxD): 16.9" x 11.8" x 2.75"
Weight: 28.6 lbs.

U.S.

PA-20

Price: \$1995

PW-400

Price: \$2795

AUDIO PLUS SERVICES

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

U.K.

PA-20

Price: £1,380

PW-400

Price: £2,041

ABSOLUTE SOUNDS

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Soulution 710 stereo amplifier, 700 mono amplifier, and 720 preamplifier

The Amp That Wasn't There

Jonathan Valin



I've listened to a lot of audio equipment over the years, but I can count on one hand (without using all my fingers) the number of times I've heard something that was fool-me realistic. The first time this happened—way back in the early seventies—was when I auditioned the Magneplanar I-U's (still my all-time favorite Maggies) with Audio Research electronics and got tricked into thinking I was hearing an actual grand piano being played behind the “decorative screens” at the far end of the room. (The screens were the Maggies, of course, but back then I didn't know they were loudspeakers.) The last time this happened to me was about a year ago when I listened to Steve Hoffman's remastering of Joni Mitchell's *Blue* [Warner] and heard the way her backup vocals had been potted into the mix with such clarity that I felt as if I were standing in the engineering booth alongside the mastering engineer, listening to him mix the multi-track mastertapes down to two-channel work parts. It wasn't the same experience as the Maggie/ARC of years past. I wasn't being fooled into thinking that an actual instrument was “there” in the room with me; instead I was being fooled into thinking that I was “there” at the mixing sessions, listening to recorded instruments being played back and mixed from separate tracks. In neither case was I aware that I was listening to speakers and electronics. All sense of hi-fi simply vanished.

If you've been following my other reviews in TAS or my blogs on our Web site, AVguide.com, you already know that the speakers I was listening to *Blue* on that day were the sensationally transparent MartinLogan CLXes and that the amp and preamp were two then-entirely-new-to-me solid-state wonders from an upstart Swiss company called Soulution.

I first heard about Soulution (the name is a Motown-like concatenation of “soul” and “solution”) from solid-state amp maven and loudspeaker-designer extraordinaire Alon Wolf. Soulution was not a company I was familiar with and when I looked it up on-line and discovered that it was a division of another Swiss company called Spemot that specialized in building electrical motors and refrigeration units for the

automotive industry, I was not enthralled. Shades of Crown, I thought. Then I chanced upon a rave review of a Soulution product—the 120Wpc dual-mono Soulution 710 stereo amp—in the usually tough-minded German hi-fi magazine *Stereo*, and got more interested. You see, *Stereo* had pronounced the 710 a sonic and technological *wunderkind*. Indeed, the amp had tested so unprecedentedly low in distortion, so high in channel separation, so superbly well in S/N ratio that the magazine's chief technician hung the test results in a gold frame above his bench.

Of course, some of us remember (at least some who go back that far) those Japanese solid-state amps from Sansui and others that also boasted record-low THD figures—but sounded like crap. The trouble was that to achieve such stellar

EQUIPMENT REVIEW - Soullution 710, 700, and 720

DESIGN AND OPERATION

Physically, all of the Soullution products share what I would call an austere Bauhaus aesthetic—kind of the anti-MBL/Burmester style. There is nothing fancy or gaudy about these simple, handsome, massive, beautifully machined boxes—each inset with its own glass window for readouts. They look like they're ready to go to work. All three products give you an unusual amount of control over various functions—some operated by switches and some electronically. The electronic adjustments can be read out in the windows of each component. For instance, the 720 preamp allows you to set or adjust the starting volume level, the maximum volume level, the balance, the bandwidth of each input, the gain of each input, the gain of the phonostage, the highpass filtering of the phonostage, and the brightness of the display, among other things. Both amps and preamps have switches that allow you to lift grounds. The 700 has switches for selecting bi-amp or monoblock (bridged) modes and for fan level. All three products have XLR and RCA inputs and outputs. The EU-approved plastic-covered binding posts on the amps are a pain, but...what are you going to do? A chintzy but handy little plastic remote is included, which permits you to make all of the electronic adjustments from your listening seat. Form definitely follows function here—for the most part elegantly.

specs the Japanese engineers had to ladle on so much negative feedback that the amps were virtual TIM generators. Feeding back the signal from the output in order to compare it to the signal at the input and eliminate any distortions that may have accrued as it made its way through the circuit works fine if that feedback process is instantaneous, but feedback is a disaster if the amp takes too long to make its corrections. After all, the musical signal coming into the amplifier doesn't hold still for a portrait; it is constantly changing; and if too much time elapses (and we're talking nanoseconds here), the signal that the feedback circuit is comparing the output to is no longer the same signal that was input. Think of it as a worst-case "jitter" scenario, albeit in the analog realm.

This jittery, old-fashioned, negative-feedback-fix is *not* how the Soullution 710 and its 430W monoblock big brother, the Soullution 700, work their distortion-free magic. Instead, the Soullution amps and their companion preamp, the 720, are ground-up rethinkings of solid-state circuits executed without regard to cost (as any of you who buy Soullution gear will quickly find out) and with the sole object of building the best possible amplifiers and preamplifiers.

As you'll see when you read my interview with Cyrill Hammer on p. 142, Soullution is a labor of love. Though Cyrill and his partner Roland Manz own Spemot, they are also serious long-time audiophiles. Indeed, they started a small subsidiary back in the late nineties to import and distribute the high-end audio gear of a German outfit called Audiolabor. When Audiolabor went under, Cyrill and Roland hired its chief designer Christoph Schürmann to develop their own series



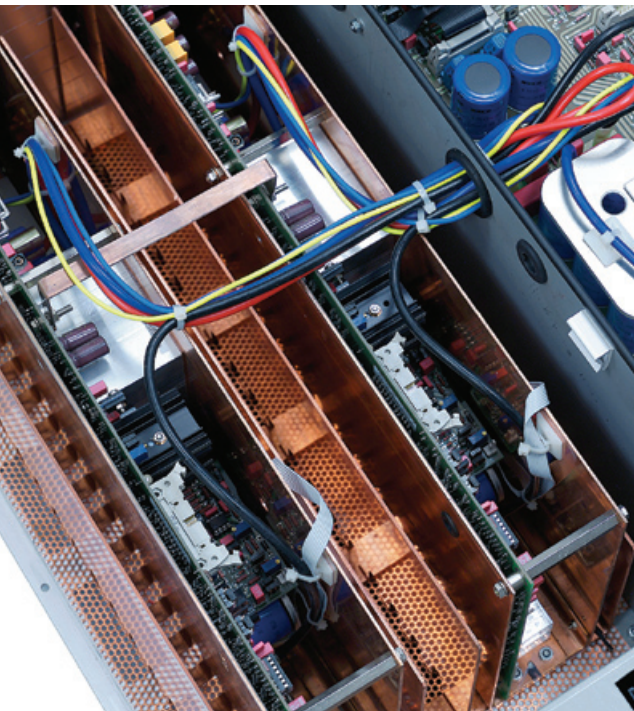
of amps, preamps, and CD players. Costs were no object; bullet-proof sonic excellence was. What the boys from Dulliken were after was the inherent musicality and low time-related distortion of tubes combined with the high current/drive capability and low THD of solid-state. What they wanted, in a nutshell, was an amp with all the virtues and none of the vices of both technologies. What they wanted was an amp with no pronounced sonic signature of its own.

It took Schürmann better than half a decade to pull off this little trick. But—to kill any remaining suspense—pull it off he did. With a transparent-enough speaker and source, the Soullution amps, particularly the 710, simply aren't audible in most of the usual ways that solid-state or tube amps are audible. They aren't dark and they aren't light; they aren't warm and they aren't cool; they aren't liquid and they aren't dry; they aren't fat and they aren't lean; they aren't sweet and they

aren't dour or antiseptic; they aren't great at the frequency extremes but less fully fleshed out and lifelike in the midband; they aren't flat or airless and they aren't bloated or overly bloomy; they aren't terrific on starting transients and AWOL on stopping ones; they aren't too tightly focused and they aren't loosely defocused; they just aren't. And since they aren't, speakers (at least those capable of high levels of transparency and neutrality) aren't, either.

When I first paired the Soullution 710 stereo amp and Soullution 720 preamp with the AAS Gabriel/Da Vinci 'table, Da Vinci Grandezza tonearm, Da Vinci Grandezza cartridge, Audio Tekne TEA-2000 phonostage, and MartinLogan CLX electrostats, I simply couldn't get enough of listening to the system. Every single record—even records I'd been playing for decades—was born anew. It was as if a door to a hidden room in front of the soundstage had opened and there, for all the

EQUIPMENT REVIEW - Soulution 710, 700, and 720



world, sat the recording and mastering engineers, their tape machines, their mixing boards—just as clearly present as the musicians arrayed on stage, whose every nuance of intonation or fillip of technique was just as finely revealed as the miking setups and dial-twiddling of the engineers. It is true that each new piece of equipment reveals certain things you haven't heard (or haven't heard as clearly) before, because each piece of gear has different timbral and dynamic emphases, different combinations of sonic strengths and weaknesses. But this wasn't like that. This wasn't a change in emphasis—a different grid laid on top of the same old map; this was a gestalt shift—the revelation of a world within a world, a

huge and unmistakable step closer to the reality of a recording not just as the documentation of a musical performance but as an artifact, as a thing that was itself made, for better and worse, by artists, engineers, and hardware.

It was obvious—and this isn't always the case with products that reduce distortion—that the Soulution 710 was substantially lowering noise and, in so doing, revealing things about records and the recording process that had previously been inaudible or far less audible with even the finest competition. The 710 wasn't just taking me closer to the music, it was taking me back further in time—to what was coming through the mikes at the recording session and to how those mike feeds were subsequently manipulated (or not) in the engineering and mastering booths.

I wish I could speak with greater authority about how Christoph Schürmann achieved this new standard of transparency to sources. But I'm not an engineer and all I can do is parrot what Cyrill says in my interview with him and what Soulution says on its Web site. As near as I can tell, it all boils down to speed or bandwidth.

After the specsmanship wars of the sixties and seventies, the received wisdom about solid-state was that negative feedback was a bad thing—only to be applied sparingly and locally. Shorter signal paths and fewer parts were good things. Schürmann and Soulution have turned this conventional thinking on its ear. Together they decided that it wasn't feedback itself, but the speed at which the feedback loop operated that was the problem. As I've already noted, to eliminate the time-related distortion, the graininess and edginess that feedback engenders, you have to make those feedback

loops correct errors instantaneously. This means that circuits must operate at incredibly high speeds and with incredible precision. Forgetting about shorter signal paths and fewer parts, Schürmann apparently found ways to do this very thing, reducing propagation delay times

(the amount of elapsed time it takes to correct a signal via feedback) to 1–10 *nanoseconds* (billionths of a second), where big solid-state amps typically have propagation delay times of 1–5 *microseconds* (millionths of a second). This thousand-fold increase in speed allowed for an

SPECS & PRICING

Soulution 710

Power: 120Wpc at 8 ohms, 240Wpc at 4 ohms, 480Wpc at 2 ohms
Current: 60A maximum
Bandwidth: DC to 1MHz
Damping factor: Greater than 10,000
Signal-to-noise ratio: Greater than 108dB
THD: Less than 0.0006%
Input impedance: 47k Ohms (XLR), 10k Ohms (RCA)
Output impedance: 0.001 ohm

Soulution 700

Power: 430W at 8 ohms, 860W at 4 ohms, 1560W at 2 ohms (bridged mode); 110W at 8 ohms, 220W at 4 ohms, 440W at 2 ohms (bi-amp mode)
Current: 60A maximum
Bandwidth: DC to 2MHz

Damping factor: Greater than 10,000
Signal-to-noise ratio: Greater than 108dB
THD: Less than 0.00058%
Input impedance: 47k Ohms (XLR), 10k Ohms (RCA)
Output impedance: 0.001 ohm

Soulution 720

Inputs: Two RCA, three XLR, one moving-coil phono (RCA)
Outputs: XLR and RCA
Bandwidth: DC to 1MHz
Signal-to-noise ratio: 130dB
Channel separation: 105dB
THD: less than 0.0006%
Phono gain: 54dB, 60dB (switchable)
Input impedance: 2k Ohms (XLR), 47k Ohms (RCA)
Output impedance: 2 ohms (XLR and RCA)

U.S.

Soulution 710
Price: \$40,000
Soulution 700
Price: \$115,000 the pair
Soulution 720
Price: \$40,000

AXISS AUDIO
17800 South Main St.,
Suite 109
Gardena, CA 90248
(310) 329-0187
axissaudio.com

U.K.

Soulution 710
Price: £25,000
Soulution 700
Price: £69,000 the pair
Soulution 720
Price: £21,000

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EQUIPMENT REVIEW - Soulution 710, 700, and 720

JV TALKS WITH CYRILL HAMMER OF SOULUTION AG

TAS: The Soulution gear sets new standards of low noise and high resolution, making it the most transparent-to-sources and the most realistic solid-state gear I've yet heard. Can you tell us a bit about the technology that has led to these breakthroughs? Particularly bandwidth and distortion?

Cyrill Hammer: For a “solid-state” amplifier design the speed (e.g., bandwidth) of amplification is one of the most important criteria. This speed or bandwidth has nothing to do with the MHz-range frequencies that can be reproduced by such an amplifier; the bandwidth is required to make the “feedback loops” of solid-state designs work properly. “Feedback loops” compare the amplified music signal at the output with the input signal. Due to the fact that the music signal is constantly changing, the time delay (propagation delay) of the amplifier must be zero; otherwise, applying feedback will add timing errors to the music signal. In other words, if the propagation delay is not zero or close to zero the “feedback loop” will be comparing apples at the output to oranges at the input.

Big solid-state amplifiers can have propagation delays of 1-5 *microseconds*. Now, the period of a 20kHz sine wave is 50 *microseconds*. Under these conditions such timing errors are significant—and they get even worse for higher frequencies. The Soulution amplifiers work with an overall propagation delay of 5-10 *nanoseconds*. This is

up to 1000 times faster than other amplifiers. The voltage amplification stage—where we apply the most negative feedback—runs at 80MHz bandwidth and has a propagation delay of 1-2 *nanoseconds*. Since the timing errors of the Soulution amplifiers are negligible, this gives us 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.

Our amplifiers break with much of the common wisdom about amplifier design.

TAS: The Soulution gear doesn't sound “solid-state” in any of the usual ways. It doesn't sound like tubes, either. It is its own thing. Can you tell us a bit about your overall design philosophy? What are you aiming for sonically?

CH: We aimed for an amplifier without any audible signature. The electronics should virtually disappear. Their presence should not be detectable.

Tube amplifiers have clear advantages over solid-state designs for specific criteria and vice versa for others. We tried to combine the advantages of tube designs (low feedback, natural sound, etc.) and “solid-state” designs (high power ratings, low distortions, etc.) Since we feel the amplifier should be able to provide enough power

increase in negative feedback (and a drastic lowering of THD levels), without the usual price paid in time-domain errors.

One result of Schürmann's new thinking is greater complexity. Soulution's power supplies (there are ten separate ones) and circuits are unusually complicated—Schürmann is reported to have proudly proclaimed that the 710 all by itself uses over 3000 parts. While this may not seem like a thing to brag about from a simpler-is-better vantage, there is no question that his unconventional design achieved its goal.

As I noted above, the sonic gains are obvious and the measured results are phenomenal (even better than what Soulution claims). In the 710 stereo amp, THD is well below 0.0006%, the signal-to-noise ratio is well above 108dB, channel separation is an astounding 86dB, damping factor is above 10,000, slew rate is 330V/ns, and power bandwidth extends from DC to 1MHz. (And these figures are even more mind-boggling in the monoblock 700 amplifiers.) The upshot: You hear more of *everything*.

Now I have to admit that some listeners might not want to hear this much information this clearly. It's not that it makes the presentation overly “analytical”—dreaded word—but rather that it reveals artifices (like splices, mike preamp clipping, and overdubs, as well as every mechanical noise that a musical instrument is capable of making when it is played close by the diaphragm of a microphone) that other, less transparent amps and preamps gloss over, and that the musicians and recording and mastering engineers probably didn't want or intend for you to hear this plainly. While I reveled in this wealth of detail for all the previously unheard subtleties

of music, performance, and recording that were revealed, some members of my little listening panel weren't so sanguine. A few of them felt the 710—particularly in combination with the CLXes—was just a bit too revealing.

I didn't. What the 710 was was utterly neutral, utterly grainless and distortion-free, astonishingly quick on starting transients and detailed on stopping transients without ever sounding sharp or etched, standard-settlingly high in resolution, standard-settlingly transparent to sources, phenomenally well defined in the bass and treble with superb grip and extension from bottom to top, extremely wide in soundstage (albeit a bit more forward than some transistor amps), unusually natural in imaging (both in size and dimensionality) for solid-state, and less “there” than any other amp I'd tried.

Listening through the 710 does require a bit of a sonic adjustment. It is not an amp you would ever call warm—or cold, for that matter. It just doesn't have a color of its own; like glass or water it has the color of what you see through it or reflected by it. If a recording is highly manipulated, “hot,” “dull,” “dry,” or “gorgeous,” it will tell you this with the added bonus of telling you *why* this is the case (by revealing everything that a piece of vinyl or polycarbonate can retain of the recording/mastering process). It is like a laboratory instrument for audiophiles who want to hear all that can be heard.

The 710 is a dual-mono stereo amp; the Soulution 700s are dual-mono monoblocks. By this I mean that each 'block holds what amounts to two 710s that can be bridged (via a supplied piece of hardware) for almost four-times the power of a 710 stereo amp, higher bandwidth (DC

EQUIPMENT REVIEW - Soulution 710, 700, and 720

for all loudspeakers potentially hooked up to it, we decided to use solid-state circuits.

TAS: The Soulution products are extremely expensive. Can you tell us a bit about the build- and parts-quality and how they play into your pricing?

CH: The amplifiers are very complex products that use many parts, some of which are very expensive. The machining and surface treatment of the housings are very difficult to execute, as well, in order to achieve the required quality. Additionally, Soulution amplifiers are built in small quantities, which also drives the price up. Taking these factors together we end up at very high retail prices. However, we are convinced we deliver a product which rewards the client with top-quality sound and is worth the price asked.

TAS: Your company is relatively new. How did you get into the audio business and what are your long-term goals? For instance, are you also going to build a speaker? Also, tell us a bit about your design team. Who are they? What are their backgrounds—and yours?

CH: Soulution products have been available for three years, although product development for this project started in the year 2000, nearly ten years ago. Our parent company—Spemot AG—has been in operation for better than 50 years, successfully active in the development and production of electric motors and electrical appliances. We decided to start the audio business partly because we wanted to diversify the business portfolio of Spemot AG and partly,

of course, because Roland Manz and myself (the owners of Spemot AG) have a longstanding interest in high-end audio equipment. In 1997 we began our audio business with the distribution of German brands in Switzerland. Among them was Audiolabor. Unfortunately Audiolabor went out of business due to financial problems. This gave us the opportunity to hire Audiolabor's chief engineer, Christoph Schürmann, and start the Soulution project. Our long term goal is to create a strong and well-known brand for luxury high-end audio products. Our focus is clearly on electronics. We do not intend to do anything in the field of loudspeakers.

The design of the electronics is done by Christoph. For the design work of the housings we use our existing design team from the motor/appliances design department at Spemot. Christoph worked for Audiolabor for many years; before that he was active as an audio engineer in several domains.

TAS: Your 720 preamp incorporates an excellent phonostage, making it one of the very few “full-function” preamps left on the market. I know you are (rightly) proud of your phonostage. Can you tell us a bit about its design and capabilities? Also, you are planning an outboard (stand-alone) phonostage. How will it differ from the phonostage built into the 720?

CH: First, yes, we *are* introducing a stand-alone phonostage, the 750. The core amplification stage of the 750 is identical to the phono section built into the 720. However, since we have

to 2MHz), and even lower distortion; the two amps inside each monoblock chassis can also be run separately if you choose to bi-amp your speaker.

Even though the technology is precisely the same, the 700 doesn't sound exactly like the 710, even when you're using it in bi-amp mode (i.e., when you're using it as dual 710s). It has what I guess you could call a bit more of its own signature. It is slightly but noticeably plusher in overall balance—less purely objective—than the 710. The greater body and density of tone color that the 700 adds isn't anywhere near marked enough to constitute a coloration; it is much more like a bias, a “leaning” toward a slightly different, slightly more *gemütlich* kind of colorless neutral—rather like a superb lens equipped with an 81A warming filter. At the same time, the 700 is every bit as distortion-free, finely detailed, and supremely transparent to sources as the 710 (all that you hear through the 710 you'll hear through

the 700, only it'll sound a little friendlier and more *human*), with the bonus of even bigger and fuller and more powerful bass, a wider soundstage, larger more “bloomy” and dimensional images, and more reserves of power—rather like a solid-state version of an ARC 610T with lower grain, lower distortion, higher transparency, better grip in the bass and the treble, and slightly less dimensionality, air, and bloom (though *not* less density of tone color and texture) in the midband.

BTW, if you're wondering why I'm not loading this review with musical examples of the Soulutions' excellence, it's because I've already done it—in every review I've written since the 710, 700, and 720 arrived in my home almost nine months ago. All those little sonic details I've remarked on—the tremolo of Alison Krauss' voice on “Forget About It,” the glycerin sound of the harps doubling the plucked basses in the Passacaglia of Lutoslawski's



EQUIPMENT REVIEW - Soulution 710, 700, and 720

more available space, the input section and the output section have been designed with fewer restrictions and compromises. The 750 provides several functions like a mono-switch, a mute, an attenuation-selector, multiple inputs, and the option for moving-magnet cartridges that are not available in the 720's internal phonostage.

TAS: You seem to have a healthy respect for tube gear. How have the virtues of tubes played into your design philosophy. Do you plan to make a line of tube products?

CH: It is true that we did spend a lot of time on the question of which are the best active components for amplification. The result of that study was that there is no one component that combines all the required virtues without showing deficiencies. Vacuum tubes are very fast, and they are stable without the necessity of applying negative feedback loops. Their drawbacks are “weak” current ratings, questionable long-term stability, enormous waste-heat generation, etc. Transistors have high current ratings, they have very low parameter drifts over time, and they can be very fast. Their drawback is that for high-current ratings a negative-feedback design is required (potentially producing time-domain errors).

At first glance there is seemingly no practical way out of this dilemma. Either you go for tubes with very small errors in the time domain, while accepting higher distortion levels and lower current ratings, or you go for a solid-state design with higher current ratings and lower distortion levels and tolerate errors in the time domain. Theoretically, however, this dilemma is very easily solved. The errors in the

time domain in solid-state designs do not come from the transistor itself but are induced by the “poor” design of the required negative-feedback loop. The magical word is speed (bandwidth). Once the amplification is done without any time delay from input to output (i.e., propagation delay = zero), you can apply as much negative feedback as you wish without inducing any errors in the time domain. This seems to be a simple fix, but it took a very long time and a lot of hard work to make a functional amplifier with propagation delays of a few nanoseconds. The commonly known topologies of solid-state amps simply do not work under these conditions. The power supply units have to operate at a level of accuracy previously unheard of in audio designs in order to make the gain stages work properly, etc., etc.

Higher current and lower distortion are the reasons why we chose a solid-state design for our amplifiers. A similar design with vacuum tubes would not have been possible. This is not to say that there aren't tube amplifiers on the market that sound really great and obviously many audiophiles prefer the sound of tubes over solid-state. Some of these tube fans might eventually change their minds if they listened to the Soulution amplifiers, but in the end it is also a matter of personal taste. We clearly prefer the purity and transparency of our amplifier design.

Today the Soulution brand stands for state-of-the-art solid-state designs. We do not want to weaken that position. Apart from that we do not have any experience in the domain of tube designs.

Concerto for Orchestra, the utter realism and startling comprehensibility of every word those high lonesome backup singer-shouters utter on Levon Helm's *Dirt Farmer*, the cleaning up of Leon Redbone's foghorn delivery on “Oh, Sweet Mama, Papa's Getting Mad” (and the sound of his mike preamp clipping), the clear resolution of every whispered word that Ricki Lee sings in the refrain of “Walk Away Renee,” the fabulous colors, transients, and decays of Attila Bozay's *Improvisations for Zither* (the zither equivalent of Jimi Hendrix's “Star-Spangled Banner” and one of the best audiophile test records I've ever heard), the incredible bullroarer sound of the bowed bass drums in John Cage's *Third Construction*, etc., etc., etc.—were all brought to you (and me) courtesy of Soulution. It has been a treat almost beyond compare (although I *am* going to compare the Soulution gear, over the next few issues, with some other contenders for the solid-state crown from BALabo and Technical Brain, as well as with the latest tube gear from ARC).

For music lovers who want to hear it all with a bit more natural warmth and body than the 710, the Soulution 700s may be hard to beat, although I guess I should note that I tend to prefer them (at least with the Magic M5s) in bi-amp rather than in monoblock (bridged) mode, where to my ear they lose a *tiny* bit of their refinement, although they do gain considerable “oomph.” (I should also note that other experienced listeners feel just the opposite, so this may be a speaker- or listener-dependent choice.)

As for the Soulution 720, it sounds almost exactly like a preamp version of the Soulution amps—and for good reasons. Technically, it is almost another Soulution amplifier—a reviewer in

a German hi-fi magazine pointed out that the 720 was capable of putting out 3A, making it suitable, all by itself, to drive loudspeakers! Like the amps it uses speed and bandwidth to lower distortion and raise resolution. The thing is a wonder of ingenuity and attention to detail. The volume control, for instance, uses a discrete-resistor network comprising eighty 1dB steps. To avoid sending switching transients through Soulution's incredibly wideband amps as the volume-control wiper passes over the contacts of these resistors, the volume control inaudibly switches itself out of the circuit as soon as you touch its knob (or the up/down buttons on the supplied remote). Changes in level are handled, instead, by a chip—called a Programmable Gain Amplifier by Soulution. This PGA chip immediately duplicates the level you have selected in the resistor network and, within three seconds of your releasing the knob or remote pushbutton, switches over to the chosen resistor. The result: no transient noises, no wear on contacts, no intermediate steps.

As a linestage the 720 is virtually without color. Like the 700 amp, it is biased slightly toward the *gemütlich*, adding the same touch of natural timbral warmth and body that the monoblock adds, without sacrificing neutrality, resolution, or transparency to sources. The thing has terrific bass—big, powerful, bloomy, tremendously deep-reaching, and tremendously solid and well-defined. Its midrange resolution is as fine as any piece of electronics, tube or transistor, I've heard—nothing seems to escape it, though it does not sound at all analytical. (While not as bloomy or airy in the mids as the Audio Research Reference 5, the 720 is not without bloom or air and is as detailed in timbre and texture as the

EQUIPMENT REVIEW - Soulution 710, 700, and 720

great ARC unit.) Its top end is reminiscent of the Magico M5 in that you're not aware it's there until something with treble energy shows up. Tone color is as beautiful as the recording/mastering allows. Staging, ditto, although the thing can really go wide, tall, and deep with the right discs.

The 720 is a full-function preamp, meaning it has a built-in moving-coil phonostage. Unlike some contemporary full-function preamps, Soulution's phonostage is an all-out effort—not a chip or an itty-bitsy circuit board screwed to a side panel or plugged into some pins. As solid-state phonostages go, it is as exemplary as the rest of Soulution's gear—a model of power, control, transparency, and resolution, with particularly stunning bass. While I think it adds a slight tinge of darkness to the overall sound, which isn't there with the linestage, other listeners disagree. Personally, I prefer the bloom, light, and air of tube phonostages, like the ARC Reference Phono 2 (which mates up beautifully with the 720, BTW), but I can see where many would opt for the low-end grip, very low noise, solid imaging, full-bodied timbres, and very quick transient response of the Soulution phono. (I should note that, at a maximum of 60dB, the 720's phonostage has barely enough gain for really low-output moving coils, such as the Da Vinci Grandezza or certain Ortofonos. They'll work, but you gotta run the volume control almost full-out. The phonostage will not function with higher-output moving-magnet or moving-iron cartridges.)

In my interview with Alon Wolf in Issue 196, I said that I thought there were three types of listeners (though these types tend to overlap): first, those

who primarily want recorded instruments and voices to sound like live music—what I call the “absolute sound” type; second, those who want to hear exactly what has been recorded, whether it's lifelike or not—what I call the “fidelity to mastertapes” type; and third, those who could care less about the absolute sound or mastertapes and just want to hear their music sound thrilling and beautiful—what I call the “as you like it” type. If you fall, primarily, into the second group—the fidelity-to-mastertapes type—or if you're in the first group and lean toward the second, then Soulution is a must-listen. I have never reviewed components that are more transparent to sources (and more transparent to what the rest of your system, from front end to back, is doing to those sources). They will make recorded music sound precisely as real or as canned as the recording and mastering engineers (and your gear) allow it to sound. For me, they set new standards of clarity, neutrality, and transparency in hi-fi electronics, which is why they are my solid-state references and why the Soulution 720 preamp and 710/700 amps are this year's winners of TAS's Preamp and Amplifier of the Year Awards. **tas**

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Coda 05X preamp and CSX power amplifier

Small and sensible

Alan Sircom

Coda is one of those hi-fi brands that has a secret past. Coda Technologies might not trigger distant memories of excellent sounding electronics, but names like InnerSound, Legacy and Threshold certainly do. And the design team at Coda has strong connections with all of the above. More recently, the Coda people had two lines – Coda and Continuum (no relation to the Aussie turntable), but a few years back the lines blurred and the X Class – including this slimline line pre and high-current stereo power amp – represent perfect examples of what the Coda brand does best.

Like some of the best of the Jeff Rowland line, the Coda 05X preamp has to be one of the slimmest products to still score high-end cred points. It's so low profile in fact that the phono and XLR inputs and outputs need to be laid side to side on the back panel. Unlike Jeff Rowland however, the Coda ain't big on bling. With its light grey brushed alloy finish, chrome end cheeks, buttons and dial and the big blue LED readout behind an oval display, the 05X treads a fine line between 'classic' and 'dated'. It does match the CSX however and the two together really do look

like escapees from a high-class high-end system of 20 years ago (save for the big learning handset and the blue LEDs). We'll give them the benefit of the doubt and call it 'classy' and 'timeless'.

Just because it's slim and doesn't have next-generation styling doesn't mean this isn't a fully functioning, state of the art pre in its own right. The 05X runs in class A and uses a FET control buffer output stage, although the preamp level outputs mean it doesn't run toaster-warm. This topology allows the preamp to have very high input impedance, so a signal does not demand



EQUIPMENT REVIEW - Coda 05X preamplifier and CSX stereo power amplifier

any attendant current draw from a source. Cable dismissers take note; this reduces the complexity of the interaction between source and preamp, meaning even wildly different cable designs will not drastically alter the sound of a source played through the 05X.

Usefully, Coda has included programmable gain on all inputs, from unity gain to +18dB, allowing the listener to precisely match the outputs of individual sources (or accurately level match components for listening tests). Its system logic remembers the most recent volume level and balance settings for each input too. With no global feedback, very low-noise circuitry and a low-distortion Burr-Brown attenuator in place of the normal volume pot, this

is a very exciting design, even before you factor in the roll-call of high-end components (Holco resistors, Black Gate and Nichicon caps, Fairchild diodes and Vampire connectors).

The CSX power amp is basically a one-box version of the company's CX monoblock flagship designs. A 330w per channel device (that doubles perfectly, delivering 660 watts into four ohms and is good for one-ohm impedances — a sign of a stiff power supply and very good load-stability) with the first 25w of that power in class A, the CSX is a high-current design (125A peak) with a differential JFET input and vertical MOSFET voltage gain stage. Under the hood is a 3kVA custom designed (and beefy) potted transformer and some 80,000µF of

supply capacitance and a similarly wonderful roll-call of high-spec components. In terms that non-multimeters would understand, it'll drive practically anything without fuss or complaint.

There are just three lights and one button on the CSX. Two blue LEDs to indicate the DC power supplies of each channel are working and a green 'bias' LED between them, with a button marked 'bias on'. That it says 'bias' is accurate, but slightly misleading — it's actually showing whether the bias current of the amplifier is running or in standby (making it a true standby setting, capable of letting an otherwise huge amplifier jump into life in a fraction of a second). The somewhat sensitive button next to these three LEDs simply controls the switching on and off of the bias current. There's a bit of skill required to turn the standby control on without immediately turning it off again, but this causes the amplifier no harm and otherwise this amplifier is a paragon of fit 'n' forget simplicity.

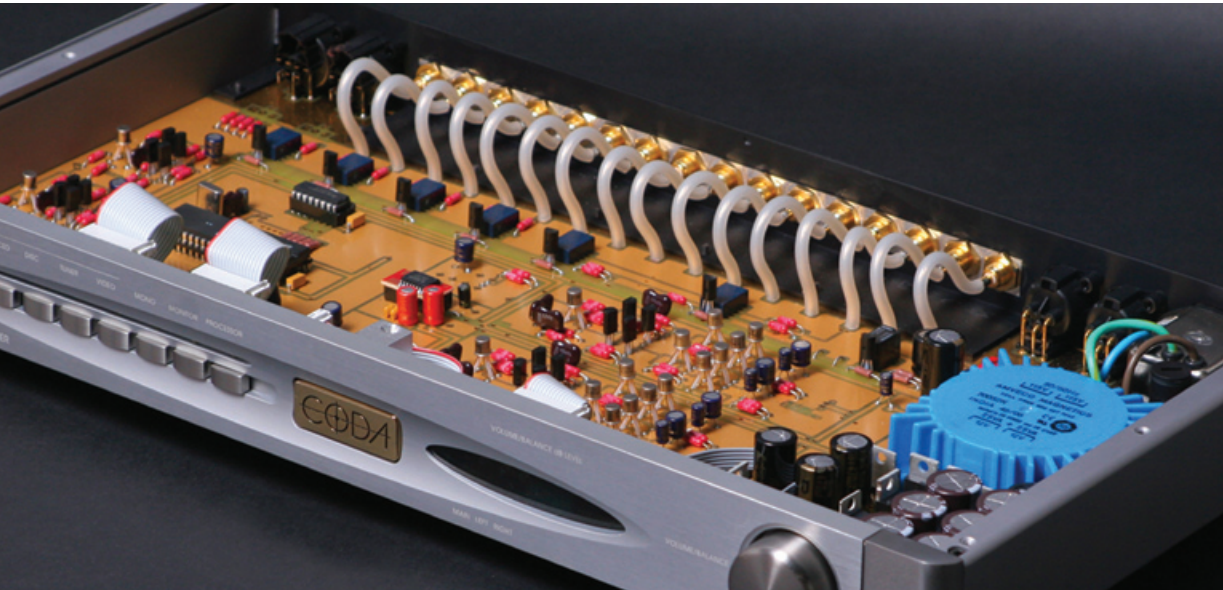
The distributor seems to think the single-ended sound is superior to the XLR inputs and outputs. I'm not completely in agreement, here. I think XLR is on a par with the single-ended lines. However, it seems that the preamp runs best in single-ended and the power amp is best run balanced. The abilities of the designs are such that the any such differences in performance effectively disappear when the two are used together. And they don't seem to mind whether balanced or single-ended is used throughout, either. Score one for Coda on the unfussy stakes.

Part of the lot of an audio reviewer is a fair stack of chopping and changing. Sometimes products show up their idiosyncrasies better when used out of step, so the preamp with another power amp might not sound as good as the preamp with

its own regular partner. Not so here, these two were remarkably consistent. Moreover, you found yourself thinking how good the other Coda product was, whatever product was out of the system. So used separately and together, they turned in a good, attractive and consistent performance no matter what was thrown at them.

One of the great reasons why you know you are on to something good with the Coda products

“So used separately and together, they turned in a good, attractive and consistent performance.”



SPECS & PRICING

05X preamplifier

Inputs: 3x line-level phono, 1x XLR, 2x line-level monitor inputs
Outputs: 1x single-ended phono, 1x XLR, 2x line-level monitor outputs
Dimensions (HxWxD): 6x45.1x24.8cm
Weight: 6.35kg (shipping)

CSX Power amplifier

Inputs: 1x phono pair, 1x XLR pair
Dimensions (HxWxD): 15.2x43.1x35.6cm
Weight: 28.1kg

U.S.
No US distributor

U.K.
05X preamplifier
Price: £4,865
CSX Power amplifier
Price: £5,275

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EQUIPMENT REVIEW - Coda 05X preamplifier and CSX stereo power amplifier

is the reception they garner from those who've heard them. Those who've heard the preamp, love the preamp, and the same applies to the power amp and the system as a whole. There are those who claim not to like the sound of one side of the combination, but when digging deeper, it's because they haven't heard that product and are going on the say-so of others. Such is the lot of the small manufacturer.

So let's separate them. The 05X preamp is a thing of joy. It's the valve preamplifier for people who don't like valves. The richness and musical beauty that attracts people to ARC and Conrad-Johnson preamps is there in great detail (perhaps an unfair comparison, but I had the 05X at the same time as the c-j GAT from last issue. Although the GAT was the better preamp in terms of spaciousness, naturalness and musical enjoyment, the test was not as one-sided as the price differential might suggest and the 05X had the detail edge in some respects). The sound is smaller in scale and scope than those world-class valve pres, but the 05X more than holds its own in the precision and articulation of sound. The difference is akin to comparing an operatic aria (all space and staging) to lieder (more up close and personal) and the 05X is a lover of lieder.

Moving over to the Coda CSX, it seems to have seemingly endless power on tap, capable of delivering awesome dynamics (but without sacrificing those shades of dynamic subtlety that audiophiles crave). There's a sense of rootedness to the sound that holds whatever you are listening to. Double basses in particular seem to be locked firmly in place, whether bowed at the back of the string section or plucked up front and next to the pianist in a jazz trio. It can wail like a demon with

screeching guitar solos and unveil the subtleties of the a cappella human voice, even one as finger-in-the-ear folksy as Ewan McColl.

Of the two, I marginally prefer the power amplifier, but this is more down compatibility with other products than intrinsic failings in the preamp. There are a lot of super-detailed preamps that can come across as fierce with the wrong equipment and the Coda power tames that perfectly. On the

other hand, power amplifiers at this level seem to be designed to help tame such detailing and there's a thin line separating 'enticing' and 'soft'. The preamplifier — going for the enticing sound — can too often push similarly enticing sounding power amps into making a soft sound.

Granted, the Codas will never find favour with those who still want that up-front, uniquely British sound. Instead, this is a mature product for a

mature audio audience. It can still rock with the best of them, but those who are fixated on 'PRaT' will not like the Codas. Instead, this is the kind of product that is refined, powerful and more than delivers the goods. Taken alone or together, the Coda 05X and CSX pre/power have got The Right Stuff. [+](#)



Vincent SA-T8 pre-amplifier and SP-T800 mono power amplifiers

A Marriage of German Design and Chinese Manufacturing

Dick Olsher

The German company Vincent was established in 1995 with the goal of placing high-end sound within reach of the common man. The question of how to make the high end affordable was answered by its founder, Uwe Bartel, using a business model, which while innovative for its time, has become common-place today: Design products in the West and have them built in China. This marriage of German engineering and Chinese manufacturing proved quite successful. Mr. Bartel, an electronics engineer, had no problem designing interesting audio gear, and Vincent's attractive mix of good sound and value slowly gained momentum and global marketshare. The SA-T8 line preamp and SP-T800 monoblock power amp represent Vincent's top-of-the-line Premium line. Even though these products' fit, finish, and elegant aluminum chassis exude a distinct high-end feel and look, the price is quite affordable by high-end standards and well below the onset level of sticker shock.

Vincent's quality is more than skin deep, as a glimpse under the hood will reveal. In addition, there's quite a technical story to tell. Let's start with the line preamp. The SA-T8 is an all-tube balanced design, meaning that both the positive and negative legs of a balanced signal are amplified separately. What happens to a single-ended (RCA) input? Well, it's converted to a balanced signal by being routed through a split-load (also known as a concertina) phase-splitter, using one section of a 12AU7 preamp tube per channel. This type of phase-splitter creates two

balanced outputs of opposite phase from an unbalanced input. However, both balanced and single-ended preamp outputs are provided—just in case your power amp lacks balanced inputs. The gain stage consists of a cascade of two 12AX7 triode sections. The output stage features a cathode follower based on a single 12AU7 section. Note that Russian (rather than Chinese) tubes are used exclusively. The power supply uses two power transformers and is quite sophisticated. It features shunt-regulated high-voltage rails. The filament supplies are DC and



are also fully regulated. A total of four RCA and two Neutrik XLR inputs are provided. A heavy-duty aluminum-cased remote control is included, which controls the input selector and a motorized volume control. My only quibble is with the motorized volume control. It takes some getting used to, as anything beyond a light tap on the "up" and "down" remote buttons results in too large a level change. As with many other modern line preamps, there is no balance control. Too bad, as this is a feature I find handy on occasion in adjusting for interchannel sensitivity differences.

The SP-T800 power amplifier is also a fully balanced design, and a hybrid in that it consists of a vacuum-tube front end and a solid-state output stage. The amp does accept either a single-ended or a balanced input, selectable on the rear panel. As with the SA-T8, a 12AU7-based split-load phase-splitter is used to convert the single-ended input to a balanced signal. The first voltage amplification stage uses a Russian 6922, which feeds a 6CG7 dual triode connected as a series-regulated push-pull driver stage. The output stage uses a total of eight high-power transistors

EQUIPMENT REVIEW - Vincent Audio SA-T8 and SP-T800

to meet its power rating. Much of this amp’s bulk and weight are the result of an impressively large 500W-rated power transformer and a total capacitor reservoir of 80,000 microfarads, all of which are isolated in a separate compartment. The power supply is fully regulated, including the DC tube-filament supplies. Passive parts used in the signal path are audiophile-grade, and include Wima and Solen caps.

My strategy in evaluating these products was to audition each component separately in several contexts and then, for the grand finale, combine both units in the signal chain. The preamp sounded pretty good out of the box even after only an hour break-in period. The monoblocks, on the other hand, required a significantly longer break-in before reaching peak performance levels. Since the Vincent gear was evaluated in parallel with the TEAC Esoteric A-100 power amplifier, comparisons of the sound of the SP-T800 to that of the A-100 were inevitable. Keep in mind, however, that the A-100 is not only four times more expensive but is also an all-tube, KT88-based, power amplifier.

The ultimate goal of a hybrid power amplifier is to combine the best of both worlds—the magic of tubes with the bandwidth and bass crunch of solid-state. The SP-T800’s solid-state genes were definitely in evidence while driving the Esoteric MG-20 speakers. There was more treble energy and enhanced treble detail relative to most all-tube power amps. And bass definition was quite convincing. A power amp with a fairly low source impedance (e.g., the SP-T800) not only provides superior bass damping but also generates minimal interaction with a speaker’s impedance magnitude and hence produces

a more predictable tonal balance. Most tube amps, especially the low or no-feedback designs, are stuck with a source impedance of several ohms and thus generate a significant load dependence. On the flip side, the Vincent gave up some ground in microdynamic intensity and soundstage transparency.

While driving the Final Sound 1000i electrostatics, plenty of tube magic shone through. The midrange displayed a warm and smooth tone, and in particular, a robust lower midrange that did justice to male voice. The soundstage spatial impression was expansive, especially with regard to width. There were losses in depth perspective and image focus relative to the A-100, but image focus was the area most



affected by continued break-in and showed considerable improvement over time. There was plenty of speed in evidence. Transient attack was cobra-like in its quickness, while transient decay was well behaved. The Vincent displayed a healthy dose of kinetic energy as it propelled musical lines along. Bass output was nothing short of spectacular. I had never heard the 1000i sound so punchy, and it’s far from being the easiest load on the planet. The SP-T800 made the 1000i sing on large-scale orchestral music, revving up from soft to loud with the greatest of ease. Though, as it left its sweet spot of 20Wpc Class A operation, the midrange started to sound a tad more electronic than the real thing.

Enter the Venture Audio Excellence III loudspeakers, and more or less the same story to tell. Tremendous bass punch, pitch definition, and drive, with no upper-octave brightness. Excellent timbre fidelity, especially good with male vocals. A slightly warm tonal balance, this prized tube warmth being a big plus in my book. Slight losses were observed in image focus, soundstage depth, and transparency, all of which made it a bit difficult to fully resolve massed voices.

The inescapable conclusion is that the Vincent SP-T800 is a remarkable performer blending some traditional tube virtues with solid-state power reserve and bass punch. Its tube signature shines through clearly in the midrange, though it is slightly diluted by the solid-state output stage. Its imaging style is certainly transitional. By that I mean that it isn’t as good as many tube amplifiers in fleshing out a soundstage, but it is head and shoulders in this department relative to the average all-transistor design. If you’re

SPECS & PRICING

- SP-T800 Hybrid Power Amp**
Power output: 200W into 8 ohms; 320W into 4 ohms (20W Class A into 8 ohms)
Inputs: One unbalanced on RCA jacks, one balanced on XLR jacks
Dimensions: 8.3" x 10.4" x 15.75"
Weight: 39.6 lbs.
- SA-T8 Tube Preamp**
Inputs: Four unbalanced on RCA jacks, two balanced on XLR jacks
Outputs: Two unbalanced on RCA jacks, one balanced on XLR jacks, one unbalanced record-out on RCA jacks
Dimensions: 16.9" x 5.3" x 14.6"
Weight: 22 lbs.

U.S.	U.K.
SP-T800 Hybrid Power Amp	SP-T800 Hybrid Power Amp
Price: \$4500/pr. SP-	Price: £2109/pr. SP-
SA-T8 Tube Preamp	SA-T8 Tube Preamp
Price: \$2500 (w/remote)	Price: £2509 (w/remote)
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EQUIPMENT REVIEW - Vincent Audio SA-T8 and SP-T800

an imaging fanatic, I suspect that you'll be a bit disappointed with this amplifier, while solid-state fans will probably rejoice.

And the story gets even better with the SA-T8 line preamp. It made a very positive first impression with its precise and speedy transient reproduction, pure midrange textures, and rhythmic drive. I did initially note a bit of grain and assertive brightness through the upper registers, but as the preamp settled in after several hours of break-in the rough edges essentially disappeared. The lower treble, however, remained a bit coarser texturally relative to the midrange. Despite the fact that this is an all-tube preamp, its presentation was both direct and broadband in nature. No deficiencies were noted as far as treble roll-off or bass extension. And most remarkable of all, it evinced a velvety black background, which allowed the music's harmonic tapestry to unfold with crystalline purity.

I decided to compare the sound of the SA-T8 head on with James Bongiorno's Ambrosia—a full-function solid-state preamp. The contrasts, as expected, turned out to be tube-versus-transistor characteristics. The Ambrosia clearly won the battle at the frequency extremes with purer highs and better bass definition. But the SA-T8 erected a more spacious soundstage with exceptional depth of field and palpable image outlines. Microdynamic nuances, the 1 to 2dB volume variations that imprint feelings onto the music, were reproduced with greater conviction, though not as well as with my much more expensive reference line preamp—the Concert Fidelity CF-080.

Mating the SA-T8 with the SP-T800 monoblocks

gave me the opportunity to take full advantage of the SA-T8's balanced output. In fact, I made it a point to compare the sound of the preamp-amp combo using both unbalanced (RCA) and balanced (XLR) connections between the two. Even with an unbalanced connection, it was clear that the SA-T8 nudged the voicing of the SP-T800 closer to tubeland. Image focus improved but I also noted a slight reduction in the hall's reverberant signature. The latter became a non-issue when I switched to balanced connections. There was significantly more immediacy to the presentation and I was easily able to follow reverberant decay down to the noise floor of a recording. Bass lines were tightly defined. In particular, kick drum was reproduced with satisfying punch and weight. Percussion, brass, violin overtones, and soprano voice were all nicely controlled with plenty of resolved low-level detail. Harmonic colors were generally neutral without noxious tube brightness. Midrange textures were creamy smooth without being overly liquid and soft.

It's fair to say that when aided by the SA-T8, the SP-T800 closely fulfils the promise of a hybrid design: tube magic with plenty of bass crunch and power drive in one nicely "gift-wrapped" chassis. Both units represent sensational value, but the SA-T8 is an absolute steal at its asking price. In my estimation, nothing else at this price point comes close to equaling its primary twin virtues of crystalline clarity and ample boogie factor. Kudos to the Vincent team for shifting the economics of high-end audio within reach of the working man *tas*.

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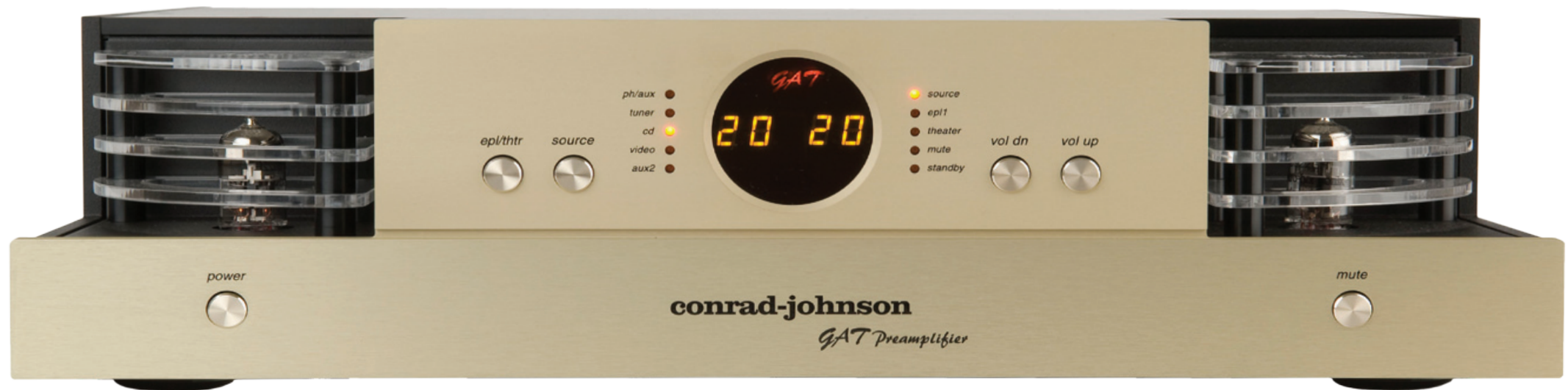
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EQUIPMENT REVIEWS Preamplifiers



Belles LA-01 preamplifier

The best preamp you've never heard of

Alan Sircom

It isn't one of the big names in audio circles and the product design makes even minimalist products look overstuffed with features. Nevertheless, the solid-state Belles LA-01 line-level preamplifier has got everything in the right places. Just two black or silver boxes – one preamp, one power supply, one remote and a great sound!

Belles is one of those secret weapons in the audiophile's arsenal. It's not one of the superbrands, but that only means it delivers a performance you cannot easily get at the price. The designer, David Belles of Pittsford, NY, is clearly one of those no-nonsense amp designers who isn't locked into using valves or solid-state exclusively; he goes with the device that best suits the product at the time. So the LA-01 is a completely solid-state preamp, while other devices in the portfolio take great advantage of tube performance (the same applies to the power amplifiers, although these are all solid-state – the 200 Watt mono MB-200s we used with the preamp are Class AB affairs, but there are several Class A designs too).

The preamp is a two-box, line-level affair. There are just four line-level, single-ended RCA phono inputs and a pair of single-ended RCA phono outputs. There is no phono stage. Aside from a volume control, the sole concession to

flexibility is the mute control (replicated on the remote) and a 12v trigger on the back to allow the power amps to power down with the preamp. You want balance adjustment buy another preamp. Trimmable inputs with fancy LCD readouts and home cinema by-passes are not on the Belles roadmap. You do get a multi-pin cable connecting preamp with power supply, but that's it.

So, flexibility and a bewildering array of readouts and adjustments will never trouble the LA-01 – what does it have in their place? Good, solid, no-nonsense engineering, that's what. Like an exceptionally simple and direct signal path, combining high input impedance (100k ohms) and virtually no output impedance. That alone makes the Belles LA-01 almost textbook in terms of how a preamp should 'see' its sources and 'be seen' by power amplifiers (an ideal preamp would have infinite input impedance and zero output impedance across the frequency range); the zero crosstalk between inputs and 60dB



EQUIPMENT REVIEW - Belles LA-01 preamplifier



between channels, allied to a claimed distortion figure of better than 0.001% help, too.

Belles has chosen to drive the preamp as if it were a power amplifier, using power MOSFET devices in the output stage. This means you'd really need to select a broken power amplifier, or dozens of metres of interconnect cable, to find an incompatibility between preamp and power amplifier. You could almost run a pair of speakers off the preamp on its own, because those MOSFETs run at about 10w in Class A. This is kind of why balanced operation isn't important here, even when there's a goodly distance between preamp and powers.

The separate power supply case sports four stages of decoupling to keep the preamp from the mains. While that is not quite a virtual battery design, it's a very practical solution that gets close enough for most. It's also considerably more real-world practical than going the real-battery route. There's also a level of mechanical decoupling too, in that the chassis for both preamp and power supply (as well as many of the other amplifiers in the Belles range) sport Stillpoints feet.

'No-nonsense design' extends to the exterior, which is on the functional and bluff side of things. There are thick black or silver aluminium front panels and top-plates with the matching italic-script Belles logo inset in an oval, and everything is built to an exceptional standard. The three switches are tiny toggles and the volume control is distinctly ordinary. If beauty is skin deep, these things were built inside out. It's a remarkably British design for that; nothing fancy, it's a roll-your-sleeves-up kind of minimalism, the sort of preamp you expect would be 'handy' in a fight and would even bust you ten bucks for the cab

ride home the end of the night.

The 'handy in a fight' point is not just because it's built solidly. The Belles LA-01 has a lot to commend itself in the sonics bit, as well. It manages to combine excellent solidity of sound with the sort of slippery-fast transient speed of the likes of a darTZeel. The pace is incredible; one of the many sad musical passings last year was jazz drumming legend Louie Bellson; at his peak, Bellson (like Buddy Rich) played the drums with the sort of lithe expression that turned the drum kit into a fluid, legato instrument. The LA-01 has that kind of quality; dynamic classical passages hit you with an intensity that almost hurts, Gregorian chant ebbs and flows with such

SPECS & PRICING

Belles LA-01 preamplifier

Inputs: Four line-level stereo RCA inputs
Outputs: Two pairs RCA stereo
Dimensions (WxHxD): 432x88.9x330mm
Weight: 10.9Kg

U.S.

Price: \$6995

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EQUIPMENT REVIEW - Belles LA-01 preamplifier

grace, you feel the need to burn a few witches while 50s jazz draws you inexorably toward the drummer as you hear them move around the kit.

The leading edge of music is preserved with the LA-01. That simple statement sounds obvious, but it masks the fact that so few products do this as precisely. Those musical transients that make you instantly recognise live music from recorded are retained perfectly here. And again, we come back to drummers; the splash of a cymbal, the delicate stickwork of an Art Blakey, or the not-so-delicate pounding of Meg White are all in

perfect temporal alignment (the online video of Meg White receiving a not-so-delicate pounding is probably fake, by the way). You notice this especially in comparison, this time to the otherwise very good Coda 05X preamp. Sounds seem half a step behind the Belles; softer and perhaps more rounded, yes, but not as fast or as immediately dynamic. This applied both with the matching Belles powers and the Coda CX; the Belles-Belles combination being the most expressive and exciting, the Belles-Coda being the more sumptuous. But every time the LA-01

was put in the system, things just seemed to get a little bit faster. If anything, it's almost too fast; combining the seeming pace with the Stillpoints feet (especially on a Townshend VSSS rack) is pushing 'excitement' into 'brightness'.

The Belles preamp is not simply a speed-freak though; there's a lot of dynamic weight and solidity to the sounds too. Play something Wagnerian and that sense of rootedness, coupled with the pace really makes for a maelstrom of sound. All of which means the Belles will never be consigned to making background sounds. You wick it up and listen captivated. The idea of talking over the LA-01 is absurd; it won't let you. You're there for the musical duration. In this, I'm reminded of the Magico experience; it's not as enchanting and pausing the disc does not seem like an affront to music, but you find yourself struggling to pull away from sounds played on the LA-01.

There are more subtle preamps around, and what the LA-01 does to the leading edges of music, you can find preamps that do the same to the sustain, decay and release of individual notes too. And even ones that address the whole musical entity with more excitement and drama, but in all these cases the preamp that's better is also a lot more expensive. Then there's the whole issue of stereo imagery; the LA-01 is squarely locked between the speakers. The imagery does not draw attention, either in a positive or negative light. But those who set their store by expansive soundstages and stereo you feel you could walk into are going to be looking elsewhere. Others will find this a triviality and love the amplifier for its excitement first and foremost; soundstaging's suddenly not going to be a priority for you after listening here.

The Belles LA-01 preamp is surprisingly good. It's one of the fastest and most exciting sounding preamps you can buy, in very much the darTZeel mode (only without the battery power and the fancy multicoloured Swiss casing). It will take feed from any CD player and drive pretty much any power amp you can think of without a grumble. For some, the lack of even a balance control is a minimalism too far, and just four inputs and a complete absence of funky features will make it impossible to countenance. Others will find it the perfect combination, in a package that challenges considerably more expensive preamps. That could prove irresistible for many seeking top class sound over fancy frills. That's a heady brew. +



conrad-johnson

The GAT

Simply the best

Alan Sircom

The GAT drew the same reaction from every one of the real people, muggles – non audiophile types:

“What the hell’s *that*?”

“It’s a preamplifier. It takes signals from the CD player and controls the big power amp.”

“It looks like something Captain Nemo might have used. How much is it?”

“Er, roughly... a lot.”

“[expletives deleted due to need to stay within the UK’s 1957 Obscene Publications Act, the 1697 Blasphemy Act, and the physical impossibility of getting a horse to do that to an archbishop]. Sounds bloody *great*, though!”

The dialogue, repeated more than once (although few were quite as creatively swearsy), highlights much about the new conrad-johnson GAT preamplifier. It’s big. It’s visually distinctive. It’s expensive. And it sounds so good you don’t care. The GAT is the latest in a long line of limited-edition flagship preamplifiers from conrad-johnson, following in the traditions of ARTs and ACTs from the brand. There will be just 250 lucky GATters. The name is short for Great Anniversary Triode, but insiders (like Wes Philips) think it’s

there as tribute to c-j’s well-loved customer service team-leader, Carwell Gatling.

Like the ACT before it, the GAT is a one-box valve line-only preamp, which only features single-ended inputs (five, two loops for processors or recording and two sets of single-ended outputs) and one that makes extensive use of microprocessor control. Channel switching relays, the 100-step volume control, balance and basic operation are all powered by a microprocessor, and the main ‘head’ section (where the main controls and displays live) looks very similar to the preamp that preceded it. Anyone you has used an ACT will also be used to the ticka-ticka-ticka sound as you work through those 0.7dB volume steps.

Unlike the ACT, with its offset, back-set control panel and the four clear plastic protectors for the quartet of tubes, the GAT looks very symmetrical. The centre control unit is flanked either side by a single 6922 triode, protected from the outside world by four quartered clear plastic protectors. The overall look does highlight the substantial feel of the preamp, and opinions converge on the GAT having a 1950s aesthetic... in a good way, more ’57 Chevy Bel Air than ’59 Edsel.



One triode per side might invite some questions from those who know their way around a preamp circuit. Digging deeper finds the GAT with a high-current MOSFET buffer stage and a solid-state discrete DC voltage regulator. From a strict valve-fascist standing that would make this a hybrid design, but few will call it that in reality. The advantage of solid-state voltage regulation is complete isolation from the mains circuit, while the MOSFET buffer means very low

output impedance. That makes it more power amp friendly, or rather makes the use of long interconnect cables a distinct possibility. Like all c-j preamps, it inverts absolute phase, so turn your cables hot to cold and cold to hot at the loudspeaker end.

The typical c-j ‘no feedback, no electrolytics’ rule has been adhered to in the GAT. Every capacitor in the audio circuits (and their power supplies) is either a polypropylene or custom-

EQUIPMENT REVIEW - conrad-johnson The GAT

WHY CHANGE?

If you follow top c-j preamplifiers closely, over the years, they've taken up less boxes and got steadily better. The Premier 7 of the late 1980s and Premier 7a of the early 1990s had separate boxes for each channel and a third power supply case. The two chassis ART (Anniversary Reference Triode) came along in 1998 to celebrate the company's then impending 20th anniversary. Over the years, the ART went through a couple of significant revisions over the years. Meanwhile the ACT preamplifier was launched in the early 2000s as the then-current, one-box limited edition flagship, followed in 2005 by the ACT2. Now, all of that's gone... replaced by the GAT.

While it's wonderful for a manufacturer, a retailer and a magazine to have a constant stream of new and exciting products to attract the attention of our respective clients, should a reference point have such a short time at the top before being eclipsed? If the GAT is reaching a new clientele, this isn't a problem, but I can't help thinking some of those prospective GAT owners will be considering an upgrade from an ACT2 bought just a few years ago.

In fairness, I think most people would rather see the standard being raised by ever-better products whenever they appear than held back because of last year's line-up, but too regular a series of upgrades can be a source of understandable frustration for

designed Teflon type, while the circuit bristles with metal foil resistors and gold-plated silver contact relays that are sealed from the outside world. This is, of course, what you'd expect from a top-class preamplifier.

I'd say the clever part of the GAT is the blending of 21st Century control circuitry with mid-20th Century amplifier technology, but I guess the point of the GAT is it's one big clever part. The microprocessor controlled start and stop processes are an example of the kind of forethought that went into the design. It goes into a minute-long auto-mute, to eliminate the sort of transients that occasionally hit during the first few seconds of tubes powering up and down. Most don't bother, assuming that these early stage transients are not much of an issue if the power amp hasn't started up. If you use these preamps with powerhouse solid-state amps that come to life in a second, those transients can get a touch alarming. In other words, if it wasn't for the two tubes staring at you from either side of the front panel, you'd never guess this was a valve preamp.

That is, of course, until a minute after switching the amp on. Then it's valves all the way, in all the right ways too. What strikes you first about the GAT is the midrange. It's got something the classic old c-j amps had and sort of lost in trying to move with the times. That midrange is liquid silk; refined, open, natural, enchanting. The old romantic sound of c-j was made from this, but not like this. Instead, now we have new levels of openness and clarity, like you swapped your drive units for electrostatic panels... only with the dynamic drive of, er, dynamic drivers.

This is where we encounter the first bit of GAT-

magic. It exposes more of what's being played and yet doesn't make that insight uncomfortable. If anything, it just makes you want to listen more to what's going on in the music, but not at the expense of the music. This might be the only time in the whole history of all 250 GATs that anyone will ever say this, but it even does a good job of playing Tool albums. Yes, the GAT's inherent 'beauteous' nature might blunt the heaviest

of transients, but what you lose at the cutting edge of prog metal, you gain when you listen to anything acoustic.

Play anything with ambience and you are greeted with a soundstage that makes you feel like you were there in the room with the musicians. Move from a small jazz club to the Wigmore Hall and the soundstage resizes itself perfectly. Then you reach for those classic 1950s albums like Ella

"On most preamps, you'd be at the volume control like a safecracker, turning it up and down to get the level precisely wrong."



EQUIPMENT REVIEW - conrad-johnson The GAT

Fitzgerald's *American Songbook* series, and you realise why hi-fi was all the rage back then; the GAT raises the bar and could make the pursuit of quality music replay cool again.

It's not all Brylcreem and grey flannel suits. The way the GAT articulates sounds is sublime. Normally, articulation is read to mean the way the human voice sounds and whether you can better understand the singer. Here, it not only articulates voices perfectly, it seems to do the same to any instrument you put in front of it. I stuck on 'Sweet Dreams' from the eponymous album by the late Roy Buchanan. Being a

mediocre Fender Telecaster player, this is one of the 'set pieces' I try — and usually fail — to learn to play. Here though, the GAT managed to articulate Buchanan's signature pinch harmonics well enough that I could almost copy the master, with the accent on the 'almost'. Never mind, that instrument articulation represents GAT-magic part two.

GAT-magic part three is the discovery of seemingly endless dynamic range. My new classical discovery — *The Flight of Icarus* by John Pickard (Christian Lindberg/Norrköping SO, BIS CD 1578) — is a perfect example of this

endless dynamics in action. The title track (which just about manages not to sound like incidental music from *Planet of the Apes*) consists of an orchestra playing *pianissimo* interspersed with a percussionist beating merry *fortissimo* hell out of his instruments at key moments.

On most preamps, you'd be at the volume control like a safecracker, turning it up and down to get the level precisely wrong at every moment. The GAT just takes this album in its stride. The quiet orchestral passages are not subsumed by any hint of a noise floor, while the headroom of your power amplifier or loudspeakers are the

only limits to the musician bashing seven bells out of their tympani. Just remember not to set the volume level too high when listening to the quiet bits, or you'll be wearing a pair of woofer cones as a fashion accessory.

Finally, there's the breathtaking coherence of the GAT. You can listen to the most disjointed, angular piece of Acoustic Ladyland/Polar Bear style punk jazz (pazz? junk?) that to most people will sound like someone throwing a saxophone — and the saxophonist — through a wood-chipper, and the GAT will make sense out of the onslaught. You might not think this sounds like an exercise

those seeking the best of the best. And the problem is the GAT really is the best of the best.

In part, this is a problem of compulsion on the part of the listener (and, in fairness, the reviewer). You want the best and aren't happy when the best that you own is superseded, making your product now the next-best. I have the same thing with camera lenses - my big Nikon 70-200 zoom was recently replaced with an improved model and, even though there's nothing wrong with the six-year old lens I currently own, there's a burning desire to trade up. My current 70-200 lens turned in stellar performance last year and it will do the same next year, even if there's a more stellar body in the heavens. Sooner or later though, I know I'll be spanking down the readies, because last year's best is not best enough. I suspect exactly the same is true for the GAT.

"It exposes more of what's being played and yet doesn't make that insight uncomfortable."



SPECS & PRICING

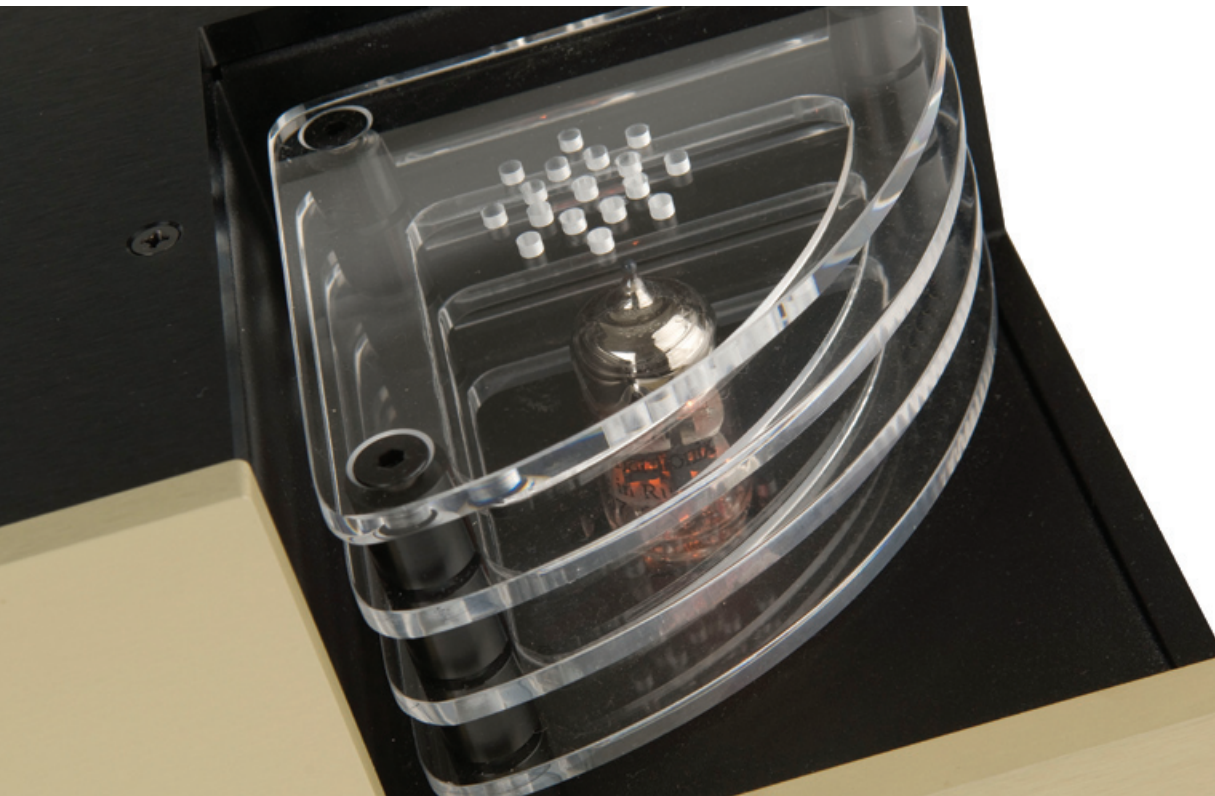
Conrad-Johnson The GAT Preamplifier
Inputs: five line level RCA phono, two processor/record RCA phono
Outputs: two preamp out RCA phono, two processor/record RCA phono
Dimensions (WxHxD): 483x122x391mm
Weight: 15.9kg

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EQUIPMENT REVIEW - conrad-johnson The GAT



you would wish to repeat (many feel punk jazz albums sound like disco dentistry), but you should hear what it does to less extreme recordings. It's as if everyone in music had suddenly gone to James Brown school, and started playing in that incredibly tight, close-knit way only ex-JBs (like Maceo Parker) can muster.

That's not really the true 'finally' part. These were just the observations made by someone who's seemingly most aware of dynamics, coherence, articulation and imaging. If I'd been wearing my 'detail' hat or my 'rhythm' pants, I'd have been praising the GAT's detail and

its rhythmic properties. In that wholly positive respect, the GAT is protean in its shape-shifting; it sounds good to people especially in the way they want it to sound good, over and above all the other ways it sounds good.

The GAT represents the pinnacle of c-j preamp thinking, but it's more than that. Over the last few years, the top preamp landscape has been largely redrawn, thanks to a crop of best-ever products. Ayre, Audio Research, Lyra and more have planted flags once more on this high ground. Now, conrad-johnson's back in town! +



AAS	Gabriel	DaVinciAudio	MK2	turntable,	Grand	Reference	
grandezza	tone	arm,	Preziosa	M	LCR/RIAA,	grand	reference
Grandezza	cartridge,	In	UniSon	MK2	turntable,	Nobile	
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Audio by Van Alstine Trancendence Eight

Good sound for the budget minded

Dick Olsher

I like this product's name, and not just because of its promise of reaching beyond the common range of perception. It's the version number—the Eight—that really piqued my interest, suggesting a mature product evolved through multiple design iterations. Selling direct, as AVA does, helps to keep prices down, but to extract good sound on a budget it is essential for the designer to put his ears into the design loop, critically evaluating component and circuit options, as there is only so much money you can throw at a given project. And this is something Frank Van Alstine has done for over 35 years, judging by the success of his numerous modifications of vintage gear. Extracting maximum bang for the buck is apparently a way of life at AVA. Frank tells me that his goal is to “build as high a quality and durable a piece as possible, while trying to keep prices in the range affordable by mortals.” Somehow he still manages to include gold-plated switch-contacts and jacks, precision controls, and power-supply regulation.



Functionally, the Trancendence Eight (T8) is a mixture of old-fashioned and standard features and is intended to serve as a full-function preamplifier, rather than as a bare-bones linestage. In addition to the obligatory volume pot and input-selector switch, there's a balance control, mono-mode selector (useful for playback of single-channel sources and noisy FM stations), two tape loops, and a headphone jack. Three AC convenience outlets are located on the rear panel. The headphone driver is built around a fast integrated chip configured as a unity-gain buffer, offering low output impedance and high current drive. While I made no attempt to evaluate the

headphone driver in depth, a quick listen via my Grado RS-1 cans indicated more than sufficient drive, but a sonic flavor more akin to solid-state than tubes. An optional phonostage is available, as is a motor-driven remote volume control. And that's how my review sample was outfitted, bringing the price tag to \$1697.

Van Alstine was forthcoming in providing me with a schematic of the T8. He warned me that there wasn't that much amazing to look at and that the magic is “pretty much just good execution and careful calculation of circuit time constants to insure outstanding stability and bandwidth.” The truth is that there's nothing revolutionary left to do

in tube audio. It was already a mature technology in the 1960s, and much of what passes for new today is nothing more than a rehashing of vintage technology. (In fact, did anyone notice that the vacuum tube celebrated its 100th anniversary last year?)

The line-level input stage is built around a “plain vanilla” grounded cathode circuit. A single Russian 6N1P dual-triode is used per channel. This medium-transconductance, low-distortion tube is, with the exception of higher heater-current consumption, a direct replacement for 6DJ8/6922 types. The triode sections are cascaded to give plenty of voltage gain—more,

EQUIPMENT REVIEW - Van Alstine Transcendence Eight

in fact than I could ever imagine being necessary for CD line-level inputs. There is no cathode-follower stage, which means that the line output impedance is fairly high—a bad thing when driving low-input-impedance power amps. The RIAA phonostage topology is similar and is based on a single 12AX7 dual-triode per channel. The power supply is solid-state and fully regulated. No global feedback is used. One of AVA's "secrets" is the use of separate high-voltage regulators for each triode section; for the two 6N1P tubes in the linestage and two 12AX7 in the phonostage that's a total of eight regulators in all! And these are zener-controlled, high-voltage power MOSFETs. A replacement tube set of selected and matched phono and line tubes is offered at reasonable cost (\$29).

It is rare for a sub-\$2k preamplifier (the T8 base price is \$1099) to compete in one or more performance aspects with the best money can buy. But with digital source material, the line section amazed me in several important aspects.

First and foremost, the music's tension was reproduced fully intact. That is to say that the T8 was never a dull, boring little fellow. Polite, sterile sound is what I find most off-putting about most solid-state linestages (though there are happy exceptions), and the T8 offered a potent antidote. The music's grandeur and drama were fully drawn out. Its ability to engage the highest gear, to rev up explosively from soft to loud, was impressive. Familiar vocals were given free reign, from a soft whisper to full shout. The T8 didn't seem to know about compression. The impression of speed was enhanced by excellent transient attack, and controlled decay enabled the silence between notes to be clearly perceived.

Image outlines were tightly focused within a deep soundstage and fleshed out with palpable presence. This level of performance, long an area of tube supremacy, was of course dependent on the associated amplifier. To its credit, the T8 was good enough to keep up with the imaging prowess of the single-ended deHavilland GM70 tube amp.

Tonal character was also unchanged with a

“Extracting maximum bang for the buck is a way of life at AVA”

variety of program material, being consistently close to neutral in presentation. The bass range was neither ripe nor lean. The upper octaves were well extended and lacking the brightness that some mistake for genuine detail and presence. This was a good thing in my book, as there are already plenty of bright-sounding speakers out there. However, and this is the proverbial fly in the ointment, the treble lacked a measure of delicacy. It's fair to say that the T8 did not sound like a vintage tube preamp, but more like a hybrid. It lacked the harmonic warmth and liquidity that characterize romantic tube sound. Midrange textures were slightly grainy in nature. OK, nothing gross, but discernible, nonetheless. If velvet were assigned a perfect 10 and sandpaper a 1 on a scale of 1 to 10, then the T8 linestage would earn a respectable 7. Tone colors were a bit bleached out relative to the real thing. It is important to point out that when matched to a romantic-sounding power amplifier, the T8's linestage shortcomings were easy to overlook.

I was less enthusiastic about the RIAA phonostage. Out of the box it didn't prove to be the quietest gain stage on the planet. The overall noise floor was considerably elevated—a bothersome issue with high-sensitivity speakers. Now comes the spooky part. As if he had read my mind, Frank Van Alstine e-mails me to say that the grounding scheme of the T8 has been improved by simply moving the main grounding wire closer to the first main power-supply capacitor, cutting the linestage background noise in half (from 4–5mV to 2mV broadband). Back went my sample to the factory. It returned with a note stating that the linestage noise level was now around 1mV broadband. That certainly did take care of the noise issue.

There was more than enough gain to be had—at least for the moving-magnet cartridges this stage is designed for. Running my Grado Reference mm cartridge directly in, at a VTF of 1.7 gram, allowed the T8's strong virtues to shine through. Its unmistakable cornerstone of quick attack, dynamics, and spatiality was very much in evidence. But it seemed that its relative flaws in the treble and midrange were exaggerated. Not only were textures grainier to the ear, but brass assumed a slightly more brittle character. As a sanity check, and to put matters into perspective, I decided to pit the T8 phonostage directly against the Air Tight ATE-2, the latter being a much more expensive tube-rectified design known for its distinctly vintage sound. It was thus possible to bypass the T8's built-in phonostage. I like the ATE-2 very much, and when servicing the Grado Reference its exemplary liquidity and textural smoothness provided a perfect backdrop for judging the T8's performance. While the ATE-2

rewarded me with silky smooth highs, the T8's phonostage shortcomings were brought into focus. The final diagnosis: a touch of overly sibilant and brittle upper registers.

When configured as a linestage, I can confidently recommend the T8, not only as offering a terrific value but also as a product that genuinely transcends the constraints of budget amplification. The key, and this is true of audio gear at any price point, is careful matching. Be sure to mate it with a romantic tube amp, and simply kick back, relax, and enjoy the music. *tas*

SPECS & PRICING

Van Alstine Transcendence Eight Preamplifier

Inputs/outputs: Five line inputs, two tape inputs; two tape outputs, two main outputs (all RCA jacks)

Dimensions (HxWxD): 17" x 12" x 3.5"

Weight: 17 lbs.

U.S.

Price: \$1099

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Red Wolf Pack by Carole LaRoche

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LAMM Industries LL2.1 Deluxe line preamp

Tube Sparkle and Drive

Dick Olsher



Designer Vladimir Lamm, who is equally at home with tube as well as solid-state circuitry, has refreshed the LL2 design, LAMM's long-standing entry-level tube linestage preamp. The LL2.1 is a direct replacement for the LL2. Aside from a few new parts and slight changes in the schematic, the most important modification, at least from my perspective, is the introduction of a switch-selectable 15dB gain attenuator. With this switch on, the gain drops from about 18dB to only 3dB. Now that's still plenty of gain for a CD player input in the context of a sensitive power amp (e.g., the Audio Space Reference 3.1 300B) and a high-efficiency loudspeaker such as my Basszilla Platinum Edition Mk2 DIY. Otherwise, I could barely crack open the volume potentiometers.

Unlike most modern tube preamps, the LL2.1 is actually an all-tube design, featuring tube rectification in addition to tube amplification. This, in my experience, is an important distinction. I happen to think that tube rectification offers a direct highway to tubeland's magic kingdom. Most solid-state-rectified tube preamps leave me slightly disappointed, wanting for more tube magic. In fact, I'd be very curious to audition a tube-rectified solid-state linestage if an intrepid designer were to undertake such a challenge. Here a 6X4 full-wave rectifier is used followed by a pi filter circuit. The input voltage gain stage consists of a single 12AU7A twin triode wired in parallel. The signal is then capacitively coupled

to a driver stage, a single 6922 twin triode configured as a series-regulated push-pull stage (SRPP). The SRPP stage, also known as a Mu follower, offers excellent current drive and decent output impedance. A bit of global feedback is used to lower the output impedance even further to an impressive 250 ohms and guarantees minimal load interaction—even with solid-state amplifiers. The ascendancy to the highest sonic throne isn't necessarily a function of a particular circuit topology. There are many paths to sonic nirvana, though the task is certainly made easier by this simple yet elegant circuit. My review sample came outfitted with a Philips 6189W, a ruggedized longer-life version of the 12AU7 and a

EQUIPMENT REVIEW - LAMM Industries LL2.1 Deluxe line preamp

6H23[]-EB—a Russian version of the 6DJ8/6922 tube.

The front panel is visually dominated by a pair of Noble potentiometers. There is no balance control *per se*; channel balance is adjustable by individual tweaking of the left and right volume controls. These controls are not motorized, so naturally there is no remote control. A nice protection feature is the automatic output muting that kicks in during power-up and power-down cycles. Popping off the chassis cover (you'll need a 7/64" Allen hex key for that) reveals a custom toroidal power transformer and some fancy audiophile-grade passive parts such as Vishay and Electrocube capacitors and Dale metal-film resistors. Note that the LL2.1 is available in two versions. Both the standard and deluxe versions share the same chassis, PC board, and stock parts complement. However, in the deluxe version power-supply energy storage is approximately twice that of the standard version and all critical film capacitors are paralleled by high-quality polystyrene caps. I haven't auditioned the standard version, but for only about a 5% premium why not avail yourself of the best available version?

A bit of patience is required during the break-in process. Plan for at least 50 hours of playing time before performance starts peaking, especially at the frequency extremes. Nonetheless, it was quickly evident that the star attraction was the midrange. Harmonic colors were vivid, saturated to a level I've yet to experience with any solid-state preamp and even many tube preamps. Live music spans a range of colors from dark to bright, and it seemed that the LL2.1 was approaching the real thing with admirable fidelity. In particular, it was capable of reproducing the sweetness aspect of harmonic textures without grain or gratuitous distortion products, its portrayal of violin overtones being quite masterful. In these respects, I preferred the LL2.1 to the recently reviewed Conrad-Johnson ET2. There were ample microdynamic sparkle and kinetic drive to propel the music forward, though it gave up a little in the boogie factor department relative to the much more expensive Concert Fidelity CF-080.

Some preamps seem hyperactive or nervous in their presentation of musical information. Symptomatic of such behavior is an etched,

overly detailed sonic character, the sort of sound that is euphemistically referred to as analytic. Well, there wasn't a tidal wave of detail apparent with the LL2.1. That's not to say that it obscured low-level detail—far from it. It just was never in my face, emphasizing detail that should have been discreet. Instead, it framed detail organically within the fabric of the music.

After the initial couple of listening sessions I put together a small wish list of potential enhancements. There were problems at the frequency extremes. Bass lines could have been tighter. The treble was slightly closed in, which served to emphasize the midrange and blunt transient speed. And I could have used a bit more soundstage transparency. But I was confident that with the right tube complement these issues could be significantly mitigated. And I was right.

Tube substitutions for the stock Philips 6189W gave mixed results. For example, the Mullard CV4003 box-anode type improved the frequency extremes but gave up much of the vintage tube magic dished out by the 6189W. It became apparent that the roadblock might well be the driver tube, the Russian 6H23[]-EB. It took a while, but I finally hit the sonic jackpot with a Siemens E88CC gold-pin type. And before I forget, I should add that I also installed rubber-ring tube dampers—always a good idea. This may well be the perfect 6DJ8/6922 brand for this preamp, and it works synergistically with the stock Philips 6189W. The bad news is that this tube is hard to find and expensive when you do find it.

However, it tightens up the low end, opens up the highs, and lifts a veil off the soundstage. As a result, transparency is increased dramatically. The LL2.1 now sang beautifully with excellent image focus and spatial resolution to boot.

The LL2.1 is extremely easy to live with and integrate into an existing system. Without a doubt, when outfitted with the right tube complement, it captures 80% of cost-no-object performance for a fraction of the price. Now that is a winner in my book! *tas*

SPECS & PRICING

Input impedance: 50k Ohms
Output impedance: 250 Ohms (typical)
Dimensions: 19" x 4.5" x 13.875" (add 1.375" for front handles)
Weight: 20 lbs.

U.S.	U.K.
Price: \$5990 (deluxe version); \$5690 (regular version)	Not currently distributed in the UK

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EQUIPMENT REVIEWS Solid-State Power Amplifiers



Chord SPM 1050 stereo power amp

Cool Under Fire

Wayne Garcia

While most high-end audio firms are small artisan-minded affairs that were founded by guys whose passions border on or exceed the obsessive, most of the design and production facilities I've visited appear to be anything but a spark to the creative process. To get a feel for what I mean, picture your typical suburban industrial park, with rows of nondescript buildings housing everything from skateboard manufacturing companies to shoe distribution warehouses to those thinking up the latest, uh, toys...hmm, perhaps I'm being a bit too hastily dismissive here.

The atmosphere is quite a bit more interesting over at England's Chord Electronics, which occupies a lovely Victorian-era watermill in rural Kent. Inside the brick, timber, and slate "Pumphouse," which took six months to revamp in 1997 before Chord could move in, founder John Franks and his team are building some of the world's most coveted electronics.

While the Pumphouse reflects Franks' interest in architecture, Chord actually began in one of high-end audio's classic manufacturing facilities—a garage. It was here that Franks, an aerospace engineer whose specialty was designing light, powerful, and highly reliable power supplies for British fighter jets, began tinkering in 1982 at a similarly conceived power supply he hoped to apply to audio amplification. The resulting high-frequency switch-mode power supply (SMPS), which took nearly a decade to bring to market, operates in the 80kHz range—as opposed to the 50-60Hz range of conventional power supplies—simultaneously draws from both the positive

and negative rails as the music demands it, and is responsible for the fleet yet powerful dynamic response Chord has become known for. (This is not the same as a switching or "Class D" amplifier, in which the output devices are switched on and off via pulse-width or sigma-delta modulation.)

The problem in the early days, when Franks would make amps for himself, friends, and friends of friends, was that these then new aerospace industry devices were prohibitively expensive for a commercial product.

Putting his dream on hold, Franks for the next eight years worked as a director for a Hong Kong-based power-supply manufacturer that happened to build devices for use in Apple products. As you can imagine, we're talking millions and millions of power supplies. Franks is not shy to admit that this gig paid

handsomely, but he ultimately desired a less hectic life.

As typically happens in the tech world, what was once prohibitively expensive eventually becomes not so, and by the late-80s the cost of these power devices had dropped to a point where Franks decided it was time to revisit his passion. By 1990, he was able to finalize a more "affordable" design, the SPM 1200. (I placed "affordable" in quotation marks because Chord's products have never been exactly cheap. They currently range from an \$5995 Bluetooth DAC (the QBD76) to the \$75,000 per pair SPM 14000 monoblock amplifiers.)

Luckily for Franks and his fledgling company, the development of that amplifier happened to coincide with word from friends at Spendor that the BBC was looking for something to replace its old Quad 405 models, which were not



EQUIPMENT REVIEW - Chord SPM 1050 stereo power amplifier

consistently controlling the bass frequencies of Spondor's LS5/8 monitors. Chord submitted an amplifier for review and so impressed the BBC engineers that, in an unusually brief qualification period, the unit was okayed for broadcast use within a mere three weeks.

With that BBC feather in its cap, Chord amplifiers went on to find homes at, to name but a few, Abbey Road, Sony, and Skywalker studios. Franks also likes to point out how this early exposure to the world of pro audio forced him to engineer and build all his gear to very exacting standards.

Of course, Chord has made quite the splash in consumer audio as well, first with its amplification and more recently with digital playback devices.

In an effort to bring its designs to a wider audience, the company recently released its most affordable stereo amps to date: the 130Wpc SPM 650 (\$4995), and the 200Wpc SPM 1050 (\$6995) I'm writing about here.

To illustrate the impact Chord's compact power supplies—now in their fifth generation—have had on the size of the company's amplifiers, the SPM 1050 is only 16.5" wide by 5.25" high and 14" deep, and weighs in at a svelte 33 pounds. Analogies abound, but let's say that comparing the 1050 to 200-watt models from most American manufacturers is like comparing a classic American muscle car to a Mini Cooper S. Each has its virtues, but it's hard to argue that the Mini is not the zippier, easier-to-maneuver vehicle. Another theoretical advantage of smaller power supplies is lower noise. As power supplies and transformers get larger, they typically introduce more noise into the signal. Chord feels that its smaller, more nimble supplies have a lower

noise floor, allowing more texture and harmonic complexity to be expressed.

In addition to the 2000-watt high-frequency power supply, which feeds off a ceramic core transformer (as does that of the Linn Klimax), the SPM 1050 uses another fundamental Chord technology called "dynamic coupling," which, according to U.S. importer Jay Rein of Bluebird Music, is essentially an electrical coupling of the positive and negative power rails. The idea is that, as a sine wave goes up and down, demanding more power from the amp, dynamic coupling keeps the power supplies in a constant state of balance by allowing instantaneous large-scale power demands to be fed simultaneously from both power rails.

Franks is also a fan of MOSFET output devices, which seem to have as many detractors as admirers. The sound from these is often considered cool and somewhat sterile, at worst brittle, but Chord's MOSFETs are custom-built to its own design spec by an aerospace parts manufacturer, and no one would accuse a Chord design of sounding brittle.

Listening to one of the latest 45rpm pressings in Music Matters Blue Note reissue series illustrated many of the SPM 1050's virtues, and showed why Chord has won such a following in the professional community. Trumpeter Donald Byrd's *The Cat Walk* is a melodically inventive, blues-based workout; its tunes are at once relaxed and tautly driven, and Byrd was a master of using dynamics to shape and accent his music. The SPM 1050 tracked those shifts with a deceptive ease that beautifully shaded those dynamic ebbs, flows, and crashing waves. The amp's tonal balance seems near ideal, neither overly

warm nor lacking in warmth when, say, Pepper Adams' full-throated baritone states a theme or plays one in unison with Byrd's sweetly toned yet sharp-edged trumpet. And when Philly Joe Jones lets rip with a drum break, the whiplash speed of sticks against skins bears a thrilling resemblance to the sound a hammered kit delivers live (minus a bit of head-busting power).

Turning to another reissue series, this time Esoteric Audio's 200-gram vinyl/hybrid SACD releases of classic Decca titles, I pulled out the famous Ansermet reading of Manuel de Falla's *The Three Cornered Hat* (reviewed in the previous issue). Again I heard the speed, transparency, and other virtues noted above, as well as a marvelous recreation of the depth, ambience, and instrumental textures this recording is known for. But the thing I kept thinking about the SPM 1050's overall sense of delivery was simply that this amp seems to have it all together. By that I mean not just control and grip over the speakers, effortless dynamic pop, and an easy, powerful swagger, but also a thoroughly knit coherence across the band. Nothing ever sounds out of place, exaggerated, or forced; like our current president, the amp always seems cool under fire.

This doesn't mean the SPM 1050 is somehow "polite" or not fun to listen to. It most certainly can thrill and rock with the best of them, but while doing so it never breaks a sweat—and this with heavy-hitters such as Led Zeppelin, The Who, and Nine Inch Nails.

While I do not consider the Chord sound to represent the "cool" school of solid-state design, those who love the warmer, juicier, somewhat more lushly textured presentations of tube amps, and even some transistor designs, are not going

to get that here. Instead, let's call the SPM 1050 the thinking man's amplifier.

As my lengthy listening sessions traversed vintage Sinatra, Wilco, Berio, Berg, and Nina Simone, to name a few, my appreciation for the SPM 1050 only grew. Here is an amplifier that, over months of listening to all kinds of music, never made me long for another, or think, "Yeah, fine, but what about...?" In other words, my attention was always directed toward the music—not spectacular hi-fi tricks.

And in my book, that's just as it should be. **tas**

SPECS & PRICING

Power output: 200Wpc into 8 ohms; 350Wpc into 4 ohms

Number and type of inputs: One pair balanced (XLR); one pair single-ended (RCA)

Dimensions: 16.5" x 5.25" x 14"

Weight: 33 lbs.

U.S.

Price: \$6995

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Classé Audio Omega mono power amplifier

Jacob Heilbrunn

It's easy to forget that when settling on a loudspeaker you're also going to have to match an amplifier to it. A loudspeaker, I once read in a leading German stereo magazine, is the slave of an amplifier. How true!

High-sensitivity horns are matches made in heaven for single-ended triode amplifiers. But on the other end of the spectrum, large planar or moving-coil loudspeakers can often impose big power requirements—bigger than manufacturers are sometimes prone to acknowledge. Having used the Magnepan 20.1 loudspeaker for the past eight years, I know firsthand the frustrations that can accompany trying to drive fairly low-sensitivity designs (though the Magnepan does feature a fairly benign 4-ohm resistive load—that is, there aren't any brutal plunges in the impedance curve that can drive an amplifier batty). The blunt fact is that high power is not an option with many loudspeakers; it's a requirement. Even the magnificent Wilson MAXX 3 loudspeaker, which I've had the pleasure to use during the past year, benefits from a good dose of power, even though it's rated at 90dB sensitivity.

But it's also the case that high-powered amplification delivers something that smaller units typically can't. If you're chasing after the holy grail of big orchestral crescendos and a large soundstage, then a robust amplifier is more likely to deliver the goods, plain and simple. I myself must confess

that it would be hard for me to live without that kind of power. The grip and control of a heavy metal amplifier would be hard to sacrifice. I love the inner glow, the mellifluousness of low-powered tube designs—for a few hours. Then I want more. The rub, however, has usually been that high power exacts its own costs, particularly when it comes to solid-state designs. Yes, the damping factor of solid-state versus tubes is enormously superior, which translates into iron-fisted control over the drivers. But high power has often been synonymous with a lack of refinement and sonic bliss. Rare is the solid-state design that manages to marry delicacy with grandeur.

Classé Audio's Omega monoblock amplifier is such a product. The Omega is not a good amplifier. It is a scintillating one. The Omegas, which each weigh 192 pounds and come with heavy-duty Cardas-supplied 20-amp power cords, prowl around in the territory where the wild things are—behemoth amplifiers like the Boulder 2050s and the Levinson No.33. The Omegas are fully capable of roaring their terrible roars, producing thunderous orchestral climaxes, then moving to sweetness and light within a split second. The sole limitation of the Omega appears to be the amount of current that it can extract from the wall outlet. This is, and not by a small margin, the most musical, detailed, and transparent solid-state amplifier I have ever heard, capable of making me freeze in my tracks with its astounding clarity and fidelity. But the Omega is also, in its own way, sonically unobtrusive. It seems to get



EQUIPMENT REVIEW - Classé Audio Omega mono power amplifier

out of the way of the signal, giving you a direct connection to the music. How does it accomplish this feat?

Central to the Omega is its sophisticated design. It is the second version of the Omega series. The first version consisted of a dual-mono amplifier in a single chassis that weighed 250 pounds and was capable of excellent performance. But the true monoblock version is considerable superior in speed, control, and lack of grain. At the heart of the Omega mono's claim to fame is its separate regulation of each output transistor—in effect, says Classé's executive vice-president of brand operations, Dave Nauber, an amplifier within an amplifier. This, Nauber told me, is an approach that is "typically not employed because it's an expensive way to get the result." Thirty-two bipolar transistors regulate 32 output devices. This accounts for the exceptional linearity of the Omega. In conventional amplifier design a capacitor will regulate a bank of output transistors, but a voltage sag will almost inevitably occur. The Omega is essentially immune to it. Each output transistor is thus kept within its linear operating range by the separate regulator transistor; all that technology also helps account for why the amplifier is so large. The Omega is rated at 500 watts with a 3000Va transformer in each unit, but it doubles its output power as the impedance is halved down to 2 ohms, another sign of an amplifier that will never crack or bend under the strain of reproducing a demanding passage, whether it's an orchestral fortissimo or a rap lyric.

Still, there are plenty of powerhouses out there. Power is cheap. But beautiful power isn't. What separates the Omega from pack is its careful union

of finesse and brute force. It displays great purity, capturing the tiniest nuances with preternatural accuracy. The treble seems to extend to the very heavens, but the Omega also has just a touch of warmth to it—not enough to detract from its grainless presentation, but a pinch that helps preserve the palpability and richness of the real thing.

Again and again, I have been left slack-jawed at the ability of the Omega to convey minute musical details with exemplary precision. Listening to the LP *An Evening with Alex Welsh and His Friends* [Black Lion], I was bowled over by the cut "It's All Right With Me," which features bravura playing by two trombonists, Roy Williams and George Chisholm. The band stops playing and Williams and Chisholm embark upon a several-minute long improvised duet—the Omega not only provided a jet-black background, but reproduced multiple shadings and the burnished sound of the trombones as they play at lightning speed. You could almost see the trombone slide moving back and forth and hear the spit valve burbling. This cut also testified to the Omega's ability to ramp up sonically, almost instantaneously, from zero to 60.

Another album that brought home the accuracy of the Omega was Stanley Turrentine playing with the 3 Sounds on the wonderful blues ballad "Willow Weep For Me." This Blue Note recording, which I have in mono, features Turrentine's tenor sax at its most soulful. Much of Turrentine's extended solo is played at a whisper, but the Omega delivered the most subtle pitch-definition and time variations. The Omega delivered Turrentine essentially massaging his instrument, wailing, and exploring subtle gradations in

bending notes, often haltingly. In many ways, time, you might say, seemed to stop. In this regard, a further strength of the Omega was that it seemed to slow down adagio passages and to speed up ones that moved at a fast clip. This probably occurred because of its iron grip. While there is no overhang with the Omega, it prosecutes the conclusion of a note to its final decay with uncanny verisimilitude.

In essence, the Omega abolished the sense that I was listening to an LP and made it sound more akin to a mastertape.

What about soundstage width and depth? I wouldn't say that the Omega has the fullness of the 1250-watt VTL Wotan monoblocks, which sport twenty-four 6550 output tubes each. Indeed, the solid-state versus tubes conundrum has rarely been more acute than in contrasting these two amplifiers. The sound of tubes is definitely more holographic, plangent, and seamless, particularly on instruments such as the saxophone. The VTL makes you sit up with a bang. It's a rollercoaster ride—larger, in some sense, than life. But it's sure darned exciting.

But stick in the Omega and suddenly there's another octave of air in the treble and a soundstage that goes deep and wide, especially in the bass. The Omega seems to expand the boundaries of the room. My take: The incredible grip in the bass frequencies means that the drivers are simply better controlled with the Omega, which produces the sensation of an effortlessly deep soundstage. But no, it's not as warm and rich as with a powerful tubed amplifier. Take Eiji Oue's recording of the Rachmaninoff *Symphonic Dance No. 3* [Reference Recordings]. The sound is crystal clear as the violins open

with triplet figures, then the bass comes in with an authoritative whack. With the Omega you can see all the way into the back of the hall even as the orchestra produces a swirling kaleidoscope of sound.

I don't mean to suggest that the Omega is dry or clinical. That is most emphatically not the case. It possesses a wonderful clarity that make listening to hour after hour such a pleasure, allowing the MAXX 3 loudspeaker to disappear completely. When Wilson's Audio's national sales representative Peter McGrath recently visited me, for example, he was agog at the transparency of the sound when the Omega was coupled with

SPECS & PRICING

Classé Audio Omega Monoblock Amplifier
Output power: 500W into 8 ohms, 1000W into 4 ohms, 2000W into 2 ohms
Inputs: Single-ended and balanced
Dimensions: 19.5" x 12" x 24.8"
Weight: 192 lbs. each

U.S.	U.K.
Price: \$35,000 per pair	Omega series no longer available in the UK
CLASSÉ AUDIO, INC. 5070 François Cusson Lachine, Québec H8T 1B3, Canada (514) 636-6384 sales@classeaudio.com	BOWERS AND WILKINS Dale Road Worthing, West Sussex BN11 2BH +44(0)1903 221 500 classeaudio.com

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EQUIPMENT REVIEW - Classé Audio Omega mono power amplifier

the supremely quiet, transformer-coupled Allnic L-4000 linestage. It is only when contrasted with tubes that the character of the Omega becomes even clearer. That characteristic is probably best described as exceptional neutrality. I would suggest that the Omega, to a greater extent than any other solid-state design I have heard, imparts very, very little coloration to the signal. And the noise floor, of course, is vanishingly low.

The perfect amplifier? Horse feathers. Sadly there is no such thing, probably never will be. The truth is that for me the whole audio reproduction chain is tainted at the beginning by the pesky presence of that small device known as a microphone. Go listen to the J. Gordon Holt CD where he moves from one microphone to another while speaking and you'll know what I mean. Which is the voice of the real Gordon Holt? Beats me. Unfortunately, I never met the man. But the lesson has stuck with me over the years.¹

Still, I would wager that the linear performance of the Omega comes closer to capturing the real thing than a good chunk of its competitors. Listening to the Omegas reminded me of a passage in the famous conductor Sir Thomas Beecham's diverting memoir, *A Mingled Chime*, in which he describes his early love for the music boxes that proliferated towards the end of the nineteenth century. Beecham sentimentally recalled "that delicate tintinnabulating tone, those laughing cascades of crystalline notes, that extravagance of ornament truly rococo, the comic battery of drums and other tiny clattering things, how I loved them then, and how I lament their absence now!"

Those are some of the very wonderful

characteristics that I hear with the Omegas. On a splendid Argo recording of Purcell's Complete Funeral Music, I simply stared in disbelief as each voice in the choir of St. John's College seemed to be clearly audible even as they sang in hushed tones. And the wheezing sonority of the sackbut ensemble was to die for. When a piece of equipment moves you to make the emotional connection with music that profoundly, you simply know that it's a winner. I'm not the only one who thinks that way. According to Classé's Dave Nauber, "Our most extreme customer has a B&W Nautilus, quad-amplified system with an active crossover that comes with it for each of the amps. He has a Nautilus stereo and 5.1-channel systems. He bought 28 Omega monos." After enjoying the Omegas, I can easily understand why he did. Classé has gone all-out with this design, whether it's the brushed aluminum finish, the elegant heatsinks, or the eye-catching flight cases that the amplifier nestles in when traveling. This is an amplifier built for a lifetime and maybe even beyond. It sounds that way, too. *tas*

¹ That track appears on the first *Stereophile* Test CD. When I was that magazine's Technical Editor, I put together a collection of professional microphones and recorded Gordon reading one of his old essays, switching between microphones and editing the piece together. The idea was to vividly demonstrate the massive differences in tonal balance between commonly used microphones.



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Chord Electronics Limited

NuForce Reference 9 V3 Special Edition Monoblock Amplifiers

Chris Martens

As many readers know, NuForce is one of the major players in Class D amplification for high-end audio applications, and I have been tracking the evolutionary development of the firm's Reference 9 monoblock amplifiers for more than four years. Traditionally, NuForce has offered both standard and special edition (SE) versions of its amplifiers, while also labeling them by design revision number (V1, V2, etc.). At present, the firm's top model is the Reference 9 V3 Special Edition, which is the subject of this mini-review.

To be perfectly frank, Class D amplifiers in general and NuForce amplifiers in particular are subjects of controversy within the high-end audio community. Some reviewers perceive them as not really ready for true high-end applications, while others perceive them to have particular musical strengths that far outweigh their acknowledged shortcomings.

If one surveyed reactions to the NuForce designs, strengths and weaknesses could probably be summarized like this:

PROS:

- Killer bass resulting, in part, from the incredibly high damping factor the NuForce circuit provides (these amps control woofer movements as few other do)
- Extremely open and transparent midrange—in my mind one of the unsung virtues of the

NuForce design

- Very good to excellent transient speed and definition

CONS:

- A tendency to present highs that can seem bright or overly lean (leading to what my colleague Wayne Garcia once characterized as “highs under glass,” and that TAS Editor-in-Chief Robert Harley termed a “chalky coloration”)
- A tendency toward a somewhat “mechanical” rather than “sweet” or “fluid” sound—a criticism that centers on the amplifiers' treble response characteristics

Happily, though, the NuForce folks listen—not just to their own products, but also to trusted reviewers. As NuForce designs have progressed from the Reference 9 V1 to V2 and now the V3,



the firm has attempted to build on the sonic strengths above, while mitigating or eliminating weaknesses. Accordingly, NuForce describes its sonic goals for the V3 SE circuit as follows:

“The Ref 9 V3SE adds refinement and delicacy to the already excellent-sounding Ref 9 V3 (and ... takes its strengths to an even higher level. These include:

- Sweeter highs, without any compromise in frequency extension
- A smoother and more palpable midrange, while preserving the natural harmonic structure ... (resulting) in a more natural and relaxed presentation
- The bass remains the amp's huge strength ... (with the) same tightness and texture of the standard Ref 9 V3, but with a little more weight
- The stage is more coherent and deeper

In summary, the SE's sound is more neutral and liquid, with a more relaxed yet powerful soundstage presentation.”

Relative to the earlier V2 versions, the new V3 models (both standard and SE versions) are rated to produce slightly less power at 8 ohms

(175 watts), but more power into 4 or 2-ohm loads (335 watts).

Does the Ref 9 V3 SE live up to NuForce's design goals? In many respects I think it does, though I would temper that comment with the observation that, at least in my experience, one needs to give the amps quite a lot of run-in time (75 to 100 hours, or more) before their true sonic character emerges. Based on my listening tests, here is what I found.

The Ref 9 V3 SE's bass, as advertised, is simply superb, by which I mean that it is fast, taut, well-defined, and deeply extended. On first listen, the NuForces might—depending upon your speakers—seem a little bass shy, but this is not actually the case. Bear in mind, though, that the Ref 9 V3 SE's bass strengths can pretty much be summed up in one word: control. With loudspeakers that need a firm, powerful, precise power source in order to give of their best (for example, my Magnepan MG 1.6s), the NuForce's bass can sound stupendous, making speakers sound as if they have better bass extension and control than ever before. But with speakers that—let's not mince words here—rely upon

EQUIPMENT REVIEW - NuForce Reference 9 V3 Special Edition Monoblock Amplifiers

some measure of low-frequency “looseness” or euphonic bass weighting on the amplifier’s part, the NuForces can sound underwhelming, because they steadfastly refuse to add “fake bass” that’s either not in the recording or not within the loudspeaker’s performance envelope.

To appreciate what makes the NuForces so fine down in the lowlands, try listening to the track “Lil Victa” from SMV’s (Stanley Clarke, Marcus Miller, and Victor Wooten’s) *Thunder* [Heads Up]. The track presents the three master bassists trading licks and lines and what you should hear—and with NuForces in play, *will* hear—are the distinctive voices of each of the player’s signature bass guitars. Miller plays a modified Fender Jazz bass that has a bright, incisive sound with tremendous transient snap and a hint of characteristic “Fender growl.” Wooten plays a darker and more earthy-sounding Fodera bass whose voice offers slightly warmer, grittier textures with a slightly “wooly” quality that Wooten deftly modulates as he plays. Finally, Clarke plays an Alembic bass that offers a deep, pure, almost piano-like sound that carries terrific weight and impact. Some amps tend to smear or loosely homogenize these sonic distinctions to various extents, robbing the track of its “conversation-between-masters” quality, but with the NuForces the signature sounds of the instruments are made plain as day, so you can fully enjoy the musical conversation that’s taking place.

The midrange of the NuForce amps offers comparable levels of transparency and impact—qualities that NuForce adherents are quick to

pick up on, but that some listeners (even some veteran ones) seem not to find as impressive as I do. I can only relay my personal experience, which is that when I switch from the NuForces to comparably priced traditional linear amps, I sometimes perceive that the leading and trailing edges of individual notes, and the bell-like clarity of their timbres, seem softened or “watered-down” to a degree, so that a certain desirable lucidity goes missing.

To experience this quality of lucidity in action, put on jazz vocalist Norma Winstone’s “The Mermaid” from *Distances* [ECM]. The track opens with



an unusual piano introduction from keyboardist Glauco Venier, where the piano is played both in the traditional way and in an unconventional manner, with Venier sometimes treating the piano as a percussion instrument (with abrupt hand slaps and the like), and occasionally plucking the piano’s strings (almost giving the instrument the sound of a giant autoharp). The NuForce amps capture these wildly diverse timbres and textures with riveting clarity, so that you can’t help but be drawn in by Venier’s unorthodox introduction.

Later, Winstone introduces soft, lilting lyric lines, accompanied by the deep, reedy, sonorous voice of Klaus Gesing’s bass clarinet. What caught my ear was the way the NuForces, without any exaggeration or etching, let me hear the exquisite sweetness of Winstone’s vowel sounds and the delicate acuity with which she enunciated each syllable and consonant as she sang. The overriding impression was one of pure, unforced clarity coupled with an elusive quality of focus that effortlessly drew and held my attention as I listened. On well-recorded tracks like this one, I also found that the V3 SEs produced deeper and

noticeably wider soundstages than their earlier V1 and V2 counterparts did.

However, the one quality the NuForce amps do not provide, at least in most cases, is the ethereal, “notes illuminated from within” quality that certain tube-powered amps seem to have. This is not to suggest that the NuForces sound cold or antiseptic, but rather to observe that they operate more in the realms of purity, clarity, definition, and focus rather than delivering the (perhaps somewhat euphonic?) harmonic richness that

makes good tube amps so pleasurable to listen to. But, if you want “tube magic,” note that the highly transparent NuForces respond very well to being driven by tube-powered preamps.

Fresh from their shipping cartons the NuForce amps can produce upper midrange and treble sound that initially seem quite dry and bright. “So much for improved treble liquidity, smoothness, and sweetness,” you might think, but you would be wrong. Just give the V3 SE’s plenty of run-in time and you’ll soon discover they have taken very substantial steps forward relative to earlier NuForce designs. As playing time accumulates, upper midrange textures smooth out beautifully, while highs lose their dry and bright qualities, retaining their extension yet achieving, at last, a measure of the sweetness and liquid smoothness that previous NuForce amps lacked. While no one in his right mind will ever mistake the V3 SE for a tube amplifier, neither will they find any of the glassy, mechanical-sounding treble qualities that hampered some Class D designs in the past. In short, the V3 SE is arguably the smoothest and most thoroughly listenable amp NuForce has yet produced.

To see what I mean, try a track that prominently highlights diverse upper midrange and treble sounds, such as “Talking Wind” from Marilyn Mazur and Jan Garbarek’s *Elixir* [Elixir]. This track offers, as I’ve noted in past equipment reviews, a veritable potpourri of midrange and treble percussion instruments whose sounds are not easy to reproduce well. In fact, this particular track serves as a bellwether—if equipment has any tendency toward hardness, glassiness,

EQUIPMENT REVIEW - NuForce Reference 9 V3 Special Edition
Monoblock Amplifiers

edginess, or other treble problems, “Talking Wind” will surely expose them. When handled properly the track has a beautiful, mesmerizing, treasure trove-like effect where you can’t help but become fascinated by the distinctive transient, timbral, and decay signatures of all the gongs, cymbals, and other instruments at play. This, I’m happy to report, is precisely the result the V3 SE’s were able to achieve.

The one area, however, where I still feel that

NuForce has some work to do involves capturing the often elusive sense of high frequency “air” that surrounds instruments and helps to define the size, shape, and acoustics of the recording space. The NuForce’s are decent performers in this area, but really good linear amps such as Rega’s superb new Osiris integrated can handily outperform the V3 SE’s, creating a more holistic sense of real musicians performing within a three-dimensional space.

Allow me to pass on one tip from NuForce VP Casey Ng for those conducting their own listening experiments with these amplifiers. Casey suggests trying the amps with NuForce’s new “Focused Field” speaker cables (which I did during my listening tests). While the cables are designed for general-purpose use, they do have a special shielding topology that the feedback circuits in the NuForce amps can leverage (which Casey concedes is a more or less undocumented feature) to achieve “a more three-dimensional and cleaner sound.”

Let me also mention one point of vital interest to owners of earlier-generation NuForce Reference 9 amplifiers. For modest fees, NuForce will upgrade any of its Ref 9 amplifiers to full V3 SE status. In an industry where products all too often become obsolete without any warning or recourse, it’s refreshing to see that NuForce provides a simple, affordable upgrade path for its customers.

NuForce has every right to be proud of the work it has done with the Reference 9 V3 SE. This is one of the best bass amplifiers I’ve yet heard, with terrific midrange clarity and highs that, at last, combine excellent extension and good measures of liquidity and smoothness. **tas**

SPECS & PRICING

NuForce Reference 9 V3 Special Edition monoblock amplifier

Output power: 175 watts @ 8 Ohms, 335 watts @ 4 or 2 Ohms

Inputs: One single-ended (RCA jack), one balanced (XLR connector), switch selectable

Dimensions: 1.8" x 8.5" x 14"

Weight: 8 lbs.

U.S.

Price: \$2500/each

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nuforce.com

U.K.

Price: £3,500/pair

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Odyssey Audio Khartago Stereo Amplifier

Good Enough

Jonathan Valin

For the past six months I've been using the superb \$40k Soultion 710 stereo and \$115k 700 monoblock solid-state amplifiers from Switzerland in my system—the latter the same amp with which Magico triumphantly debuted its M5 speakers at CES this past January. I'll be reviewing the Soultion electronics in an upcoming issue, but I can already tell you they'll get a rave. I've never heard any amplifier, tube or solid-state, as low in noise and high in transparency as these Swiss numbers. With a suitably transparent speaker like the MartinLogan CLX or the Magico M5 and a suitably transparent front end like the Walker Black Diamond or the AAS Gabriel/Da Vinci (both fitted out with the Da Vinci Grandezza cartridge), it's as if the electronics aren't in the system. And their disappearing act makes the disappearing act of the front end and the back end that much more complete. That's what transparency of this order buys you in an amplifier or preamplifier—less of the physical and electronic presence of all of your gear, more of the presence of the music, the musicians, and (sigh) the recording and mastering engineers.



Why am I talking about the Soultion amplifiers in a review of Odyssey gear? Because I heard about both from solid-state-amp connoisseur Alon Wolf of Magico. I wasn't a bit surprised when he recommended the Soultion 700s—they cost a fortune and had a helluva reputation for excellence. But I was surprised when he suggested that I also give a listen to a little amp called the Odyssey Khartago. First of all, I'd never heard of Odyssey, though, as it turns out, the company's been around for a decade, and second...well, I'll get to that in a moment.

"I've been using the Khartago in the factory for years," said he, "to test loudspeakers. It isn't a Soultion 700, but it's...good enough." Good enough for the Wolfman is good enough for me, thought I, and promptly called Klaus Bunge of Odyssey, who happens to be located a scant two hours away in picturesque Indianapolis, Indiana. A week or two later Klaus, a big bearded bear of a man, drove down to Cincy with a Khartago and a pair of Stratos monoblocks in hand—both hands, actually. (Though I won't have the space to talk specifically about the Strati,

EQUIPMENT REVIEW - Odyssey Audio Khartago Stereo Amplifier

JV CHATS WITH KLAUS BUNGE OF ODYSSEY AUDIO

Tell us about the development of the Khartago.

All of the different Odyssey models are based on the same singular design—a design from Symphonic Line, which by itself dates back to 1986. The Khartago is pretty much based on what was then a \$4200 Symphonic Line stereo amp, the Stratos monos on an \$8400 Symphonic Line mono amp. Both designs have been constantly tweaked and tuned, maturing for over two decades. Time is the real secret to our success here.

How do you build your amps?

When the boards and the parts are ready, we *hand-populate* and *hand-solder* every single board in our shop. Then we go through a five-part QC process, including substantial listening to each and every product. There are no bad apples or fluctuations in manufacturing-quality or parts-quality here.

For various reasons, including humanitarian ones, we try to be as U.S.-made as possible. For instance, all of our face- and back-plates are aircraft-aluminum billet, CNC-machined here in Indy. I personally hand-brush all the metal. Then they go to the anodizer, also here in Indy, and finally to the laser engraver, also in Indy.

you can take it for granted that everything I say about the Khartago goes double for Odyssey’s monoblocks.)

Bunge has been importing German hi-fi into the United States for better than twenty years. Indeed, throughout the eighties he almost single-handedly put the German electronics company Symphonic Line on the map. In the late nineties, he decided to offer a more “cost-effective” line of amps and preamps in addition to his pricey imports. Somehow he managed to talk the folks at Symphonic Line into supplying him with the same circuits it used in its amps, which Klaus then builds, stuffs, tweaks, sticks in handsomely finished custom-made anodized-aluminum boxes, and sells factory-direct. (All this work is done in the good ol’ U.S. of A.) The Khartago, for instance, has specs that are nearly identical—as they should be, considering they use virtually the same boards—to those of the celebrated Symphonic Line RG-1 Mk IV. Both output 115Wpc into 8 ohms; both have a bandwidth that extends out to 400kHz; both have high damping factors, exceptional slew rates, and oodles of current. The only thing they don’t share is price. The Symphonic Line RG-1 Mk IV is currently \$6800; the Odyssey Khartago costs \$799.

Yep, you’re reading that right: \$799. *That* was the second reason I was surprised by Alon Wolf’s suggestion. When a guy with his champagne taste recommends a beer-budget amplifier like this one, you tend to pay attention.

Apparently, eliminating the distributor and retailer and selling factory-direct pays some pretty handsome dividends to Odyssey’s customers. (See my interview with Klaus for details.) Of course, the version of the Khartago that Klaus

brought me didn’t cost \$799. Since it had a better Plitron transformer, an extra bit of power-supply capacitance, and superior parts—three options among many (including Nichicon Muse caps, Vishay/Dale resistors, extra WIMA metal-film caps, custom colors) that Bunge offers, along with his standard *twenty-year transferable* warranty—it cost a whopping \$995.

You would think that switching from the \$115k Soultion 700 monoblocks to the \$995 Khartago with what is probably the highest-resolution speaker I’ve had in my home, the \$89k Magico M5, would result in a *tremendous* falling-off, sonically. With amps in the Odyssey’s price range, you have every right to expect decent sound, but you don’t expect Soultion-level refinement. There will be noise; there will be grain; there will be soundstage constriction, timbral anomalies, dynamic and SPL limits, less detail, less everything.

Not with the Khartago. Here there was none of the usual peppery solid-state grain (and I mean none), no added brightness and coarseness in the upper mids, no added spikiness on hard transients (the kind that turns a Martin acoustic guitar into a National Steel guitar), no transistor darkness in the treble (indeed, the Khartago has an ARC-like touch of light and bloom on top), no constriction of soundstage width (although I did get a bit less soundstage depth), no sense of listening through a scrim. Nope, what the Odyssey Khartago sounded like, for all the world and in direct comparisons, was a somewhat-less-finely-resolving, somewhat-less-transparent-to-sources, somewhat-less-low-in-noise-and-coloration, somewhat-less-well-controlled-in-the-bass, somewhat-less-energetic-on-top, somewhat-less-deep-and-wide-in-soundstaging

Soultion 700. In overall tonal balance, the two amps were surprisingly similar—which is to say almost dead-center neutral with, in the Khartago’s case, a bit more tube-like warmth and roundedness.

By the way, when I say “somewhat less,” I mean a little not a lot. It’s not as if you won’t hear *plenty* of fresh detail through the Khartago; you just won’t hear it in the superabundance of the incomparable Soultion 700. If you want a concrete measure of the difference between the two amps (other than that one is 115 times more expensive), listen to Ricky Lee Jones’ fabulously moody, muttery, whispery, sometimes-hard-to-decipher cover of The Left Banke’s great “Baroque ’n’ roll” anthem

SPECS & PRICING

Odyssey Audio Khartago Stereo Amplifier

Power: 115Wpc RMS @ 8 ohms

Inputs: One pair RCA

Dimensions: 18" x 18.5" x 4"

Weight: 30 lbs.

U.S.

Price: \$799 (\$995 as supplied)

ODYSSEY AUDIO

Orders: e-mail to odav@odysseyaudio.com, or call (317) 299-5578
odysseyaudio.com

U.K.

Price: 1,049 Euro (1,349 Euro as supplied)

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EQUIPMENT REVIEW - Odyssey Audio Khartago Stereo Amplifier

I am very proud of the fact that after twenty years we are still unique. There is not another outfit that has the same factory-direct model with a true high-end design that has matured for 23 years, that has the same price structure as ours, and that offers 100% hand-made-in-the-U.S products.

How do you keep up with demand?

We have been back-ordered for at least 2-3 weeks since December of 2000. By not having units on the shelves, we essentially build amps to order. This gives me the chance to talk to every single customer, to see what he/she likes and is looking for, and get a detailed list of associated gear and room environs. In that way we are able to customize any amp for the prospective buyer. Not just the biasing, where we adjust the amp somewhat to suit either a bright or dark speaker, but actually customize to exact systems and rooms.

How do you do it all at such a low price?

When I started Odyssey I was looking to make a living, not a fortune. I honestly wanted to

offer absolute bang for the buck with massive performance and massive, heavy, machined cases. Reviews weren't important to me. I wanted a customer who was so blown away by the quality of what he bought that he couldn't keep quiet and had to chatter about it nonstop. That was my goal and my business plan, and (thanks in part to the Internet) it worked. For a decade now, word of mouth has given us over 3000 customers. We have sold in excess of 5000 amplifiers. Plus my hopes for happy customers have been met. The loyalty of our guys is truly amazing.

Money isn't everything, after all. I come from a true blue-collar Volkswagen factory-worker background. You know, the first in a large family to get the Abitur (highest high school diploma in the German tripartite system), the first to go to the University, etc. With this background, and being from Germany, social justice and human decency have always been more important to me than making millions. I have three Masters degrees and an unfinished Ph.D.—none of which I used in starting this business. Ah, well....

“Walk Away Renee” from *Girl At Her Volcano* [Warner]. With the Khartago the catchy refrain is clear up until the third line, where the amp grows momentarily tongue-tied. What you hear (without straining to hear) is: “Just walk away Renee/You won't see me follow you back home/The empty sidewalks dum-dum-DUM-dum-dum the same/You're not to blame.” Through the Soulution (and, I should add, *only* through the Soulution in my

experience) you hear the whole quatrain with crystal clarity every time Ricky Lee sings it: “Just walk away Renee/You won't see me follow you back home/The empty sidewalks on my block are not the same/You're not to blame.”

Or take the Steve Hoffman reissue of Joni Mitchell's *Blue*. With the Soulution gear, as I've noted several times before, the overdub of Joni singing backup to her own lead on “Carey” and

other numbers is unmistakably potted in. It sounds exactly like what it is—a different spot of space and time cameo'd into the soundstage. With the Khartago, the artificiality of this bit of engineering is a bit less obvious (as, by the way, it was meant to be). Although you still hear the overdub as an overdub, the effect doesn't stand out quite as nakedly as it does through the Soulution 710 or 700.

These differences in resolution and articulation aside, the Odyssey and Soulution amps are fundamentally more alike than different. Put on any well-recorded disc—say, Holly Cole's Tom Waits' tribute album *Temptation* [Metro Blue]—and listen to the same song, like her great cover of “Invitation to the Blues,” on both amps and be amazed at how similar they make Cole's voice, Aaron Davis' powerful piano, David Piltch's big acoustic bass (admittedly, a bit tauter on the Soulution amps), and the light accents of Dougie Bowne's drumkit sound in timbre, texture, and dynamic. Even performance details—like the characteristic way Cole drops her voice in pitch to “comment” ironically on lyrics she has just delivered in a sweeter, higher, softer, more childlike voice (as, for instance, in “Little Boy Blue”)—are reproduced clearly by the Khartago, though not as clearly as they are by the Soulution, which practically hands you the script and stage directions from which Cole, who like all fine singers is also an excellent actor, is working.

Yeah, the 700 and 710 are slightly, but nonetheless audibly and unmistakably, more neutral, lower in noise and color, and higher in resolution and transparency-to-sources than the Khartago—as well, they should be. (The Soulution amps also, as noted, have better grip

in the bass, more clarity and power on top, and better staging.) For a lucky few, these advantages will be decisive. For the rest of us, here is an under-\$1000 amp that sounds so much more like a \$115,000 amp than any cheap Class AB solid-state amp I know of (and I've heard and reviewed a few) that it is downright astonishing.

I'm not saying you should run out and buy one of these things instead of a Soulution 710 or 700 if you own or are planning to purchase Magico M5s or Wilson MAXX 3s or Rockport Arraki (although, if you're pinching pennies on the rest of your system to leverage a pair of pricey speakers, you could do plenty worse than the Khartago). What I am saying is that the Odyssey amp gives you more of the taste of the high-priced spread than I thought possible for \$995 (or anywhere near that price). And since the Khartago works into loads as low as 2 ohms, it mates up with virtually anything—not just Magico M5s. But don't take my word for it. Try it for yourself. Odyssey offers the Khartago (and all its products) with a 30-day, no-questions-asked, money-back return policy. There is no “restocking” fee.

If all that isn't good news, then I'm fresh out of headlines. **tas**

You are here

Pass Labs XA100.5 mono power amps

Float like a butterfly, sting like a bee

Robert Harley

There aren't many amplifier designers who have pursued innovative and original circuits with as much passion over as long a time span as Nelson Pass. Not only has Pass developed genuine advances in amplifier design, he's spent most of his career refining and improving on those designs.

All of Pass' amplifiers, going back to the first Threshold products of 1975, are built on several fundamental principles. The first is that a simple signal path and fewer gain stages translate to better sound. The ultimate realization of this concept is Pass' Zen amplifier, which, astonishingly, is based on just a single gain stage.

The second guiding principle is that output stages operating in Class A are intrinsically superior to output stages operating in Class A/B. Eliminating the "hand-off" of the signal from one transistor to another in the middle of the musical waveform makes sense intuitively and technically, and has a basis in the physics of how sound travels through air (see the sidebar).

A third foundation of Pass' amplifiers is that the products will weigh, cost, and produce the amount of heat required to make the design perform optimally. Compromising performance to make the product cheaper and lighter and run cooler just isn't a consideration. Of course, you can buy smaller, lower-powered versions of Pass'

designs, but they share the common thread of being built to a high standard.

All of Pass' circuit innovations, design philosophy, and construction approach are on full display in the new XA ".5" Series of power amplifiers. These products are the culmination of everything Pass knows about amplifier design; examining these new amplifiers is like tracing the last 30 years of his thinking.

DESCRIPTION

I requested for review the XA100.5, the middle amplifier in the new five-product XA ".5" Series line. The XA ".5" Series ranges from the XA30.5 (30Wpc stereo at \$5000) to the XA200.5 (200W monoblock at \$34,100 per pair). All the amplifiers in the series produce their rated power in Class A, and all can double that rated power into 4 ohms without leaving Class A operation. With 100W into 8 ohms, I thought the XA100.5 would be plenty of power for the Wilson Alexandria X-2 Series 2 loudspeaker with its whopping 95dB sensitivity.



EQUIPMENT REVIEW - Pass Labs XA100.5 Class A mono power amplifiers

UNDER THE HOOD

Removing the XA100.5's hefty top cover reveals a starkly minimalist design. The entire amplifier, save the power supply and output stages, is contained on a circuit board about two-thirds the size of a CD jewel case. This compact low-level stage stands in stark contrast to the XA100.5's massive power supply and overkill output stage. The toroidal power transformer is huge—larger than some I've seen in stereo power amplifiers rated at 250Wpc.

The forty matched MOSFET output devices are arrayed in two rows of ten transistors each running along each heat-sinked side panel. Forty output devices for 100W of rated output is more than generous; each transistor is specified to dissipate 125W, yet is run at a maximum dissipation of 20W. (For comparison, the output stage of a typical 100W Class A/B amplifier consists of four transistors.) This output stage can deliver 200W of Class A power into 8 ohms, and 400W of Class A power into 4 ohms. This is a staggering amount of pure Class A output power, which explains the 40 output transistors, huge heat sinks, and massive power transformer.

Let's first look at the overall circuit topology. The XA Series is essentially a combination of Pass' famous Aleph single-ended Class A circuit and Pass' "Super-Symmetry" technique (also called the "X" circuit). The Aleph amplifiers are known for their pure and highly seductive sound, which one could attribute to the Class

A operation and very simple, two-gain-stage signal path. The Aleph amplifiers' strengths are in the midrange and treble, rather than in bottom-end dynamics and sheer output power. The Super-Symmetry design uses a balanced circuit so that noise and distortion cancel at the output. The two halves of the balanced circuit operate on identical signals, but one of them is inverted with respect to the other. When these two out-of-phase signals are combined, only the difference between the two signals remains. Noise and distortion that weren't part of the original musical signal will appear in both halves of the circuit and have the same polarity. Because the noise and distortion are identical in both halves of the balanced circuit, they are not passed when the two out-of-phase audio signals are combined. This phenomenon is called "common-mode rejection."

Exploiting common-mode rejection to reduce noise and distortion is an old and common technique. It typically produces a ten-fold reduction in noise in a single-ended Class A circuit. Pass' Super Symmetry innovation, for which he was awarded a patent, is to magnify this effect by using feedback to make the distortion and noise nearly identical in the two halves of the balanced signal. Because the noise and distortion are now more alike, the rejection is greater. Super Symmetry reportedly results in a one-hundred-fold reduction in noise and distortion, an order of magnitude greater distortion attenuation than in a traditional

The XA100.5 gives the impression of being hewn from a solid block of metal. This amplifier is built like a tank, with a ¾"-thick front panel augmented by 1"-thick sculpted sidepieces that frame the front panel's large round meter. The heatsinks are unusual in that the fins run in parallel with the side panels, resulting in a somewhat different "dreadnought" power-amplifier aesthetic.

The front panel is dominated by a large, round meter. Unlike most amplifier meters that indicate output power, the XA100.5's meter reads the amount of bias current. If the meter moves during a musical transient, you know that the amplifier has briefly left Class A operation for Class A/B (more on this later).

The rear panel offers both balanced and unbalanced inputs, as well as two pairs of loudspeaker binding posts for bi-wiring. The amplifier has two power switches, one on the front panel and one on the rear. With the rear-panel switch in the "On" position, the supply's filter capacitors are kept charged to extend their lives. This condition, which is the amplifier's normal state when not playing music, is indicated by the illumination of a small blue LED above the round meter. Pressing the front switch then fully powers up the unit and bathes the meters in a blue glow. When the rear-panel switch is set to "Off," the amplifier is completely turned off and draws no power. A 12V rear-panel trigger-input overrides the front power switch, turning the amplifier on when 5–12V is detected at the trigger input.

The ".5" in the XA100.5's model number denotes a number of design improvements over the previous XA Series. The ".5" Series amplifiers have lower noise, can deliver more current into low-impedance loads, and have an improved

power supply with greater filter capacitance, more output devices (for a given output power), an improved circuit-board layout, lower distortion, a shorter warm-up time, and greater efficiency. (See the sidebar for a complete technical description.)

LISTENING

Having lived with pure Class A amplifiers many years ago (the Mark Levinson No.20.5 monoblocks), I was expecting the XA100.5s to be room heaters. I also expected the amplifiers to reach their full sonic potential only after many hours of being powered up—not a good combination. In fact, I had to return the Levinson amplifiers despite how great they sounded; they ran unbelievably hot and sounded mediocre unless they'd been turned on for many hours. I was therefore pleasantly surprised that the XA100.5s produced a fraction of the heat I was expecting and sounded great after just half an hour of warm-up. The sound kept improving after half an hour, but most of the gains were realized in the first hour. The XA100.5 is a high-powered, pure Class A amplifier that one can easily live with.

My first thought on hearing music through the XA100.5 was that there was something extraordinarily beautiful about the sound. It was like slipping into a hot tub on a cold night; the music seemed warm, inviting, and enveloping. I had a hard time at first identifying the specific aspects of the presentation that fostered this impression—the XA100.5 was that different from other solid-state amplifiers I've heard. In fact, the XA100.5 reminded me of the best power amplifier I've ever had in my system, the Audio Research Reference 600 MkII (the forerunner

EQUIPMENT REVIEW - Pass Labs XA100.5 Class A mono power amplifiers

balanced circuit. Moreover, this technique of reducing distortion by common-mode rejection means the circuit needs less of the traditional form of feedback. As Pass puts it, "It is simply much easier to tweak the two halves of the circuit into identical symmetry than to eliminate all the distortion in each half of the circuit."

The XA100.5 is two balanced Aleph amplifiers that share a differential input stage. There are just two gain stages—the differential input stage just mentioned and the output stage. This circuit topology is shared throughout the XA-5 Series; the larger amplifiers are simply scaled up in the number of output transistors, power supply capacity, and heat-sinking.

The output stage is biased so that it puts out the amplifier's rated power in Class A operation. To understand Class A, it helps to first consider Class B operation. Also called "push-pull," Class B employs pairs of transistors that work together. One transistor of the pair handles the positive half of the waveform and the other transistor handles the negative half. One transistor "pulls" current through the load (the loudspeaker) and the other "pushes" current. Each transistor is conducting current half the time, turning completely off when its partner takes over amplifying the signal.

This method is highly efficient, but introduces some problems. Transistors are not very linear at very low signal levels where the "handoff" to the partner transistor takes place. It's also impossible to match the characteristics of a pair of transistors so that this "handoff" occurs seamlessly. The result is distortion at the zero-

crossing point where one transistor turns off and the other turns on.

The solution is to turn the transistors partially on all the time with a small amount of current, called "bias." This bias current keeps the transistor from turning completely off, and forces it to operate well away from its non-linear zero-crossing point. With enough bias, the transistor can be made to amplify the entire waveform rather than just half of it. The application of bias current has just turned our Class B amplifier into a Class A amplifier.1

This amplifier will operate in Class A up to a certain amount of output power, and then switch to Class B (push-pull) mode. This transition from Class A to Class B is uneventful; the transistors just operate a little differently above a certain power level. Most amplifiers operate this way, thus the common "Class A/B" designation.

The amount of power the amplifier can deliver in Class A before switching to Class B is purely a function of the amount of bias current. Increase the bias current and you'll get more Class A watts before the amplifier switches to Class B. But if Class A is so desirable, why don't designers simply crank up the bias? The answer is that bias increases the demands on nearly every aspect of the power amplifier—particularly the expensive parts. Because current flows through the transistors at all times, and not just when they are conducting audio signals, the amplifier runs hot. This means bigger heat sinks, more output transistors to dissipate the heat, and a beefier

of the 610T, our 2007 Product of the Year). The \$36k, 34-tube-per-side, 600-watt monoblock Reference 600 possessed a stunning rendering of instrumental timbre, had an unparalleled sense of ease, and coupled a sense of delicacy with unfettered dynamics.

The more I listened to the Pass, the more I understood why this amplifier sounded so luscious (and so much like the ARC Reference 600); the XA100.5 had a freedom from grain and a suave liquidity in the midrange that rendered instrumental timbres with stunning realism. The best tubed amplifiers avoid the sins of solid-state—a slightly gray and grainy patina overlaying instrumental textures that is akin to a metallic aftertaste. This coloration imparts a "sameness" to midrange timbres, as well as overlaying the treble with a sterile hardness. The XA100.5 was utterly devoid of this character, the musical significance of which cannot be overstated. In fact, it was this lack of electronic "haze" that fostered my first impression of the XA100.5 sounding so beautiful. I was responding to the purity of timbre, the depth and saturation of tone color, and the utterly natural rendition of instruments and voices that is this amplifier's defining achievement.

Listen, for example, to the rich and colorful orchestration of the Lento Assai in Rachmaninoff's *Symphonic Dances* [Reference Recordings]. The XA100.5 allowed the full palette of tone colors to emerge with a lifelike palpability, unhindered by electronic artifacts. The presentation had a pristine cleanliness, particularly in the midrange, that allowed the vividness of timbres to shine through. This cleanliness wasn't a dry, analytical character, but a true transparency to the source. Music is so much more involving when one

doesn't have to listen through a synthetic veil that dilutes timbral realism. In this regard, the XA100.5 sounds like a handful of the very best tubed amplifiers, with the grace, ease, and involvement that come so naturally to tubes.

The XA100.5 also had an overall "warm" character, particularly in the bass, mid-bass, and lower midrange, again much like a tubed amplifier. But unlike most tubed units, the XA100.5 had no trace of thickness or bloat that often accompanies a sense of bass warmth. Rather, the bass was tightly controlled and articulate, lacking the dryness and absence of body prevalent in many solid-state amplifiers. In addition, the XA100.5's bass swings with a great sense of rhythmic propulsion. There's no better example of this

SPECS & PRICING

Pass Labs XA100.5 mono power amplifiers
Output power: 100W @ 8 ohms, 200W @ 4 ohms
Inputs: Balanced on XLR jacks, unbalanced on RCA jacks
Dimensions: 19" x 7" x 19"
Weight: 110 lbs. each (net)

U.S.	U.K.
Price: \$16,500 per pair	Price: £14,850 per pair
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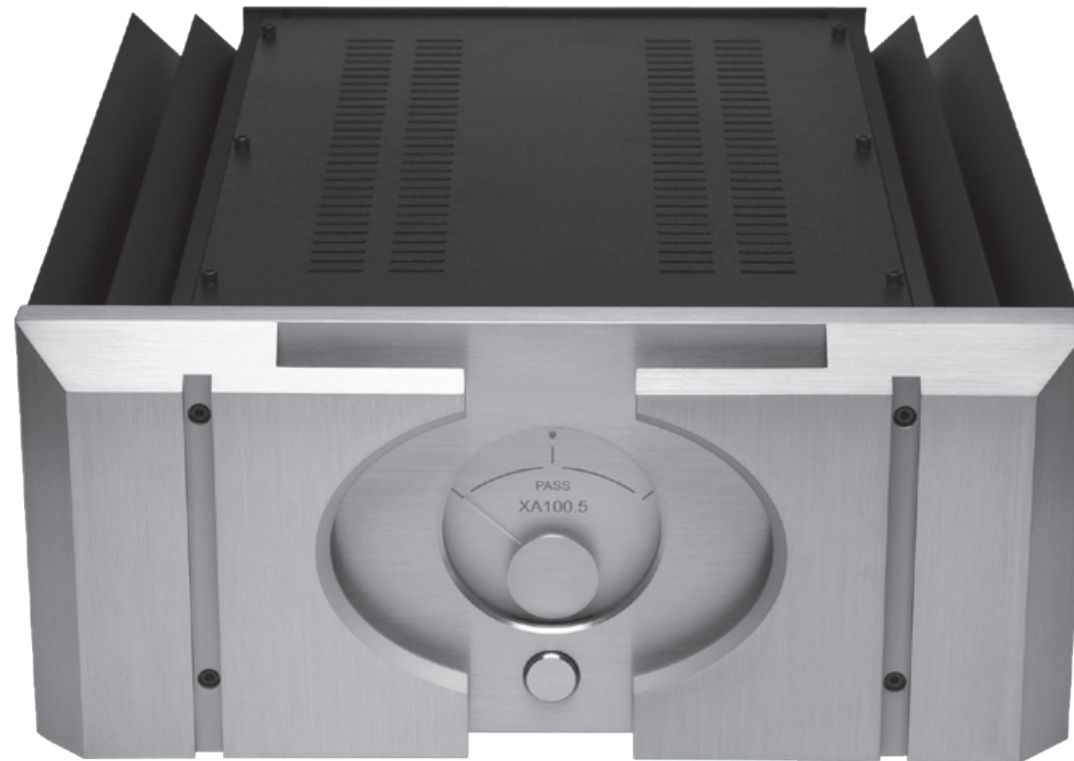
EQUIPMENT REVIEW - Pass Labs XA100.5 Class A mono power amplifiers

power supply that can deliver a continuous source of current. Class A amplifiers are big, heavy, expensive, highly inefficient, and run hot. In fact, a pure Class A amplifier runs just as hot, and pulls just as much power from the wall, when at idle as at full output power. The amplifier is simply running flat-out all the time, whether it's amplifying a musical signal or not.

Most amplifiers produce a tiny fraction of their rated power in Class A, and then switch to Class B. For example, a 200W amplifier might produce 3W in Class A, and the remaining 197W in Class B. Some amplifiers are more heavily biased so that they deliver more Class A power before switching to Class B.

Pure Class A operation is common in low-level signal applications, such as in preamplifiers and CD-player output stages where the power requirements are low. Pure Class A output stages in power amplifiers are, however, a rarity, and those that can deliver 400W of Class A power into 4 ohms are rarer still. This is why the XA100.5 has the size, weight, and cost of a much more powerful Class A/B amplifier. If you want the most "watts per dollar," Class A isn't the way to go. **RH**

than Ray Brown's bass on the appropriately titled *Soular Energy* by the Ray Brown Trio. The Pass amp had an agility and articulation that belied the accompanying sense of weight and warmth. Brown's instrument sounded like the big, round,



wooden, resonating cavity it is, not a miniaturized facsimile. (The 192kHz/24-bit DVD-A release of *Soular Energy*, mastered on a Pacific Microsonics Model 2 converter from the original analog tapes on the Hi-Res Music label, is spectacular.)

This description might lead one to think of the XA100.5 as sweet and a bit romantic, favoring ease over resolution, but that's not the case. The XA100.5 achieves its tube-like purity not by glossing over flaws with a "forgiving" character, but by reducing audible artifacts to the point where the amplifier becomes a transparent window on the source. Moreover, the XA100.5

was highly resolving of musical detail, but in a relaxed and natural way, rather than in a "hi-fi" sense.

Symphonic Dances also revealed another great strength of the XA100.5—the portrayal of dynamic contrasts. The Pass amplifier was capable of reproducing transient information and musical climaxes with sudden, explosive power. There was a sense of complete ease and of unlimited power reserve during demanding passages.²

Some amplifiers that sound dynamic and lively tend to add a bit of etch to the leading edges of transients, creating an initial impression of

dynamics and detail resolution. They don't have any real weight behind the transient impacts; it's "all show and no go." One quickly tires of such a presentation. The XA100.5 is devoid of this hyped sound, instead deriving its dynamic portrayal from sheer speed coupled with weight and power behind that speed, exploding like a crack of thunder directly overhead. The sense of unlimited dynamics, the muscular control over the bottom end, the suddenness of transient impacts, and the way that dynamics jumped from a jet-black background produced a sense of vibrancy and excitement. The combination of ease and relaxation, fostered by the midrange and treble liquidity on one hand and the vivid immediacy and drama that resulted from the highly dynamic rendering on the other, made for an immensely involving musical experience.

The XA100.5 didn't just excel at large-scale dynamics; it also emphasized (or perhaps more accurately, didn't obscure) small dynamic shadings such as accented notes. I had a new appreciation for the dynamic expression in music after living with the XA100.5. I've long been a fan of drummer Jack DeJohnette. He has an amazingly wide range of expression, from the most delicate and empathetic cymbal work (notably in the trio with Keith Jarrett and Gary Peacock) to raw, visceral power. He also brings out the best in soloists by spurring them to greater heights with his energy and vitality. Check out the track "Tumbleweed" from Michael Brecker's *Pilgrimage* CD, particularly the way DeJohnette's take-no-prisoners playing (especially during Brecker's solo) elevates this track into a thrill ride. The XA100.5's dynamic ability better resolved the steep attacks of sticks hitting drum heads, and

EQUIPMENT REVIEW - Pass Labs XA100.5 mono power amplifiers

consequently, revealed the full extent and power of DeJohnette's expression. Another example is the Latin percussion work on the outstanding new Mobile Fidelity LP reissue of Santana's great *Abraxas*. The congas, timbales, and güiro had a vividness that made them sound as though they were recorded yesterday.

The XA100.5's spatial presentation was similarly outstanding. Instrumental images were presented against a dead-silent background, seemingly hanging in black space. The soundstage was wide and deep, with great dimensionality. The overall perspective was a bit more forward than that of many amplifiers, and the sense of depth and hearing into the far recesses of the hall wasn't as pronounced as from the Spectral DMA-360 which I also had on hand.

CONCLUSION

If I had to count on one hand the best power amplifiers I've ever had in my system, the Pass Labs XA100.5 would make the cut. This amplifier had a remarkable sense of ease, relaxation and involvement that are no doubt the result of its tube-like liquidity, midbass warmth, and freedom from electronic artifacts. Although gorgeous in its reproduction of instrumental timbres, it would be a mistake to characterize the XA100.5 as romantic or forgiving. Rather, the XA100.5's beauty comes not from what it adds to the signal, but what it doesn't.

Couple this warm and inviting quality with a high-resolution rendering that is capable of explosive and lightning fast dynamic swings and you have the makings of one very special amplifier.

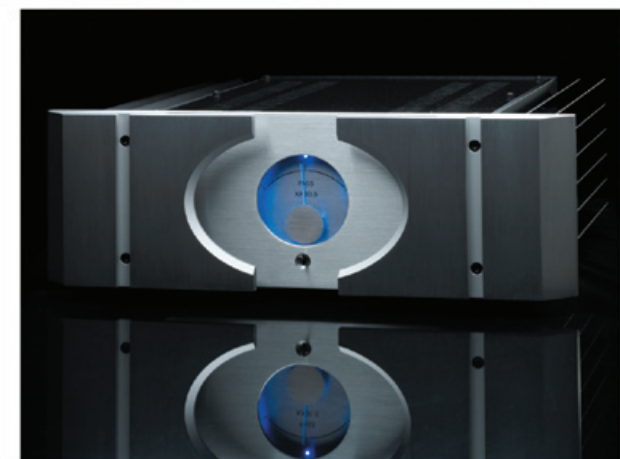
Finally, it's important to note that the XA100.5 is

beautifully built, designed for long-term reliability, and is backed by one of the most venerable names in high-end audio. It all adds up to one of the greatest values in solid-state amplification. *tas*

¹ In a white paper on Class A operation, Pass has the interesting insight that sound in air is essentially a "Class A" phenomenon. A vibrating object such as a musical instrument produces compressions and rarefactions (areas of higher and lower pressure than atmospheric pressure of 14.7psi) that move our ear drums back and forth, which we perceive as sound. These pressure variations are referenced to the prevailing atmospheric pressure of 14.7psi; the rarefactions are areas of pressure lower than atmospheric pressure, but still represent positive pressure compared with a vacuum. The atmospheric pressure of 14.7psi is analogous to the bias flowing through an amplifier's transistors. Just as the atmospheric pressure creates an elevated "zero reference level" around which the compressions and rarefactions vary, bias elevates the transistor's operating point so that when the audio signal swings "negative," it is really just "less positive."

² The XA100.5's front-panel bias meters didn't budge during the entire review period, indicating that the amplifier never left Class A operation. This is partly due to the Wilson X-2's 95dB sensitivity. The wide range of output powers in the XA series allows you to precisely scale the amplifier power to the loudspeaker's requirements. I got the impression, however, that the 30Wpc XA30.5 would have capably driven the X-2.

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EQUIPMENT REVIEWS Tube Power Amplifiers



David Berning Quadrature Z mono power amplifiers

Grace and Favor

Roy Gregory

The Berning amps, as they not surprisingly tend to be known, given their clumsy and convoluted nomenclature, arrived with quite a fanfare – and an equally impressive reputation to live up to. But there's more besides; the cult reputation and almost underground status of previous Berning products, tales of whose performance have been whispered in the darkened back corridors of the audiophile community for many a year. And finally, there's the man himself – undeniably and genuinely brilliant as well as creatively eccentric (who else would wear a valve wrist-watch?). Audio is just a hobby for him, relaxation after a heavy day certifying power device performance and safety for the US government. It is, quite literally, a high-powered responsibility. How does he accomplish the task? By designing and building ultra fast and accurate valve circuits to do the job. Yes, that's right; he uses tube circuits to test and measure the fastest solid-state devices...

My first exposure to Berning electronics was in a system at the Montreal Show a good few years ago. It was the same system that introduced us to Stillpoints – and was producing not just one of the best sounds at the show, but impressive sound by any measure. It was an encounter that had a profound effect on our thinking, but whilst the Stillpoints devices have become a prominent part of our ongoing history, engaging with the Berning amps has taken quite a bit longer.

In part that's because David Berning isn't really interested in his hobby becoming a business,

being happy to tinker and build a few amps for friends. But those friends, having trodden a long and often winding road to audio Nirvana, are less relaxed about the products and their potential. More people, they reason, should have the opportunity to hear what a truly ground breaking amp can do (and make no mistake – the circuitry in these amps is totally unlike anything you'll have seen or heard before). Eventually they brokered a deal in which the man would provide the design and engineering expertise, but they would handle all other aspects of the business. The Quadrature



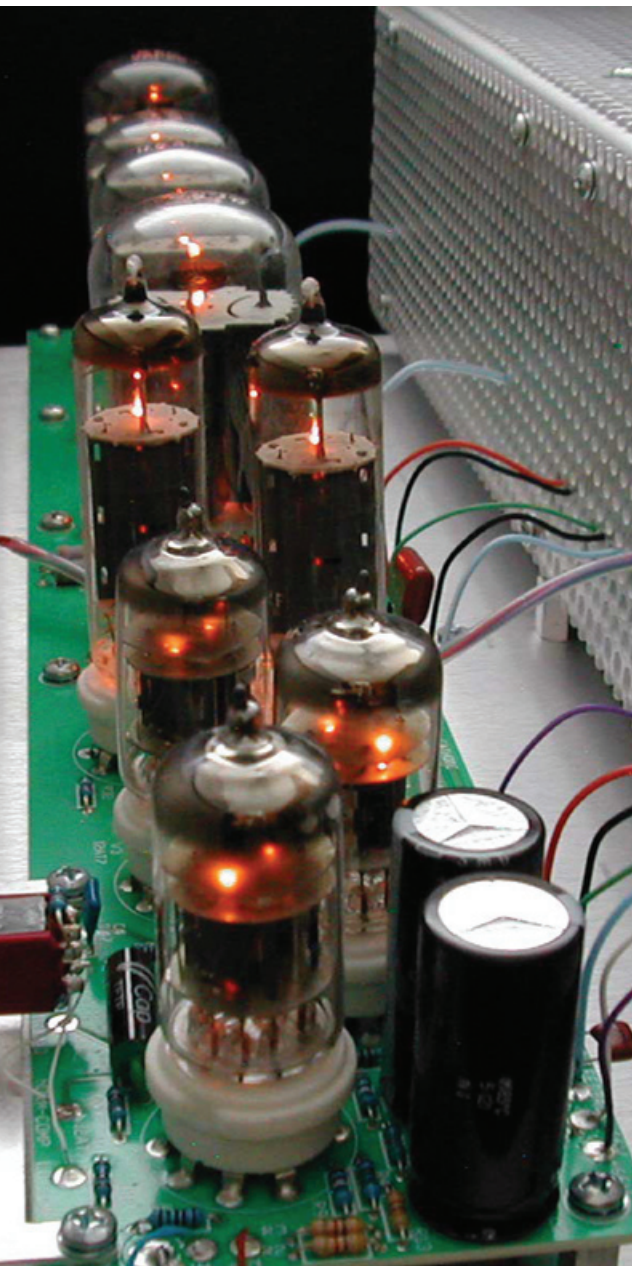
Zs are the first product of this arrangement and, if these are anything to go by, the future looks rosy indeed.

The Berning mono-blocs pitch up right alongside the likes of the Hovland Stratos, the big c-j and Karan mono-blocs, established favourites offering a powerful and balanced performance that makes them the pick of the amplification options we've heard. The Quadrature Zs are perfectly comfortable in such exalted company, but like each of those models, they also bring their own particular slant to proceedings, that

one realm in which they excel – except that in this instance it's not so much a presence as an absence that really impresses.

Even the briefest of listens to the Berning amps will make you realize that there's something remarkable going on. Both the speed of the amps and the pace of the music, its ability to progress seamlessly from measured phrases to lightening quick runs of notes, is remarkable in the realm of hi-fi reproduction. It invests the playing with an expressive range, a mastery of time and space that's captivating. Playing the

EQUIPMENT REVIEW - David Berning Quadrature Z mono power amplifiers



Heifetz *Kreutzer Sonata* on Cisco's superb re-pressing allows the amps to really show their flair, matching the maestro for poise and his flair for the dramatic contrast. The sudden switches of line and musical accelerations, the blindingly quick sprays of notes that scatter from his bow, are beautifully controlled and juxtaposed with the slower passages and the sonorous support of the piano part. The balance between the instruments is perfectly maintained – and if Heifetz is a little larger than life, well, that's life!

It's listening to the unfettered majesty of performances such as these that reveals just how much the Berning amps are contributing to the experience. What you become aware of is the complete lack of restraint in the process – not the music, where the players exhibit exemplary control – but the process of reproducing it. No matter how fast the signal or how wide and sudden the dynamic jumps it makes, it is never slowed or impeded. Simply because things can happen as quickly as they need to, suddenly the sense of the system tracking the demands of the signal disappears altogether, allowing the music to ebb and flow, race or dawdle as the players desire.

Add to that the OTL's traditional transparency and the Bernings' lack of grain, a facet of their sophisticated power supply, and you have an instrument for unimpeded access to the inner workings of any recording. Key to that capability is the lack of baggage, the absence of extra weight or colour, either right across or at discrete bands within the bandwidth. Rhythmic patterns are never slurred or slowed, and only stumble when they're meant to – or they were played that way. These amps aren't lean in the

traditional sense that we use that word – but they are spare, without an ounce of extra fat on their musical bones, neither adding to the music's colours nor taking away. Indeed, one of the few artifacts I can attribute to the Quadrature Zs is a subtle shallowing of instrumental textures, but you'll need a good system and fantastically good speakers to hear it! You might also detect a hint of coldness, but that's more to do with another absence – the lack of expected, added warmth. The Bernings were run with a number of speakers but I was fortunate to have them in-house alongside the MartinLogan CLX electrostatics. Cue that old joke about OTLs and electrostatic loudspeakers – the one that points out that the transformer has been moved from the output of the amp to the input of the speaker. Be that as it may, the combination was spectacularly successful, possessing phenomenal presence, intimacy and immediacy. But in a way, what was



SPECS & PRICING

David Berning Quadrature Z mono power amps

U.S.

Price: \$9,999.95

standard

\$3333 with upgrades

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EQUIPMENT REVIEW - David Berning Quadrature Z power amps

more impressive was the way in which these amps handled the sort of moving-coil systems that would normally make an OTL go weak at the knees. This underlines the effectiveness of Berning's patented Zero Hysteresis current-impedance conversion technique, a topology that allows the Quadrature Z to drive low impedance loads without its output collapsing the way it does in conventional OTLs.

If this all sounds too good to be true, then in one sense it is. The Bernings ability to drive awkward loads is unproven, and they'll probably need more careful speaker matching than the other amps in their class. They lack the sumptuous warmth and colours of the c-j LP-M 275s, the textural intimacy and phrasing of the STRATOS, the rock-like stability, separation and staging of the big Karans. But if you want to hear a player's technique and immerse yourself in the structure and inner relationships of a performance then I can think of no finer tool for

the job than the Quadrature Z. Quick, capable and almost intuitively direct in its communication, this is an amplifier that can beguile, astonish and thrill. I gave these amps to CT for review because they would fit both his system and my purpose – I wanted to stretch his appreciation of the possible. Well, now I'm duly humbled, for they've stretched my appreciation too. I've yet to discern their full mettle, but a number of projects on the horizon promise the opportunity to do just that – and believe me when I say that it will be a pleasure. +



The Audio by Van Alstine Ultravalve Vacuum Tube Amp



"Greatest Bargain at Rocky Mountain Audio Fest"

"Frank Van Alstine has been making super-affordable high-performance gear for decades, but he might have outdone himself with the Ultravalve, a 35Wpc stereo all-tube amplifier for just \$1695"
Robert Harley, October 5th, 2009

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PrimaLuna DiaLogue Seven mono power amplifiers

Bigger and Better

Jim Hannon

Have you ever fallen in love with the sound of a mid-powered amplifier, decided to move up in that manufacturer's line to a more powerful unit, and found that the sonic magic that originally captivated you had vanished? This has happened to me several times. I've learned the hard way that bigger is not always better, and can lead to sonic disappointment and needless expense. Whereas the extra oomph in the bass with higher-output amplifiers can be a real benefit, larger transformers just don't seem to behave as well, causing the midrange and highs to typically sound more gritty and less sweet when compared with their lower-output brethren. Having truly loved the sound of the PrimaLuna DiaLogue Two, a gem of an integrated amplifier if ever there was one, I approached PrimaLuna's new DiaLogue Seven monoblock amplifiers with a bit of trepidation, hoping upon hope that these more powerful amps would maintain the glorious sound of the Two, while providing added power and enhanced channel separation.

After using the amplifiers in my second system for background music over the course of several weeks, I was ready to put the Seven monoblocks through their paces. The first serious music I listened to was Albeniz's *Suite Espanola* [London/King Super Analogue]. In my opinion, a great amplifier must first be able to reproduce massed strings realistically, with the beautiful lushness, richness, and sense of air and space one hears in live concerts, as well as inner detail and bite

without stridency or grain (quite a tough balancing act). If an amplifier fails this test, I don't really care to listen further, no matter how wonderful its high-end extension, transient quickness, or bass slam and control may be. I was relieved when the DiaLogue Seven passed the massed string test with flying colors, maintaining all the sonic magic of the lesser powered DiaLogue Two (and more). Indeed, with the monoblocks, massed strings were lush and had body, yet they

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PRESERVING THE SONICS WITH HIGH-POWERED AMPLIFIERS

The design team at PrimaLuna faced a formidable challenge; namely, how to match (or exceed) the sonic signature of its DiaLogue Two in a set of monoblock amplifiers with twice the power. This was no small feat because the DiaLogue Two possessed a natural and highly engaging midrange, outstanding soundstaging, extended and articulate bass and highs, and a musicality reminiscent of a live performance. As many designers can attest, it's quite easy to take a step backwards rather than forwards when creating a more powerful amplifier.

PrimaLuna's Chief Engineer, Marcel Croese, was no stranger to design challenges. As Goldmund's principal engineer for several years, he was credited with many innovative designs, including the Mimesis 29 and 28 power amplifiers, and the MM29.4 and MM28.4 monos, among others. He also developed PrimaLuna's innovative, and highly effective, Adaptive AutoBias circuit.

While many may have used larger transformers to double the output power, Marcel ruled that approach out because big output transformers don't behave as well or sound as good as their smaller brethren. He opted to use the same outstanding wide-bandwidth output transformers in the DiaLogue Two (described in Issue 175), employed two discrete audio channels on one chassis, and paralleled them at the loudspeaker terminals

so that the outputs would be summed, resulting in double the output power. He also added a 16-ohm tap to each transformer, which when paralleled resulted in an 8-ohm output.

However, the summing approach created other challenges, since a percentage of power from one free-running transformer was pushed into the other, due to output voltage differences caused by circuit tolerances and tube aging. To deal with this problem, Marcel developed a specific cross-coupled positive/negative feedback scheme to balance out both channels perfectly. It also enabled Marcel to offer a 2-ohm tap to drive very low sensitivity/low impedance loudspeakers.

Since less total gain was needed than in the integrated amplifier, Marcel was able change the pre-stages in a way that improved the drive capacity to the power tubes, resulting in even lower distortion, without the need for extra negative feedback. The circuit was inherently more stable and virtually immune to drive imbalance and its accompanying distortions with tube aging.

This innovative twin-channel-summing approach with cross-coupled positive/negative feedback not only resulted in surprisingly low harmonic distortion, but also matched (and improved upon) the sonic signature of the smaller DiaLogue Two.

also were dimensional and detailed, and when I switched to triode mode, they were even sweeter and more palpable. In both ultralinear and triode, the soundstage was enormous with excellent width and depth; instruments floated in space with plenty of air as well as body. Castanets and other percussion instruments maintained their transient quickness and thrill without any hint of tube sluggishness.

Admittedly, the ability to reproduce massed strings realistically does not alone make an amplifier great. Several classic tube amplifiers, like my Quicksilver monos (the originals using 8417 output tubes), have that wonderful midrange magic, including lush string tones and an absence of sibilance and stridency in voices.

However, the Quickies roll off the highs and lows, lack tight bass control, and don't have dynamic explosiveness. Many other classic tube units fare far worse, sacrificing transient speed and clarity, homogenizing and darkening the sound, and/or lacking sufficient rhythmic drive to keep those feet tapping. Yes, some flea-powered triode amplifiers, coupled with high-efficiency speakers, can stun you with their midrange lucidity and palpability, but they, regrettably, suffer at the frequency extremes and are not viable options to drive most real-world loudspeakers.

Voice can really ruthlessly expose an amplifier's ability to reproduce micro- and macro-dynamics, inner detail, the leading edge of transients, and realistic timbre. Whether I was listening to Sarah



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Vaughan, Mirella Freni, Mary Stallings, Richard Thompson, or Eric Bibb, the DiaLogue Seven tracked voices effortlessly; I never got the feeling that the Seven was straining, nor did voices unintentionally change character on dynamic peaks or across the frequency spectrum. Yet when the performer wanted to change subtle inflection or tone, the Seven was more than up to the task, rendering Sarah Vaughan's instrument-like use of her voice on *Sarah Vaughan* [EmArcy Records/Speakers Corner] with all its natural color and fine detail, like the initial transients of consonants and even the spit in her mouth. Freni's sublime voice, among others, just soared beautifully, with a sonic realism that had me glued to my chair.

Besides massed strings and voice, I marveled

at how lifelike other instruments sounded, too, on Malcom Arnold's *English and Scottish Dances*, Harry James' *Still Harry After All These Years* [Sheffield Lab], and Richard Thompson's *The Old Kit Bag* [Diverse Records]. Brass instruments not only had that initial ping or blat one hears in a live performance, but they also maintained their harmonic richness as the columns of air continued to move through them. Cymbal crashes not only were explosive but they decayed naturally, and woodwinds had body without bloat. Strummed acoustic guitars sounded lifelike with great transient speed and timbre.

The real achievement of the DiaLogue Sevens is that they not only preserve the sonic realism and beauty of the lower-powered DiaLogue Two, they also improve upon its Golden Ear Award-level

performance in several areas. What you'll notice immediately is that these monoblocks have better dynamic range, bass slam, and explosiveness. While testing out Clearaudio's superb Innovation Wood/Helius Omega/Benz system, I used Telarc's *Omnidisc* and put both the turntable system and amplifiers through a torture test on a number of musical selections. This combo yielded excellent performance, without cartridge/arm/table distortion (except for the highest level of cannon shots), or amplifier clipping. A cut of the Beach Boys' "Good Vibrations" has dynamics that Telarc suggests "approach those of a live performance." The Dialogue Seven monos sailed right through it, reproducing huge macrodynamic swings as well as very deep and soul-satisfying synthesizer tones that could almost knock you out of your

chair. This is performance one associates with large reference tube amplifiers costing far more than the PrimaLunas.

In ultralinear mode, these monoblocks sounded more powerful than any 100 watt per channel amplifier I've had in-house. I kept thinking that they would have been perfect mates for large dipole speakers like the Infinity Betas and (modified) RS-1Bs I owned some years ago. What was "way-cool" was that they also had sufficient output in triode mode so I could listen comfortably to powerful orchestral, big band, and rock music on the 90dB-sensitive Hyperions, as well as on the Quads. While I preferred the added dynamic headroom and rhythmic drive of ultralinear on "Whole Lotta Love" from *Led Zeppelin II* [Atlantic/Classic Records], I was surprised at how good

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the Sevens’ triode performance was, with a striking immediacy and more dimensionality than I’d ever heard on that recording previously.

Indeed, with the ability to switch between triode or ultralinear output, via the supplied remote, owners are likely to feel like they own two exceptional, but sonically related, amplifiers. Deciding between the two modes was more difficult than I had imagined, and I found myself really enjoying whichever output mode I happened to be listening to with full-range, dynamic loudspeakers. However, with the Quads, I preferred to bask in the relaxed beauty, extended soundstage, and delicacy of triode mode. I consider this to be a match made in heaven, but some may consider it too much of a good thing in the midrange and opt for the more balanced ultralinear presentation. In either mode, you’d be surprised how much (mid)bass the Seven monos are able to pull out of the Quads, while still delivering lightning-fast transients and beautiful highs.

It would be easy to generalize that triode mode was better for more intimate and small-scale music and ultralinear for power music, but there were no hard and fast rules. For example, in triode mode on Cannonball Adderley’s *Somethin’ Else* [Blue Note/Classic Records], the sax was more relaxed and a bit sweeter and more palpable, floating on a larger cushion of air, with soundstage depth that seemed to extend beyond the back wall. Switching to ultralinear, the music became more dynamic and incisive, the string bass was more controlled and seemingly extended, and the sound was somewhat more balanced across the frequency spectrum.

If you’ve been hesitant to try tubes for fear

of reliability or maintenance issues, the Seven eliminates those worries, and not only rewards you with trouble-free operation, but also with lots of flexibility. It sports first-rate point-to-point wiring, wide-bandwidth transformers, chassis dampening, and a soft-start feature which helps extend tube life. Its Adaptive AutoBias circuit, said to reduce tube distortion by 50%, lets you choose between KT88, 6550, or KT-90 output tubes, or EL34, 6L6GC, 7581A, and KT66 (which yield slightly less output). Just pop them in the tube sockets and the PrimaLuna does the rest! These features not only combine to produce a highly natural and engaging sound, they also help make the DiaLogue Seven the most hassle-free tube amplifier you’re likely to find. I never

SPECS & PRICING

PrimaLuna DiaLogue Seven mono power amplifiers

Power output: 70Wpc, ultra-linear; 40Wpc, triode

Inputs: One RCA

Dimensions (HxWxD): 15.9” x 15.2” x 8.3”

Weight: 63.8 lbs.

U.S.

Price: \$5495 per pair

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had a single issue with it. The only penalty you're likely to pay from tube ownership is that these amplifiers do put out some heat, but not more than any amplifier with four output tubes per chassis, and certainly a lot less than those with more output tubes.

As with other amplifiers in the DiaLogue Series, PrimaLuna offers several nice touches that make the ownership experience a bit more special. The excellent user manual, containing a host of information about getting the most out of a tube amplifier, is personally signed by the driving force behind PrimaLuna, Herman van den Dungen, and the serial numbers are written on the front of the manual. A pair of white gloves is included. Packaging is carefully constructed and meant to survive the rigors of UPS shipment.

The PrimaLuna Seven monoblocks are so good that it's really picking nits to find fault with them. No tube amplifier I've auditioned comes close to their performance for anywhere near their modest price, and they hold their own against many reference amplifiers, particularly in terms of soundstaging and truth of timbre. While I love these amplifiers, they may have a touch too much warmth for some, but, boy, do they sound like music! Others may opt for the crystalline clarity, ultra-detail, and/or vice-grip bass control that some reference solid-state amplifiers offer, but not I. Some of the reference tube monoblocks that I covet (but cannot afford) may offer slightly better overall performance, but the DiaLogue Seven monoblocks come so surprisingly close that I could live happily with them.

The PrimaLuna DiaLogue Seven monoblocks are so musically captivating that you're likely to

fall in love with your system all over again. They eliminate the sonic and maintenance drawbacks of classic tube amplifiers while letting audiophiles and music lovers without fat wallets get surprisingly close to the sound one hears in a live performance. Moreover, the remote lets you easily switch between the more dynamically explosive, incisive, and tonally balanced ultralinear sound, or the even more beautiful and palpable triode mode. It's a tough choice. Let me conclude by saying that I've been searching for affordable, reliable, and flexible tube monoblocks with near-reference-quality performance for decades and have finally found them. **tas**

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Power, power and more power

Jacob Heilbrunn

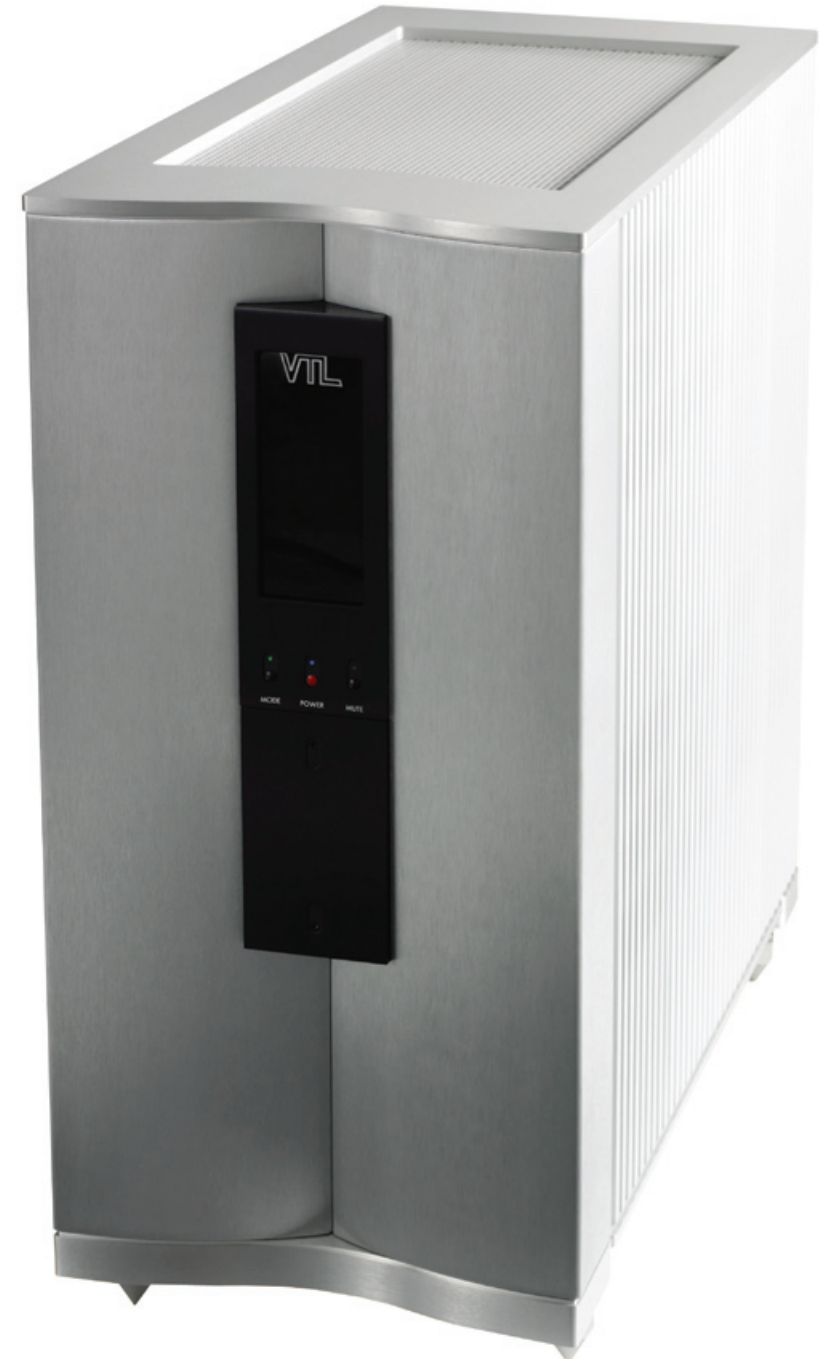
If amplification happens to be the topic, then mentioning anything other than tubes in Luke Manley's presence is apt to ensure that a look of mild distress starts to cross his face. Luke, who prizes the ability of tubes to act as voltage-controlled devices, can talk about their virtues for hours. Tubes, you could even say, run in his bloodlines. His father, David, was designing tube gear back in the 1960s and 1970s, when solid-state looked like the ticket for the future. Then, over a decade ago, Luke bought the Vacuum Tube Logic (VTL) company outright from his old man and set off on his own path. That path has remained resolutely grounded in the venerable tradition of two-channel high-end audio.

While other companies have moved on to newfangled things such as switching power supplies or shifted to an emphasis on the home-theater market, VTL, like Audio Research, has stuck to making what it knows best. That, as the company name indicates, is old-fashioned tubed equipment. Drawing on the basic circuit used by his father—two 6350 tubes and one 12AT7 in the input section—Luke first made a splash in the late 1990s by producing the 1250-watt Wotan amplifier, which is still probably the most powerful and refulgent tubed amplifier ever constructed, as well as a baby-brother 750-watt version featuring half the number of output tubes as its big brother—a mere twelve 6550Cs in

each chassis. Both models received high praise in TAS. (I have been using the Wotan and 750 in an actively biamped configuration with the Magnepan 20.1.)

Now, in a bold attempt to reinvigorate the VTL line, Luke has made another foray into the Wagnerian sphere. The result is the massive and spectacular sounding 800-watt Siegfried monoblock amplifier.

The first thing that should be said about the Siegfried is that it marks quite a break with past VTL amplifiers. It represents an audacious attempt to marry old with new technology. The Siegfried seeks to accomplish the age-old dream of uniting the slam and transparency of solid-



EQUIPMENT REVIEW - VTL Siegfried mono power amplifiers

INSIDE THE VTL FACTORY

VTL may have a soft spot for Teutonic terminology, but the company's firmly rooted in sunny Chino, California, where its large factory is dedicated to turning out, on an assembly-line basis, amplifiers and preamplifiers. Unlike some other firms, VTL insists on doing its work in-house. I was impressed by the thoroughness with which the process of building, or repairing, a piece of equipment is conducted. No matter how often a technician has built a piece, VTL insists that he follows a picture guide to ensure that no one is relying on memory and, in addition, that each individual stage of work is tested upon completion.

VTL relies upon a team of engineers to execute its designs, and I had the good fortune to get to watch one such confident employee stress a Siegfried to the max on the test bench. Even though the amp was sent into clipping by driving an enormous loudspeaker cone directly, the voltage to the tubes dropped less than 2 volts out of a maximum 600 volts—a testament to its rugged power supply. The sound, however, was, I can assure you, dreadful.

Fortunately, before I headed over to the factory, Luke had deposited me for a few hours at the eponymously named Brooks Berdan Ltd. Berdan, a well-known purveyor of audio goodies who is an expert on turntables, had the ravishing SPJ Centovani feeding the VTL 7.5 preamplifier into the Siegfrieds, which were

powering the Wilson MAXX II loudspeaker. Though the room was a little on the smallish side, the system sounded splendid playing a Duke Ellington "Uptown" LP that I had brought along. The ability of the Siegfried to control the bass frequencies was once more brought home to me.

The factory itself boasts nothing along these lines; it's strictly business. Luke played me his small system in his office, which was enjoyable enough. But the double-breasted blue blazer hanging on the door made it clear that he is almost constantly on the go, regularly visiting Russia, Asia, or Europe. Meanwhile, his extremely capable wife Bea Lam, a former Hewlett-Packard employee, gourmande, and music lover, keeps everyone on their respective toes, serving as the ultimate judge of the sonic qualities of new equipment and ensuring that the factory is humming smoothly. To encounter her disapproval would be a daunting experience, indeed, which may help account for why VTL boasts such a successful track record.

state designs with the blissfulness of tubes. It can be run in either tetrode mode, which I preferred, or triode, which halves the power output. The technology behind the amplifier forms the basis for VTL's claim to have produced a fundamentally new high-powered tube amplifier rather than simply a modified design.

For starters, the models of yesteryear relied on brute force, regulating the input stage but not the output stage. The Siegfried, by contrast, regulates both. It boasts a precision power supply. The regulator, which is built around five MOSFETs, is placed between two massive banks of capacitors to ensure that the B+ voltage to the output tubes does not sag. In addition, the Siegfried has an automatic-biasing system—no more messing around with individual trim-pots and a voltage meter to bias the tubes manually. VTL says that the auto-bias system disengages whenever music is playing. When the amplifier is on, a microprocessor is supposed to ensure that the tubes are optimally biased. And that isn't all. The microprocessor also can sense when a tube has a low-current fault, or is about to blow. If the tube has a low-current fault, the microprocessor shuts down just that tube. If the tube is about to blow, the microprocessor shuts down the entire amplifier. In either case, the tube that caused the problem is indicated so that it can be replaced. No more guessing which tube went up like a Roman candle. (Having seen more than one tube go nuclear in other amplifiers as I raced over to shut the amplifier off, I can attest that this is entirely a good thing. The sound of a B+ fuse blowing after a tube fails is not for the faint of heart—more than once I've been convinced that my tweeter simply had to have blown, though so far it hasn't.)

Should the amplifier itself fail, you can hook up your computer to it via a bi-directional RS232 control port and send the diagnosis to VTL. In essence, the amplifier is like an Erector Set; any part can be dismantled and returned to the factory for repair without sending back the entire unit. The auto-bias and control hardware can be removed with basic tools—which, incidentally, come supplied by VTL in a separate case inside one of the amplifier crates—leaving the amplifier core and power supply intact as the components least likely to fail. (The amplifier requires 20-amp power cords, and the stock supplied cords should be replaced with something heftier—I used Shunyata Helix Alpha.)

Unlike the older units, the Siegfried could not be more user-friendly. Nevertheless, the Siegfried, as befits its name, is hardly a cuddly amplifier. Instead, it looks intimidating. Weighing in at over 200 pounds, it's no lightweight—and it doesn't sound like one, either.

VTL has always been an exponent of power, power, and more power. The Siegfried delivers it in spades. Upon firing up the amplifier, it was immediately apparent that it threw a wider and more precise soundstage than the 750 amplifier. One of the first pieces I listened to was a lovely Handel organ concerto. With the Siegfried it was as though the aperture through which I was hearing the music had increased.

It was also notably purer. The sheen and grit of the stringed instruments was simply more precise, more realistic, if one can use that word, or, to put it another way, closer to the absolute sound than the 750s. The Siegfried simply took complete command of the music and never got bogged down.

EQUIPMENT REVIEW - VTL Siegfried mono power amplifiers

A lot of this can probably be ascribed to the exceedingly robust power supply of the Siegfried. On the Kharma Midi-Exquisites, it seemed as though the Siegfried produced another octave of bass. More than that, the bass that it produced was simply prodigious in heft and impact. This wasn't just a matter of more slam, but also considerably more solidity. No VTL amplifier that I have heard has matched the tautness of the Siegfried in the bass, whether it was driving the Wilson MAXX II or the Kharmas. Yes, the Wotan was richer sounding, but not quite as iron-fisted in the subterranean regions. The Siegfried simply would not quit when presented with the most punishing loads. This is quite a contrast with most tubed amplifiers, which simply cannot provide the kind of punch that solid-state delivers. To be specific, on Jimmy Smith's sensational CD dot

com blues [Blue Thumb Records], which was mastered by Bernie Grundmann (and sounds like it), the bass lines plunged down with an authority and impact that I have seldom heard. At the same time, the congas and background choirs never became hazy, congested, or indistinct, as can sometimes be the case when an amplifier becomes overwhelmed by the sheer amount of information that's being delivered to it by a good front-end.

Two pieces of vinyl were stunning. The first was *The Soulful Moods of Gene Ammons*, on a marvelous pressing released by Chad Kassem's Acoustic Sounds on 45 rpm. Via the Continuum turntable, the saxophone sounded meltingly sweet on the cut "Two Different Worlds," which has to be one of the prettiest jazz ballads around. It was possible to discern precisely where

Ammons was standing in relation to Patti Brown's piano. On the next cut, "But Beautiful," which was, if possible, even more beautifully played, the Siegfried clearly revealed the clacking of the saxophone pads just as Ammons prepared to launch in. Audiophilia? No doubt. But such little details also provide a sense of realism and are a tribute to the vanishingly low noise floor of the Siegfried. Another album that left me marveling at the transparency of the Siegfried was John Lee Hooker's *Burning Hell*. In particular, on "Graveyard Blues," Hooker's piercing, gravelly voice had a you-are-there quality, with the guitar twangs vivid and forceful.

It's worth mentioning the new version of the VTL 7.5, Series II preamplifier at least in passing, because it also distinguished itself so well. Comprising a "clean" and "dirty" box (the former contains the audio circuits, the latter the microprocessor and control electronics), this preamplifier, which uses a 12AU7 tube as opposed to the first-generation's 12AX7 tube, nicely supplemented the strengths of the Siegfried. It was wide open, passing a tremendous amount of information—the most that I have heard from any preamplifier, excepting the Messenger, which passes a pinch more. Once again the VTL trademarks were there: an extremely dynamic, transparent, and fast sound. No part of the frequency spectrum was unduly emphasized, but the presentation was far from the traditional tube one. Lovers of a more romantic sound will find the 7.5 to be too stark and neutral. I didn't. The verve and zest, the dynamic power and scale with which it reproduced music made it hard to fault. Using the 7.5 preamplifier also allowed me to run the Siegfried in balanced configuration,

which is the way VTL prefers it to be used. VTL uses what it calls a 'superbalanced input stage' in its newer amplifiers to create common-mode noise rejection and the additional 6dB of gain that is inherent with balanced operation.

To be sure, the lover of low-powered tubed equipment is never going to be convinced that the VTL sound is for him or her. VTL is striving to meld the best of solid-state and tubes. The result is, for lack of a better word, far more neutral than what tubed equipment customarily sounds like. This can translate into an opaque window on the music for some; and for others, it will simply be



SPECS & PRICING

VTL Siegfried mono power amplifier

Power output: 800 watts into 5 ohms, 400 watts in triode

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

Dimensions: 11.5" x 24" x 24"

Weight: 205 lbs each.

U.S.

Price: \$24,000 each

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EQUIPMENT REVIEW - VTL Siegfried mono power amplifiers

too much to bear. The 27-watt Audio Note Ongaku amplifier that I had on hand for a few months offers a radically different presentation. Nothing like the majesty, drama, and excitement of the Siegfried, but it does have a tonal sweetness that no high-powered tube or solid-state amplifier can match. (Is the Ongaku colored? Of course, it is.) Nor is the Siegfried going to convert the dyed-in-the-wool solid-state aficionado. Despite the excellent black backgrounds it produces, the Siegfried remains at heart a tubed amplifier. As someone who has a soft spot for the glowing filament, I believe this is very much a good thing.

But the Siegfried does close the gap between high-powered and lower-powered tubed equipment to a remarkable degree. It is a more refined and transparent amplifier than its predecessors. What's more, the grip and control that come with high power are very enticing.

If you want an even cleaner sound, you can substitute the KT-88 tube for the 6550s in the output stage. The KT-88 had about another octave of air on top and was a purer sounding tube, while the 6550 was more aggressive. My own preference hands-down was for the KT-88. In any case, whatever tube you deploy, the Siegfried will allow any audiophile to poke about in the recesses of the soundstage to his or her heart's content. At such low levels of distortion, how much more can really be extracted is an open question, though designers seem to be doing their level best to find out, which is one reason audio equipment keeps sounding better and better.

Anyway, if you're in the market for an amplifier on the level of the Siegfried but wonder whether

you really need all that power, think again. The blunt fact remains that most loudspeakers need a lot more power than their designers would like to admit. On the Kharma loudspeaker, I found that running four VTL 750s was the only way to try and approximate the size of the soundstage delivered by the Siegfried. And it still wasn't as tight in the bass.

Put bluntly, the Siegfried offers stratospheric performance, mating high power with finesse to deliver the musical goods. There are few other tubed amplifiers in production that can challenge its dynamic sweep. It's not an amp for the equipment-swapper, but represents a destination point. If you have the floor space and the necessary change, the Siegfried should be on a very short list of exquisitely made high-powered amplifiers. **tas**

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Scaena Loudspeaker System

HP'S WORKSHOP on using the VTL Siegfrieds with the Scaena speakers

Harry Pearson

This multidriver hybrid system derives its name from the Latin, where one meaning of “scaena” is “stage,” and derives its design ancestry from the much-admired Pipedreams a decade or so ago. The Scaena (the makers pronounce it “say-na”) is, however, in looks and sound, an altogether different creature.

In that antecedent version, the Pipedreams, the principal design goal was the creation of a realistic soundstage and ambient space through the use of direct radiators, as opposed to the so-called “di-” or “bi-polar” radiators then in vogue.

The overriding aim of the new system is the creation of a high degree of accuracy in the frequency and time domain, and a new level of audio resolution.

Even after several months of listening, I don't quite have a grasp on how to describe this speaker's sound, and I am still wrestling with that. Yes, it has the lowest distortion, methinks, of any full-range system I've heard. And it has the leanest (in the sense of accurate and right) midbass I've heard. And, yes, it can, with the right amplifier, create a thrilling sound, not that far removed from the concert hall. It goes as low as the big IRS and Genesis systems and the Nola Grand Reference, but it does so more cleanly and with less “character” than those, partially because it is crossed over so cannily you think you are hearing one speaker. Nothing is missing from any of the fundamentals of a

musical instrument, and the basic overtones are there, intact. It reminds me, in its speed and transient accuracy, of an electrostatic from the midbass to the lower highs, but with power, three-dimensional imagery, and “presence” I have never quite heard the likes of before. But further than that, I cannot directly go in Part One of this essay, although you will find tantalizing (I hope) hints in this piece.

The team behind the Scaenas includes several veterans of the old, defunct Pipedreams group, including designer Mark Porzilli; George Bischoff, Porzilli's right-hand man from Melos Audio; Alan Eichenbaum, the CEO in large part responsible for the creation of the new company; and Sonny Umrao, the chief operating officer and the man who shaped the look of the speaker.

The flagship version, which I am reviewing here, has two main towers, tall, slender—and minus conventional enclosures—each with 18 midrange drivers and 12 ribbon tweeters on either side. It's called the Model 1.4, because it also has four 18-inch subwoofers (two per channel!). A somewhat less thunderous set of

single 18-inches-per-side is dubbed the 1.2.

There are, additionally, two less elaborate versions, with prices ranging from \$40,000 to \$83,000. (Robert E. Greene is reviewing the smaller Model 3.) The less elaborate systems differ in the number of drivers from top to bottom, although the most apparent difference at first sight will be their towers' reduced heights.

The midrange units are made in Denmark by Tymphany and, says Eichenbaum, these are modified to increase their magnetic flux, thus providing more control for the voice coil, more dynamic power handling, and “far more” linearity. This flux increase is achieved by increasing the driver's magnet structure.. For the record, the “three-inch” midrange's frame size is four inches, the actual moving diaphragm but two.

And, as we shall see, it is these very midrange drivers that account for the resolution of the system, its remarkably low distortion, and its frequency ease, which I consider to be the source(s) of the Scaena's remarkable realism.

The ribbons, planar units made in China, are larger in size than the normal design, Eichenbaum

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says, because this “changes the resonance characteristics—freer movement equals lower distortion,” and allows, in a line array, more radiating surface. The ribbons cover the range from circa 6kHz to above 20kHz. One deliberate design consideration called for the elimination of complex crossovers in the front towers. (Porzilli says, “One of my dreams is to design a speaker without any crossovers whatsoever,” and this one comes closer to that goal than most.) Thus, for the tweeters, “The internal crossover,” says Eichenbaum, “contains an excellent foil inductor from Denmark” for rolling the midranges, “and a film-and-foil capacitor for rolling the tweeters.” The tweeters’ response is 12dB down at 3kHz.

Down below, the midrange units’ natural roll-off “starts at 90Hz, but since they are allowed to run full-range, the tower’s [combined signal] is not sent to the external bass crossover.” (The mids’ natural roll-off is 12dB per octave and then that increases to 18dB.) In other words, the smooth mechanical roll-off of the drivers eliminates the need for a crossover. Porzilli is more to the point: “A single capacitor removes the midrange from the tweeters. A single coil removes treble from the midrange.”

The woofers are made by Eminence (of Eminence, Kentucky), said to be the largest supplier of 18-inch woofers

in the world. The cones are made of plastic-coated paper pulp, and are housed in round cylinders that look something like a naval depth-charge barrel, the so-called “ashcan.” They are ported (at 16Hz), in an enclosure designed to prevent standing waves by the use of a “rectangular diffractor,” damped with cotton/wool fibers.

Instead of using the 700-watt amplifier supplied with the system, I substituted the Burmester 911 Mk III. Having little confidence in the idea of the supplied electronics, I thought the 911 would be the better amp to drive the woofs. I had no immediate alternative, so I used the Scaena electronic crossover, about which, in time, I shall have more to say. The present arrangement, not surprisingly, made setup more complicated and vexatious for my tender sensibilities.¹ The woofers themselves must sit behind the 7’ 10”-high towers; achieving the correct balance and phase between the two is no mean feat. In fact, it is one of the most challenging aspects of dialing in the sound, and a small wonder if they ever sound as good as they can under “show conditions.”

I haven’t gotten into all the design considerations behind the speaker’s sound just yet. I want to describe, if I find the descriptive vocabulary, the sound of the system first, before attempting to explain some of the ways in which that sound has been achieved.

First off, in setting the system up, you have to keep in mind that what you are striving for (and what the design team has achieved) is a seamless continuity, bottom to top, of the frequency domain and the recreation of the soundstage. And you may find that the four-sub option overloads the room, in which case, the Model 1.2 will be the better choice. Given a kind of reckless desire to push the limits, I set my goal as taming the two-subs-per-channel option. All of this, of course, depends on room size and shape, and Room #3 is happily devoid of audible resonances and thus capable of something approaching a concert-hall level of realism. By carefully adjusting the (original) equalizer for the lowest bass frequencies, we avoided overloading the room, but that didn’t mean we were scotch (or sour mash whiskey) free. This system is capable of full output down to 16Hz and one of our high-priced turntables, not tremendously well isolated on its own base, generated subsonic distortions of the most unpleasant sort. The remainder of the system, thanks to Arcici Racks and two Halcyonic isolators (designed for electronic microscopes) did the trick. The 1.4 is a system that means business, and the business it’s about is reproducing everything, every signal it’s fed, and, as I have implied, with a degree of linearity and low distortion I have found to be unique.

SPECS & PRICING

- SCAENA Model 1.4**
Dimensions: 94" x 10" x 12" (towers, w/o supplied machined-aluminum stands); 20" x 20" x 23" (woofer)
Weight: 1500 lbs. (with 4 woofers)
- Siegfried Reference monoblock amplifier**
Output Power: 800W tetrode, 400W triode into 4 ohms; 600W tetrode, 300W triode into 8 ohms
Inputs: Balanced XLR, single-ended RCA
Dimensions: 11.5" x 25" x 27"
Weight: 175 lbs. (net)
- TL-7.5 Series II Reference line preamplifierZ**
Inputs: Four pairs balanced/XLR or single-ended RCA
Dimensions: 17.5" x 17.5" x 4", control chassis; 17.5" x 17.5" x 6", audio chassis
Weight: 75 lbs.

U.S.	U.K.
SCAENA Model 1.4 Price: \$83,000	SCAENA Model 1.4 Not distributed in the UK
Siegfried Reference monoblock amplifier Price: \$24,000 each	Siegfried Reference monoblock amplifier Not distributed in the UK
TL-7.5 Series II Reference line preamplifier Price: \$16,500	TL-7.5 Series II Reference line preamplifier Not distributed in the UK

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Secondly, and much more problematic in this case, came the search for best associated equipment—remember that with this speaker, everything is audible, particularly the character of the basic amplification. The colorations of some of the amplifiers I had most liked in the past were highlighted here. I understand that this system proved, for those who got a chance to hear it early on, a bit too revealing of electronic colorations or too “cool” for those who have grown accustomed to the present-day mania for big speaker systems of great warmth and midbass romanticism or enhanced “hi-fi” thrills. It ought to go without saying that realism should trump romanticism, but these are difficult days for the industry and for reviewers.

While I was trying out the Scaenas with different amps, I was also working on an evaluation of the Reference 3a’s Grand Veenas (Issue 178), which was refusing to reveal its own “character” or “sonic signature,” instead feeding through to mine ears what it was fed. I did a few informal comparisons between the Veenas and the Scaenas and decided the bigger system was much like the Veenas, except that it magnified everything, reproducing a far larger soundstage and soundfield, one that approximated what you’d hear in a good concert hall. The Grand Veenas, of course, did not provide the bottom-end depth, punch, or articulation of the bigger system, but then it doesn’t cost even a tenth as much. I also came to see, upon further listening, that the Veenas were somehow a bit more forgiving (the Jack Bybee “purifiers,” perhaps).

It was, at this point, that I received the latest generation of VTL tubed electronics, the 700-plus-watt monoblock Siegfried amplifiers and

the TL 7.5 Series II linestage. An aside: I shall be considering both the linestage, largely ignored this time out, and the amplifiers in a separate review shortly, using each with other associated equipment.

With the VTL amplifiers, the system attained, for the first time for me, a shocking sense of realism. The Siegfried supplied enough power for the system to float gracefully over the most momentous of climaxes, with the smooth neutrality that was lacking (overall) in our reference amplifiers (the Western Electric and the ASR). It was not a question of playing louder; the other amps did that. It was the effortless way it played, and how the nuances of dynamics, at both micro- and macro-levels, became easily audible, as such are in unamplified music. It was as if we had expanded the dynamic scaling itself. More strikingly, the ease of transient attacks also suggested those you hear in a good hall—in other words, with ambient decay as natural as that first wave. With this combination, you don’t sit back and say, “Oh what great sound”; you sit back and say, “What a wonderful piece of music,” or just forget about all that, once you get over the shock of hearing something several steps closer to the real thing. Yes, even on digital recordings, especially as heard through the latest update to Ed Meitner’s five-star two-channel CD player.

Part of the surprise of the Scaenas lies in their nearly unprecedented truth to the music’s foundation, the midbass frequencies. These lack bulge, boominess, excessive warmth and emphasis, and incoherences. I don’t have to tell any of you who are fascinated by the “art” of sound recreation that the reproduction of the midbass frequencies has been and is the *bête*

noire of high-end sound reproduction. It is a region of the spectrum that almost no one gets right, save the designers of large full-range planar systems; but these don’t have the power and ease under pressure of the Scaenas at full tilt. Once you hear the midbass *per se*, it will underline how dependent we’ve become not on the pursuit of the absolute sound, but of a Splenda-like sweetened sound. If you have a system like the Scaena, you can make it sound romantic, if that be your perversion, but you can *never* make an inherently romantic system a reflection of the real thing.

Forbearing, for now, a test of the Siegfrieds on several other systems (for instance, on the Grand Veenas and the Hansen Kings), does not prevent me from recognizing their “authority” and the advances over earlier VTL designs. They are the least colored of the VTL products I have heard. While I hasten to add that it’s been almost five years since I had a chance to audition Luke Manley’s work seriously, my notes recall the older VTL electronics, always smooth and easy on the ears, as being dark in tonal coloration, and the victims of occasional grain and noise artifacts, especially at the frequency extremes. On the other hand, then as now, the VTL designs were strongest in recreating a sense of ambient space and the focus of instruments upon a soundstage.

This new generation, for me, has as its underlying significance a fine balance between yin and yang character, being neither “whitish” in its signature nor leaning to the ecru to beige to black side. Owing to this utter lack of coloration, the VTLs make a heavenly marriage for the Scaenas. (You may well find your focus shifting onto the

sound of elements further back in the chain.) This combination is not only easy on the ears, it is capable of retrieving the ultra-fine harmonic details and of reproducing overtones, particularly those up way high. This means you—without effort—pick out individual violins in the string section and by so doing identify each player’s character. Try, for starters, “Mercury” from *The Planets* on the Mehta/L.A. Philharmonic XRCd to see what I mean, and while you’re there, check out the subtle transient strikes on the highest bells. Or the Chicago strings in the Reiner *Lt. Kije* in the Classic Records 45-rpm remastering.

More surprises awaited. We had started out with the Nordost Valhalla interconnects and cables, and found, as we reported earlier, the change to the new and obscenely expensive Odins like the difference between the best whitish-sounding solid-state amps (say, a Spectral) and the best tubed units (of which the VTLs are one). During the evaluation, an update arrived for the two-channel Meitner CD/DSD player, the CD-SA. Several issues back, I found the Lab 47 Pi/Tracer Revised the only deck that gave the Meitner serious competition sonically, perhaps, I thought, besting it in a kind of high-frequency airiness and sweetness completely unfamiliar to me in digital playback. But, *voilà*, the update to the Meitner (which can be downloaded via computer and fed into the player) achieved that same sweetness and airiness, even liquidity in the top octave, while beating the competition, by improving on transient response from top to bottom of the spectrum (not, evidently, by extending the preset 44kHz/16-bit limits, but by Meitner’s untangling of the phase problems seemingly inherent in conventional Red Book playback). This was an

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improvement I did not expect, nor did I expect to hear the improvements in low-level dynamics Meitner has achieved. If I go on about this a bit, it is because, with the Scaena/VTL system, all such changes are immediately obvious, not subtle, just there for you to hear without straining or imaginative supposings.

But that was not the end of what has been, through these speakers, a voyage of unexpected discoveries. After I had gotten used to the sound as it evolved, I invited a perceptive and musically astute listener in for a round or two. This guy is in love with lush romanticism (that he adores Mahler would be no surprise, and if you happen to know the sound of Zanden electronics, you won't be surprised to find he is crazy about those, too). He found the system too "cool" and too revealing for his tastes, and he had problems with some aspects of the dimensional field. I thought this over and began to wonder about this "coolness," whether, indeed, the system might be a little too much so, and perhaps, just maybe, a bit one-dimensional in the top octaves. I had a dim memory of some past experiments with differing kinds of amplifier tubes (more in a moment) and since Manley had provided a full set of KT-88s for the Siegfrieds as an alternative, I decided to switch the 6550 tubes in the amplifier to the KT-88s.

I first, and inadvertently, listened to the 88s in the amplifier's so-called triode mode (a switchover easy enough for a technical nitwit—like me—to do). You lose half the Siegfried's rated power, and gain a softer, less intrusive top octave. But, holy kimono!, the resultant sound was as lushly, sexily, seductively, ripely ready for the aural plucking as I think it has ever been my pleasure

to hear. Believe me, 'twas swoon worthy.

But I was not be lured off my absolute path by such blandishments. (To slightly paraphrase Gordon Holt's remarks in a speech at CES 15 years ago, "if the only measure of sound quality [has become] whether the listener likes it, that has pretty well put an end to audio advancement.")

So I readjusted the system for tetrode operation (as I'd listened with the 6550s), and upon hearing what happened sonically, I came to see that the nowadays garden-variety 6550s are indeed cool-sounding, distinctly lacking top-end three-dimensionality, ambient detailing, and the true sweetness you sometimes hear in the hall. The KT-88s brought the music more closely into the room, while expanding the stage's field of depth considerably. But something troubled me about the 6550s and I began to suspect that Jacob Heilbrunn, who had the Siegfrieds before I did, had put most of his time on the amplifiers using 6550s, and learned from him that I was right. Prior to this revelation, we had lost three 6550s in the Siegfrieds. This is how I got to the disturbing conclusion that the tube life of the 6550s was not what it should be, but then the manufacturers of tubes in China and Russia have not maintained the quality level of the U.S. makers. The tubes' sonic differences brought back to mind experiments with designer Dan Fanny some years ago, in which we were able, using a single amplifier chassis, to contrast different brands and makes of tubes. I then opted for the KT-88s and understood why Conrad-Johnson did also.

You may wonder, with the rolloff of the midrange units, why their apparent response (audibly) goes so low. You definitely do not hear the woofers' character until the sound is at the bottom octave

(which I define, nowadays, as 16 to 32Hz). Porzilli's explanation is simple, and classical: "Bass that deep is heard as sine waves...the human ear cannot ascertain bass information below 100Hz or so. You *do* hear bass quality, but you're actually hearing it from the 3-inch mids playing it, added to the fundamentals from the 18-inchers. So you get 18-inch-woofer bass power with 3-inch-woofer bass detail."

Furthermore, he says, "If you combine, let's say for convenience, 50 drivers correctly, you'll get 1/50th the distortion of a single mid/tweet, and 50 times the speed of a single mid/tweet because each has to move only 1/50th as far to achieve the same output if it were acting singly (drivers are their fastest near the magnet and slow down as you push them into high excursions which pulls them away from the magnet, their power source. They barely move in the Scaenas."

There is, as I came to learn, much more thinking behind the "sound" of this system than we perhaps accustomed to. And I can't begin to detail every last little thing. But there are two more points and they relate to the midrange drivers.

First, says Eichenbaum, "We find identical drivers are never identical. Each one has its own small characteristics. By connecting them in a series, they equalize themselves to one far more linear component." Second, he says that part of the speaker's ability to reproduce micro-detail as well as it does has to do with the shaping and construction of the midrange driver enclosure. In my opinion, most attractive, but hard to describe unless you've seen its ovoid cocoons.

I am dancing on tectonic plates at this point, but I have begun to suspect that the secret of the speaker lies in the performance of the midrange

array. First of all, unlike the first generation of the Pipedreams, before they were modified, the designer used a remarkable Panasonic ribbon tweeter whose sound I quite liked, as I do the Magnepan ribbons and those used in the Nola Grand References (the Ravens), which have an inherent upper-octave "thereness" that the Chinese planars in the Scaenas do not. I am far from certain about their top-octave performance (at this point) or convinced by the truth of their sound. I am beginning to suspect that the cut-off of the mids at 6kHz overlaps considerably onto the planar units, to their advantage, just as the midbass and upper midbass fundamentals and early harmonics are dominated by the middle-frequency drivers. There *is* just a hint of the transition to the big woofers in a darkening and thickening of the lowest octave, which I don't consider troublesome (just now). So, I leave you with this supposition as I end Part One: What if it is a wideband midrange line-array that lies at the heart of this system's remarkable realism?

At the very last minute, these comments came in from George Bischoff, who was intimately familiar with the design process: "The crossover point of the mids is at 6kHz, rolling off at 6dB per octave (they are only 9dB down at 9kHz), thus covering most of the primary notes of music. Our design concept was to create a 'one-way loudspeaker' with help at the extreme ends." ¹

¹ Since then, and recently, the crossover control box has been updated for the sake of simplicity of operation and the adjusting of the bottom octave's response. This means we'll have to have another pass at this system solely to hear Scaena's in-house amp and revised crossover.