

PRO AUDIO REVIEW



Live page 66

The Industry's Equipment Authority

June 2003

STUDIO MONITORS



In This Issue!

ADAM S4U-A Ribbon Monitor
Speakers from Genelec, Blue Sky and M-Audio
Legacy PointOne Powered Subwoofer
Gordon Instruments Microphone Preamp
PreSonus Digimax LT Digital Processor

LIVE SOUND REVIEW!



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Evaluating audio products for professionals in commercial recording, broadcast production, audio for video/film, project studios, live sound, contracting and multimedia.

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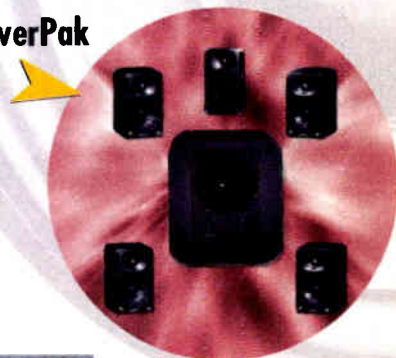
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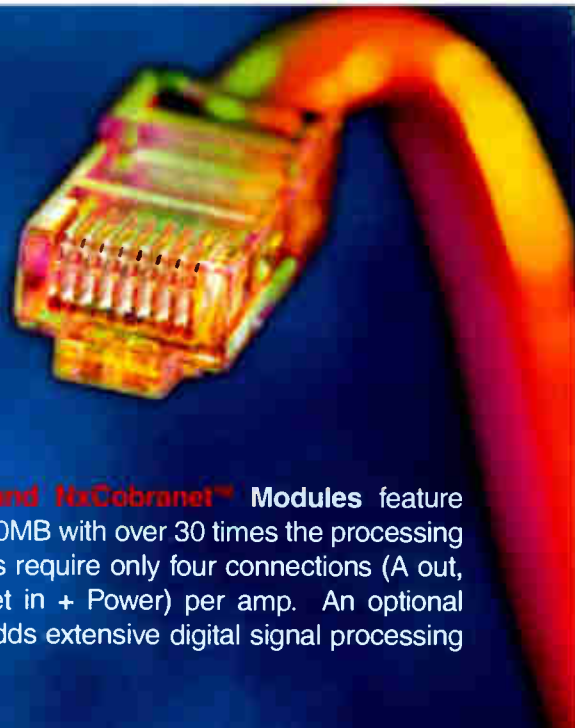
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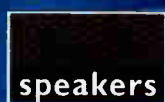
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The Nature of the Business

PUBLISHER'S PAGE

BY JOHN GATSKI

In *Pro Audio Review's* nearly eight years in publication, our real-world engineers reviewers have eval-

uated just about every type of product made for the pro audio industry.

And whether we are in a tight economy, or the technology and market forces changes the nature of the professional audio business. *PAR* will stay the course with its product review focus. Whether it's a professional home studio, post production facility, live sound and installation or broadcast, or laying down tracks in a big city studio, we cover the gear and software being used - no matter what the trend.

Over the last few years, technology has allowed the manufacture of pro products that are not designed for any particular niche. They are in fact, multi-niche.

Yeah sure, a big SSL board designed for broadcast is solely for broadcast, or a big JBL line array is designed for the high-end live sound. But there are thousands of products out there that cross into all the different niches. For instance, a CD recorder can not only be used to burn copies for recording studios, but also a copy of performance during a live gig, or burning some jingles for a radio station, or storage of sound effects at a movie post house. A CD burner, like a digital workstation or panel of rack effects, works almost anywhere.

Workstations are so prevalent these days that they are found in every in every pro application including live. The same is true for digital consoles.

Since *PAR* covers every part of pro audio, these products are perfect for our review format. For example, I often get requests from our reviewers to examine gear for live sound that you normally would expect to see in a studio or project studio. And I have seen live products used in a studio. Heck, I have been using a Midas Venice 160 live board in my studio for three months. The killer mic pre-amps and the EQ are perfect for my minimal-track, recording projects, and its plethora of outputs can feed multiple recording machines.

So read on. No matter what you do professionally, just about any piece of gear we review should be of interest to you.

OLD MAC RESURRECTION

Any of you folks out there got old Power PC Macs? Any 7600s, 8600s or 9600s sitting in the storage room gathering dust? Couldn't get \$200 out of it on eBay?

Well, maybe you don't have to junk it. I have been using a Sonnet G4 processor card in an old 7600 for a while now. This inexpensive upgrade allows the old beige Mac to come alive again as a modern DAW.

Starting at about \$200 street price, the replacement processor board card allows the old machines to get G4 performance (price dictates processor speed) which is up to 800 MHz for cards for the aforementioned Macs. The processor card update enables these great old machines, with 512 MB memory capability and three PCI slots, to run modern peripherals, such as FireWire drives, USB peripherals and current, processor-hungry software.

Because of the board upgrade, I was able to add a FireWire PCI card, (\$30), so I could use a FireWire drive. I mounted a Digigram Digital VX222 I/O card, installed BIAS Peak 3.0, and presto, a good performing two-channel digital workstation.

MacMall sells the Sonnet upgrade cards, which now include upgrades for bonafide G3s and G4s, as well as the old machines. Sonnet Technology can be reached at 949-457-6350; or visit the web site at www.sonnettech.com

Without the Sonnet upgrade card, the 7600 was destined for the obsolete pile outside of my shed. That pile currently includes a SCSI screen for a Mac Classic, a Syquest SyJet, an Apple One scanner and a rotary telephone.

LETTERS TO PAR

Need to vent or say nice things about *PAR*? Letters to the editor or our writers can be sent via email to PAR@imaspub.com. John Gatski can be reached at jgatski@aol.com. Brett Moss can be reached at bmoss@imaspub.com.

PRO AUDIO REVIEW

Vol. 9 Issue 6 • June 2003

Evaluating audio products for professionals in commercial recording, broadcast production, audio for video/film, project studios, live sound, contracting and multimedia.

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Extensions refer to office number 703-998-7600



PRO AUDIO REVIEW (ISSN 1083-6241) is published monthly by IMAS Publishing Group, 5827 Columbia Pike, 3rd Floor, Falls Church, VA, 22041.

Phone: 703-998-7600 Fax: 703-998-2966

Periodicals postage paid at Falls Church, VA 22046 and additional mailing offices. POSTMASTER: Send address changes to Pro Audio Review, P.O. Box 1214, Falls Church, VA, 22041.

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REPRINTS: Reprints of all articles in this issue are available. Contact Joanne Munroe (ext. 152) at Pro Audio Review.

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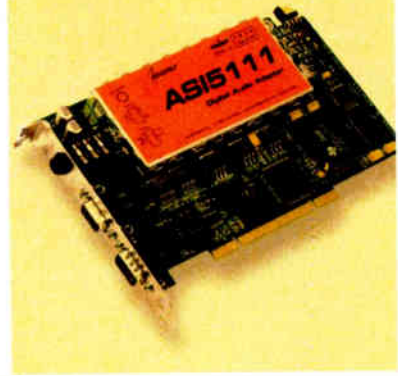
World Radio History

OUT OF THE BOX

AudioScience ASI5111 Linear Audio Adapter

The ASI5111 from AudioScience is a PCI-based card meeting current and near-term performance requirements, 24-bit/96 kHz. The card can handle two record streams and plays out four streams. Onboard 32-bit DSP features include a software-controlled compressor/limiter/expander along with a three-band parametric EQ. Unusual for cards of this class it also offers a 48V phantom power input (via XLR breakout cable). Drivers are available for Windows 98/Me/NT/XP as well as Linux. Price: \$549.

Contact: AudioScience at 302-324-5333, www.audioscience.com.



Sonance Concierge Digital Audio Server

The convergent future rears its head in the form of the Sonance Concierge, a digital audio server muscling its way into the contractor market. Dual 160 GB drives store up to 2,500 hours of music for more than 100 days of nonstop playback capability. Aiding this is MP3 ripping, an onboard CD player and four-zone simultaneous playback. Zone playback can be expanded up to 10 zones. Concierge interfaces with computers for remote control and hunts the Web for song information. Price: \$3,600.

Contact: Sonance at 800-582-0771, www.sonance.com.



Hot House High Resolution Control Room Amplifiers

Hot House Pro Audio has upgraded its Model One Thousand, Model Six Hundred and Model Four Hundred amplifiers. Adding to the basic split dual-toroidal power supplies and straight wire/zero feedback design philosophy is a redesigning of the output device section promising up to 110 dB signal-to-noise ratio. Other improvements include a more efficient signal path, increased loop bandwidth, better self-biasing and greater reliability. Prices: Model One Thousand - \$2,999; Model Six Hundred - \$2,499; Model Four Hundred - \$1,999.

Contact: Hot House Pro Audio at 845-691-6077, www.hothousepro.com.



Apex Intelli-Q Real-Time System Optimizer

Joining the burgeoning field of system processors Belgium's Apex brings the Intelli-Q to the US. Like other digital system processors, the Intelli-Q offers numerous features such as 24-bit A/D-D/A conversion, 30-band EQ, 10-band parametric EQ, high and low-pass filters (Butterworth, Bessel, Linkwitz/Riley curves), compressor/limiter, delay, 30-band spectrum analyzer with a 48V phantom power preamp and the list continues. It also offers PC control. Price: \$4,275.

Contact: Apex/Transamerica Audio Group at 702-365-5155, www.transaudiogroup.com.



CORRECTIONS

Many eagle-eyed readers spotted our April 2003 cover muff incorrectly identifying the Digidesign Mbox as a FireWire device. Fortunately, the review itself correctly pointed out it is a USB device.

In the Bryston 14B SST review, also April, the Midas Venice console was incorrectly identified. The correct Model is 160 not 1620.

April Fools on us!

Telefunken North America ELA-M 251 Microphone

An eye-catcher at recent shows and much talked about, the Telefunken North America ELA-M 251 has gotten a lot of attention. The handcrafted in USA mic offers omnidirectional, cardioid, figure 8 patterns, a condenser element and a separate power supply. TNA has acquired the rights and plans so the mic should be identical to original (with improvements in construction). Price: \$10,125.

Contact: Telefunken North America at 860-882-5919, www.telefunkenusa.com.



> Where do you want to take your music?

Today's compact recording setups allow you to make music anywhere you want. As a result, you need monitors that adapt to any work environment. That's just what **Acoustic Space control** allows in our new world-class **Studiophile BX8** and **BX5** reference monitors. Since a monitor's bass response can change depending upon proximity to walls, this control section allows you to **easily optimize performance**—whether you need to put your Studiophiles on stands, on a shelf or in the corners. You can also compensate for room characteristics like reflective

Acoustic Space	High Freq	Mid-Range	Low Cutoff
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surfaces and anomalies in mid-range and bass response at the flick of a few switches.

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-  Custom ports for extended lows



Studiophile BX-8 Studio Reference Monitors



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Genelec 1029.LSE

PowerPak Active Surround Monitoring System

On the Bench: page 12

BY BRUCE BARTLETT

Genelec, a company known for its superb monitors, now offers a finely engineered system for surround monitoring. Its 1029.LSE PowerPak includes five 1029A active mini monitors and one 7060A active subwoofer with 5.1 or 6.1 bass management. Applications include closefield monitoring in pro and project studios, remote trucks, broadcast control rooms, and multimedia.

FEATURES

Each 1029A monitor cabinet is rock-solid cast aluminum, finished in grainy black. Drivers include a ported 5-inch bass driver (6 dB down at 65 Hz) and a 3/4-inch metal dome tweeter. Genelec's Directivity Control Waveguide around the tweeter is said to provide uniform directivity and perfect phase and delay uniformity at crossover. Both drivers are protected by a perforated metal grille and are magnetically shielded. Conveniently located on the front of the cabinet are the amplifier power switch, power LED and volume control.

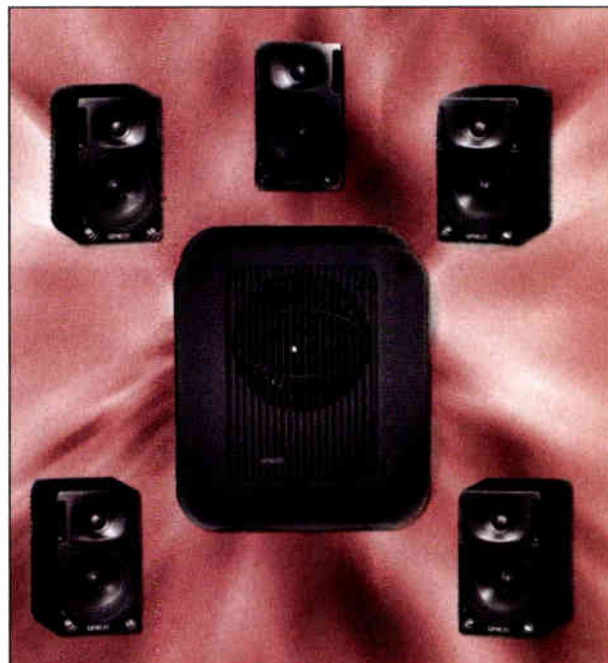
On the back are the amplifier heat sink, var-

ious mounting brackets, a voltage selector switch, an IEC power connector, an XLR input connector and a 1/4-inch input connector. Both audio connectors accept balanced or unbalanced signals. Deeply recessed in the back panel is a four-position DIP switch that adjusts the unit's frequency response: flat, bass and treble tilt and bass rolloff. These settings adapt the speaker to any environment.

According to Genelec, the integral power amp provides 40W for the woofer and 40W for the tweeter at <0.08% THD. Amplifier noise is 90 dB below full output. Maximum peak SPL is claimed to be 110 dB at 1 meter. Subsonic and ultrasonic filters are included. Each 1029A measures 9-3/4 inches (H) x 5-5/16 inches (W) x 7-1/2 inches (D) and weighs 12.5 lb.

The 7060A subwoofer is a piece of work! Its bass reflex cabinet is called a Laminar Spiral Enclosure (LSE). It is made of sheet metal rolled into a spiral and mounted between two thick MDF panels on the front and rear of the sub. The result is a long reflex tube packed into a small space. This construction is said to offer excellent laminar flow and minimal turbulence. A slotted grille covers the 10-inch magnetically shielded woofer cone. Two carrying handles complete the package. Weighing 59 pounds, the 7060A measures 21 inches (H) x 18 inches (W) x 18 (D).

Built into the sub is a power amplifier that produces 120W short-term power at <0.05% THD. Also included are driver-protection circuits and bass management crossover filters for 5.1, 6.1, or stereo systems. Frequency response is rated ± 3 dB from 29 Hz to 85 Hz (or 120 Hz for the LFE channel), and maximum SPL is claimed to



be 108 dB (short-term sine wave).

On the power amp panel are several XLR connectors: LFE in/sum in, sum out, front left in/out, front center in/out, front right in/out, rear left in/out, rear center in/out, and rear right in/out. These connectors handle balanced or unbalanced signals. A 1/4-inch jack accepts a bypass switch that lets you hear just the satellites without any bass filtering.

A Mode LED on the panel turns from green to yellow if clipping occurs, and glows red if the protection circuit has activated. If this LED is hard to see at a distance, you can connect the optional remote LED Kit to an RJ11 jack in the sub panel.

As for controls, a level control adjusts input sensitivity and a DIP switch adjusts rolloff and phase. Another DIP switch provides these options: select 85 Hz or 120 Hz bandwidth for the LFE channel, redirect LFE channel signal above 85 Hz to center channel, switch subwoofer to sum-in mode, set LFE sensitivity to 0 dB or 10 dB, and turn the 85 Hz test tone on or off. This tone is used to match the phase between the sub

continued on page 12 ►

Fast Facts

Applications:
Studio, post production,
broadcast

Key Features:
Five monitors; one subwoofer;
onboard amplifiers; included
bass management functions

Price:
\$4,200 for the complete
system; individually each
1029A is \$545 and the 7060A
sub is \$1,775

Contact:
Genelec at 508-652-0900,
www.genelec.com.

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The New O1V96 Digital Mixing Console From Yamaha



Despite its deceptively small footprint, the new O1V96 digital mixer delivers features most computer recording controllers can only dream about...

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30th
Anniversary
Mix With the Best
File Computers since 1972
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► *Genelec from page 10* and satellites by measurement or by listening. Also on the panel are a mains voltage selector, IEC power inlet and on/off switch.

Genelec's clearly written manual covers the system components, installation, placement, mounting, wiring, setting the tone controls, setting phase and levels,

maintenance and safety. The manual goes into great detail on speaker placement for the satellites and sub, then explains how to set the subwoofer phase and level to correctly match its sound to that of the satellites. Genelec thoughtfully included a sheet with speaker placement angles, and even a measuring tape to help the user

place each speaker equidistant from the listening position.

IN USE

I recommend reading the setup guide before attempting to wire the system. The effort spent in correct setup will pay off in improved sound.

Connections are straightforward. Run the signals from your multichannel monitor source to the corresponding 7060A inputs, then connect the outputs to the 1029A satellites. When the delivery medium will be DVD-A, use the extra rear input instead of "LFE IN" because DVD-A has no LFE channel.

(Genelec responds: Technically Bruce is correct, but we have discovered that some DTS DVDs that have both the DTS tracks as well as the same mixes on the DVD-A

Genelec PowerPak Active Surround Monitoring System

Bench Measurement

Figure 1 shows the anechoic frequency response of the Genelec PowerPak system in a free field. It is nearly flat, ± 2 dB from 35 Hz to 14 kHz. Response at 20 kHz is down only 4 dB. There are some 2 dB bumps at 1,200 Hz and 2,900 Hz, which might create the forward, slightly "hard" midrange heard in the listening tests. A different 1029A that I measured also had a bump at 5200 Hz.

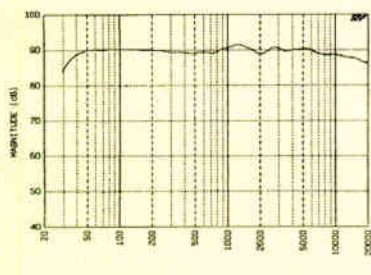


Figure 1. System anechoic frequency response, 1/3-octave smoothed.

Figure 2 shows the maximum effect of the bass and treble tilt controls on the 1029A frequency response. The response curve shown includes room reflections.

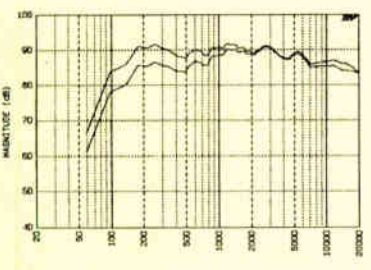


Figure 2. 1029A maximum bass and treble tilt (graph includes room reflections.) Not shown is the response at 30 degrees off-axis. It is very uniform, within 2.5dB of the front response up to 11 kHz.

Figure 3 displays the Energy Time Curve of a 1029A speaker, which correlates with its transient response. The direct-sound spike is extremely sharp, and delayed vibrations are down 30 dB or more. This superb transient response contributes to the system's detailed sound.

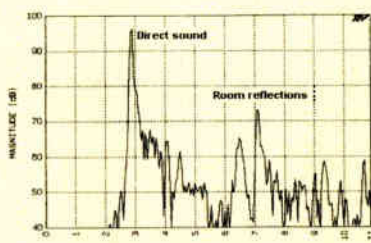


Figure 3. 1029A Energy Time Curve.

Finally, in Figure 4 we see the Total Harmonic Distortion vs. frequency at 90 dB SPL, 1 meter. This graph shows the subwoofer's THD from 20 Hz to 80 Hz and the satellite's THD from 100 Hz to 800 Hz. THD is inaudible above 35 Hz!

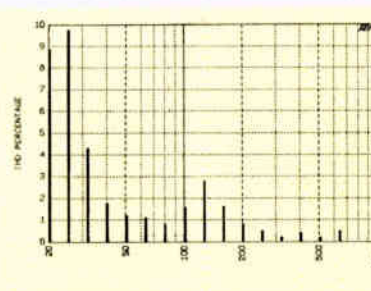


Figure 4. System Total Harmonic Distortion vs. frequency at 90 dB SPL, 1 meter.

Product Points

GENELEC POWERPAK

Plus

- + Smooth and very wide-range
- + Tight, full bass
- + Amazing detail and sharp imaging
- + Solid construction
- + Very low distortion

Minus

- Slightly forward midrange and slightly "clinical" sound

The Score

An excellent, compact surround monitoring system.

tracks do use the LFE channel on both formats. There is no consideration for the +10 dB on the DVD-A tracks, thus when using the MLP analog outputs on the DVD-A player, the +10 dB must be switched in on the subwoofer. This can be a very confusing point for even the most informed listener.)

I placed the 1029A satellites on stands behind my console and around me, toed in. The sub was on the floor, even with the front speakers and about two feet from the wall. In my control room the satellites sounded most natural with a little bass shelving. I adjusted the sub level and phase by ear until it sounded balanced with the satellites. Here are my impressions of the Genelec system reproducing some musical instruments:

Bass: Very deep and tight. Clean. Certain high bass notes seem to be weak. Perhaps

continued on page 14 ►

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ADAM S4V-A Ribbon Studio Speaker

BY JOHN GATSKI

In the November 2001 issue of *Pro Audio Review*, I reviewed the made-in-Germany ADAM S3-A powered monitor and gushed all over it - with its dual 7.5-inch woofers and folded A.R.T. ribbon

tweeter technology.

The S4V-A reviewed here, priced at \$6,800 per pair, is a larger speaker than the S3-A with a single 11-inch Hexacone woofer and a folded ribbon midrange, as well as a folded ribbon tweeter. According to ADAM, a folded ribbon has a larger acoustically-effective area of the driver, which offers more dynamic output, while maintaining excellent dispersion properties.

Versus the S3-A, the larger S4V-A speaker makes an excellent mid or far-field monitor for large control rooms, mastering suites and other high resolution, full-bandwidth listening uses where you want more bass.

FEATURES

The S4V-A powered monitor includes Class A/B discrete amp sections for each of its three drivers, with 150 watt amps for the high and mid folded ribbon drivers and 300 watts powering the Hexacone woofer. The cabinet, which measures 25.6-inches tall by 13.7-inches wide by 14-inches deep, is tapered on the sides for better horizontal dispersion, according to the company.

The speaker features conveniently locat-



ed front panel gain and EQ controls. They include overall input sensitivity (+, - 10 dB), tweeter gain (+, - 4 dB), midrange gain (+, - 4 dB), and shelving filters at 6 kHz and 150 Hz (+, - 6 dB). There also is a front panel-mounted, power switch.

Around back are a master power switch, IEC power cord receptacle and a balanced XLR input (would be nice to have an unbalanced input as well for extra flexibility). The speaker weighs in at about 60 pounds each.

Specifications included a claimed frequency response of 28 Hz-35 kHz, +, - 3 dB. Crossover point is 700 Hz (mid driver) and 2,800 Hz (tweeter).

continued on page 16 ►

Fast Facts

Applications:
Studio, post production, broadcast production, mastering

Key Features:
Three-way; 10-inch Hexacone woofer; folded ribbon midrange and tweeter drivers; triamped (150 watts for high and mid drivers, 300 watts for the woofer); adjustable front-panel controls

Price:
\$6,800 per pair

Contact:
ADAM Audio USA at 805-413-1133, www.adam-audio.com.

► Genelec from page 12

this could be fixed by more careful sub placement and phase adjustment.

Piano: Clear, well defined, not tubby. Slightly edgy or metallic in the midrange.

Drums and kick drum: Very good impact.

Cymbals and percussion: Smooth, with extended high frequencies.

Acoustic guitar: Clear, natural, palpable.

Vocal: Natural.

Sax: Mostly natural but seems to lack body or warmth. This could be fixed by resetting the tone controls.

Electric guitar: Lots of edge or "bite." Not puffy in the lower mids.

Strings, brass and woodwinds: Slightly forward, hard or metallic.

The stereo imaging was razor sharp and

depth was well reproduced. These are finely detailed speakers which reveal the microstructure of transients and reverberation. Listening fatigue was low, but I was a bit annoyed at the forward, slightly hard-edged sound. At least this characteristic tends to prevent the user from creating harsh mixes. In fact, mixes done on the Genelec system translated well to other speakers.

SUMMARY

The Genelec PowerPak system response is very wide range and flat except for a slight-but-audible midrange emphasis between 1,000 and 5,000 Hz. System distortion is extremely low and transient response is exceptional. The frequency response can be adapted to any environ-

ment. What's more, the system can be set up in a variety of configurations.

Genelec's superbly engineered PowerPak — five 1029As and a 7060A subwoofer - is an excellent, compact surround monitoring system.

Bruce Bartlett, a regular Pro Audio Review contributor, is a technical writer, a recording engineer and an audio journalist. He is the author of Practical Recording Techniques 3rd Edition, published by Focal Press.

REVIEW SETUP

NHT Pro A20 monitors; Sony PCM-R300 DAT recorder; Philips CD 910 compact disc player; Goldline TEF-20 sound analyzer; Crown CM-150 measurement microphone.



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► ADAM from page 14

IN USE

I set up the S4V-As on metal Apollo speaker stands that put the tweeter at ear level. They were placed about eight feet from the rear wall, toed in slightly. The listening position was moved from as close as four feet out to eight feet to ascertain the optimum listening point.

Sources included a Fostex DV-40 DVD-RAM recorder with material recorded at 24-bit 192 kHz, a Sony SCD-777ES SACD/CD player, a Panasonic RP91 DVD-Audio player. Separate converters used in the evaluation included, Benchmark Media DAC-1 24-bit/96 kHz sampling D/A and Bel Canto DAC-2 24-bit/192 kHz upsampling D/A.

The sources were routed through either a Legacy High Current monitor preamp, Sunfire Cinema Grand III processor preamp or a Midas Venice 160 console. All interconnects were made with Alpha-Core and Hosa solid silver cables.

Material included high-resolution recordings of acoustic guitar and voice, previously mastered material on CD and a host of SACDs and DVD-As, including some recent SACD recordings by Tom Jung.

After some noise measurements and initial listening, I tweaked the front panel controls a bit to tailor the speaker to my room: lowering the midrange gain down -1 dB and the 150 Hz EQ down -2 dB.

My first impression of the S4V-A, with its bigger box, was its increased bass expression over the smaller enclosure S3-A. I also noticed

that the ribbon midrange made voices sound tighter and, in conjunction with the ribbon tweeter, made voices pop out of the mix versus normal dome tweeters of other speakers. Hence, this speaker should be more analytical for vocal recordings. Sibilance, for example, is more noticeable on ribbons.

My high-resolution recordings of several Martin guitars (D-35, 000-28 Eric Clapton model) and a Gibson Advanced Jumbo, revealed the same accurate shimmer that the S3As showed of those instruments. The airy plucks of the D-35 sounded like the real thing.

Recordings with loud deep bass showcased the larger box's extra low-end, and the Hexacone woofer held up well at levels of well over 100 dB. No problems filling up a

room with clean, deep bass. Kudos to ADAM for front-venting the speakers to avoid the exaggerated mid-bass that can result from rear ports when located too close to boundaries.

enough to withstand the perils of long-distance UPS shipping. When I received the pair, one speaker's corner had been bashed in - as a corner of the box was clearly mashed. We had to order new boxes to safely ship the speakers back. At this price point, ADAM should crate the speakers or, at least, move up to a beefier box to keep them safe during transport.

SUMMARY

The S4V-A allows me to second my very positive impression of the ADAM speaker company. The German-designed and engineered speakers, with their unique folded ribbon diaphragms, are excellent choices for higher resolution audio monitoring. The

The S4V-A powered monitor includes Class A/B

discrete amp sections for each of its three drivers,

with 150 watt amps for the high and mid folded ribbon

drivers and 300 watts powering the Hexacone woofer.

On all recordings, I found the speaker sounds best at a midfield distance of five to eight feet from the listening position. The midrange does not sound as good up close.

I liked the sound of ADAM's power amplifiers. They are not brittle like other powered speakers I have heard. As I have said before, I still prefer separate amps and passive speakers, but with high-end speakers, such as ADAM, Genelec and PMC making strides in speaker amp technology/driver design, the difference is narrowing.

My complaints about the ADAM speaker are really just quibbles: the lack of the aforementioned unbalanced input jack for extra connection flexibility and inadequate packing material for shipping.

Because of the substantial weight of the speaker, the original box is not strong

S4V-A, in particular, with its ribbon midrange sounds more revealing on vocals than other powered speakers I have tried. Of course, these speakers will cost you a big chunk of change, but so will quality separate amps and speakers.

As always, audition before you buy to make sure that this (or any speaker) fits your sonic needs.

John Gatski is publisher of Pro Audio Review.

REVIEW SETUP

Fostex DV-40 DVD-RAM recorder; Alesis MasterLink recorder/player; Sony SCD-777ES SACD/CD player; Panasonic RP91 DVD-A player; Benchmark Media DAC-1, Bel Canto DAC-2 D/A converters; Legacy High Current monitor preamp; Sunfire Cinema Grand III processor preamp; Midas Venice 160 console; Alpha-Core and Hosa solid silver cables.

ADAM S4V-A SPEAKER

Plus

- + Unique driver technology
- + Good power amps
- + Front panel controls
- + Sound quality
- + Strong bass

Minus

- No unbalanced jack

Score:

The powered ADAM S4V-A offers up the company's highly resolute folded ribbon driver sound with an extra kick of bass.

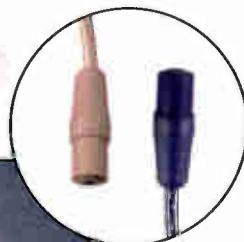
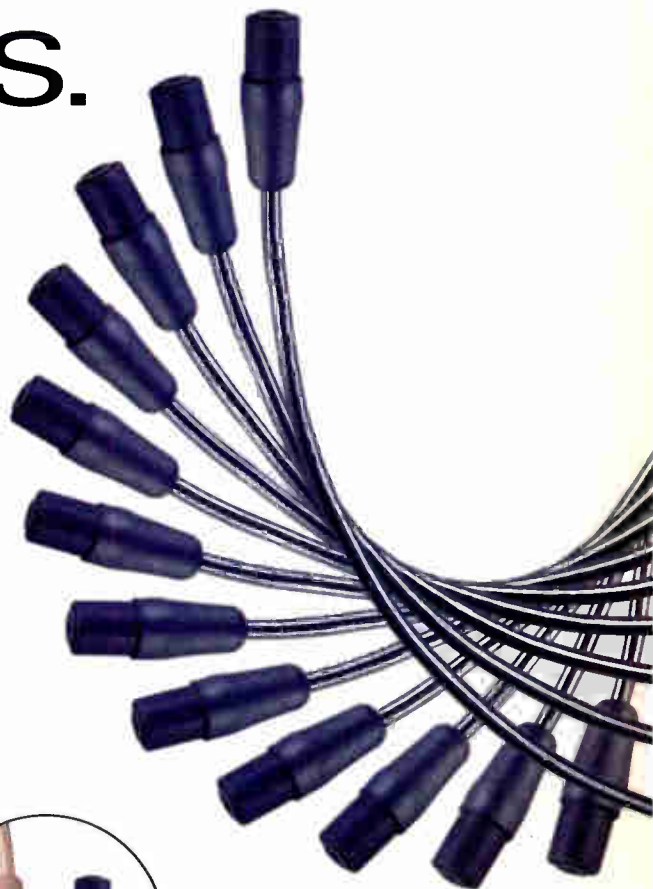
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M-Audio Studiophile BX8 Studio Reference Monitor

BY ALAN R. PETERSON

The Studiophile BX8 Studio Reference Monitor from M-Audio is a highly precise bi-amplified active monitor with a sharp look, a cleanly defined sound and the means to gently tune the monitors to your room acoustics rather than vice versa.

These monitors are as much at home in personal studios as well as commercial facilities, serving well in audio-for-video production, music recording and computer desktop audio/MIDI authoring. And at \$599 per pair are comparable to the cost of passive monitors and separate amplifiers.

In fact, anyone involved in PC-based production using the stock self-powered "audiophile" speakers that came with the computer would do well to upgrade to a pair of BX8s. It just may reveal why mixes done on those computer speakers sound flabby and amateurish when played on other systems.

The BX8 can also be a mean performer for serious gamers, as the manual shows how to hook the unit up to function with a video game console.

FEATURES

To begin with, each BX8 is packaged with an individualized frequency response chart, evaluated and printed before leaving the factory. Even though it would slow down shipping and add expense, I wish more companies did this.

The frequency chart that came with my evaluation unit showed some enhanced brightness from 3 kHz on up to about 15 kHz. I predicted this would mean I had to tip the highs down a little, which I ended up doing.

The BX8 enclosure is constructed of medium density fiberboard (MDF) of very good quality, with a laminated vinyl finish layer outside and plastic foam inside for acoustic damping.

Many monitors today are constructed of



MDF. It is nonresonant, it provides better strength than particleboard construction used in lesser-quality products, it is easy to work in the manufacturing process and more cost-effective than veneer ply cabinets.

The eight-inch polypropylene woofer admirably handles the mid- and low-frequency ranges, while a one-inch silk-domed tweeter carries the highs. The crossover frequency is 1.8 kHz. A blue LED in the woofer's mounting ring shows when power is applied to the monitor.

Fast Facts

Applications:
Audio and video production,
gaming, desktop multimedia

Key Features:
Eight-inch polypropylene
woofer; one-inch silk dome
tweeter; contour switches;
balanced and unbalanced
inputs

Price:
\$599 per pair

Contact:
M-Audio at 626-445-2842,
www.m-audio.com.

The rear panel contains the amplifier circuits, power supply, input jacks and several EQ slide switches. The inputs can be either XLR balanced, TRS balanced or TR unbalanced at line level. Each driver element has its own 65W amplifier, with a common volume pot regulating both. The back panel also includes a bass port that, according to the manual, vents frequencies below 30 Hz.

Circuit board design and loading is first class. The EQ shaping circuit is built around very capable 4558 low-noise op amps. The amplifier ICs are two high performance National Semiconductor Overture 3886 units; one for each driver and generously heat-sinked.

There are no digital inputs to the BX8. It is strictly an analog unit.

The power supply includes a mini-toroidal transformer for efficiency, and two 35 volt, 6800 mF electrolytic caps keep the amplifiers fired up without sagging on the bass notes. There is plenty of fused protection throughout the BX8, including one line fuse on the power receptacle, two on the PC board and a thermal cutout on the toroidal transformer.

M-Audio technicians have a definite eye for detail. The EQ shaping circuit is protected against hum by a grounded shield plate

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► *M-Audio from page 18*

facing the power transformer, and all components carrying lethal voltages are socked down with heatshrink tubing and a potting compound to avoid mechanical buzzing at high SPLs. Even though the AC connections are protected, you should leave any service work on interior components to qualified folks just the same.

Switches on the back panel allow you to tailor the response of the BX8 to the particular room you are working in. The alterations are subtle and are used to shape the response gently rather than severely.

For example, the low cutoff switch has three positions, turning the corner at 37, 47 or 80 Hz. Setting the switch for 80 Hz emulates the response of a small bookshelf speaker, while the 37 Hz setting extends bass response for a little more in-your-chest thump during a mix. You won't get the same effect as you would with a dedicated subwoofer, but there is a definite difference. For a more conventional mix, the 47 Hz setting is proper.

Highs can remain unaffected or be dipped -2 or -4 dB at 5 kHz with the high-frequency compensation switch. A Midrange switch offers up a wide lift centered around 2 kHz to add a little presence to the program material.

Lastly, an Acoustic Space switch offers compensation of the monitor's response depending on its placement in a room and its proximity to walls and furniture.

For those who have typically used PC-type speakers in the past and placed them anywhere they would fit, the Acoustic Space effect requires some explanation

A speaker placed in the center of a room theoretically radiates in an isotropic manner, or into what is called the *full sphere*. Against a wall, the dispersion is contained in a *half sphere*, concentrating the acoustic energy forwards and theoretically increasing it by 3 dB. Against a corner, the mode changes to *one-quarter sphere*, as two reflecting surfaces now concentrate the energy forwards (source: *Audio In Media*, Stanley R. Alten, Wadsworth/Thomson Learning, 2001). Your PC speakers might sound weak just because of where you put them.

Essentially, this means speakers in a corner sound louder, but the increase actually happens in a select frequency range and not across the speaker's entire response.

The Acoustic Space switch gently

reshapes the monitor's response by dipping the range between 500 and 900 Hz either 0, -2 or -4 dB, depending on the placement of the BX8 in the mixing space.

So a position on this switch is selected depending on whether the BX8s are placed on a stand, on a shelf, or on the mixer over-bridge facing you.

IN USE

I used a pair of BX8 monitors on a variety of sources, including a Hercules soundcard on a PC; an Earthworks SR71 microphone preamped through an Allen & Heath WZ20S audio mixer and recorded to a Sony TCD-D8 portable DAT recorder; and a simple, inexpensive portable CD player with a line out connection.

The microphone and mixer provided the most detail. As the SR71 boasts flat

version of the music environment program Reason from Propellerhead Software, I set up a bassline synthesizer with the filter set for low resonance and lots of fundamental tone. With the Low Cutoff control set to roll off at the 80 Hz setting, the BX8 followed along wonderfully without the speaker cone bottoming out. At the 37 Hz setting, the increase in acoustic energy was apparent, but not grossly so.

Lastly, an assortment of CDs played on the portable unit. A bass-heavy recording of the "Mars" movement from Holst's *The Planets* sounded balanced and well-defined without going cloudy on me.

A CD remastering of the classic '60s Perrey-Kingsley electronic album, *The In Sound From Way Out*, played through the BX8s revealed something I had never heard before: ambient noise and room tone where the live musicians were recorded.

The only time I felt compelled to change the switches to alter the response was while playing the CD pressing of the Beatles' *Sgt. Pepper's* album; ironically the one album all others are held up to in comparative judgment. I don't fault the album at all, but the way the monitors interacted with my room. After all, that is why the switches are there.

I wish I had the opportunity to do an audio mix for video on the BX8. As the units are magnetically shielded and worked as well as they did with my computer soundcard, I would predict them to be admirable performers around computer-based editing systems running such programs as Adobe Premiere or Final Cut.

SUMMARY

There are many powered monitors available, and in this price range our attention tends to head towards names such as Alesis, Event Electronics or Behringer, among other excellent manufacturers.

As such, M Audio has to exert an effort to get you to examine the BX8. But once they get you there, you should like what you hear: Fine control over the frequency contour of the monitor, plenty of clean power and a price that places it on par with other manufacturers.

Alan Peterson coordinates imaging and talk programming at WMET-AM, Washington D.C., and contributes articles and photography to PAR. He can be reached at alanpeterson@earthlink.net.

Product Points

M-AUDIO BX8 MONITORS

Plus

- + Versatile performer in most studio situations
- + Loud and clean
- + Frequency response charted at factory
- + Good construction for an under-\$600 active monitor

Minus

- No digital input
- Response favors the high frequencies

The Score

A bright sounding, well-made powered monitor that can hold its own against the competition.

response to beyond 20 kHz, I had an uncolored representation of my voice. I found it most pleasing with the high-frequency compensation at -4 dB and the midrange switch flat. Since the speakers were set on a tabletop, I also took out 4 dB on the Acoustic Space control.

My vocal recording carried power and clarity. As there is not a lot of very low (< 80 Hz) bass energy in the male voice, the low cutoff switch revealed nothing on my vocal recording.

The computer soundcard fared better in evaluating the low end. Launching a demo

Legacy PointOne Powered Subwoofer

BY JOHN GATSKI

I have made no secret that I have been a Legacy Speaker fan since the early 1990s. In fact, my reference monitors are the Legacy Classic II ribbon monitor towers. Though more often associated with audiophile/consumer speakers, distributed through a network of about 50 dealers nationwide, Legacy also sells a significant number of monitors into the pro realm, including tracking studios and mastering facilities and post.

The Point One powered subwoofer is the



company's signature subwoofer and, in pro terms, is designed for flat bass down to 18 Hz at levels that can fill up a large studio room. It is ideal for music or surround LFE effects channel in Dolby Digital, DTS, SACD or DVD-Audio.

THE INSIDE SCOOP

The beautifully made Point One sub, which is available in various wood finishes, including studio black oak, uses heavily braced cabinets that are designed not to color the bass at loud levels. It sports a 15-inch, spun aluminum, rear-mounted active woofer, and a 15-inch paper cone, bottom-fired passive radiator, which functions like an elaborate porting system, helping to augment the low frequency extension of the box. Dimensions are 24-inches tall, 17-inches wide and 17-inches deep. Weight is 95 pounds.

The sub is equipped with a 750-watt, Class

D, switching power supply amp. Connections include optional balanced XLR LFE input, L-R RCA unbalanced inputs and an unbalanced RCA LFE input. In the LFE inputs, the crossover can be switched out to enable processor-controlled bass of a 5.1 system. The Point One also has speaker level inputs.

The front panel controls include level, frequency slope of the crossover (45 Hz - 150 Hz, 18 dB per octave), phase (0 degrees to 180 degrees) and a blend function for adding or reducing gain from 35 - 50 Hz (basically a built-in version of a graphic EQ).

All Legacy speakers feature a 10-year warranty. The retail price of the Point One is \$2,400.

OUT IN THE FIELD

With its ability to go real low, the Legacy Impact can move some bass air! From the LFE sound effects of multichannel surround to hip hop, the Legacy is near impossible to run out of gas. It can easily reach in excess of 100 dB at 20 Hz and it does so cleanly without a hint of amp strain. The sub can actually deliver audible (or felt) bass to 10 Hz, depending on the room.

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Roland M-1000

Digital Line Mixer

BY DR. FRED BASHOUR

One built-in shortcoming of just about every digital mixer is its inability to mix different stereo digital sources (such as keyboards, samplers, CD recorders, DAT machines, etc.) within the digital domain—even if they're all supposedly at the same sample rate (say, 44.1 kHz). A digital audio stream consists of two components, the word clock and the digital data, and if various sources' word clocks are not identical, their digital data cannot be mixed together — or even coexist — on the same digital bus. The Roland engineering team has developed an elegant solution to this problem in their new M-1000 (\$695), and it saved my ass big time on a remote recording session recently in NYC!

FEATURES

A single-rackspace unit — with platinum front panel, colored knob inserts and



rows of multicolored LEDs for level and clock source — the Roland M-1000 packs an awful lot of digital mixing and sample rate conversion technology into a very small package, only 6 5/8 inches deep. From left to right on the front panel are an analog input level pot with -10/+4 dB sensitivity switch and four digital input level pots mapped to the four S/PDIF coaxial rear panel inputs; the first knob's section also includes a fiber optic TosLink S/PDIF input, and a switch for selecting between the two. With those four digital input controls, one can not only input the digital data, but also fade it appropriately; there is no gain, but the level can fade all the way down.

Next, roughly in the middle of the front panel, is a master output level control with a concentric balance pot. This controls the analog output level, the digital output level, as well as the USB feed to a computer. Although the digital output is another coaxial RCA jack on the rear panel, here on the front one finds a parallel Toslink output as well. Next comes a TRS headphone jack and its associated level control, followed by two vertical columns of seven multi-colored LEDs for showing level — four greens, two yellows, and a red "clip" one on top. Finally, we come to another column of seven LEDs (with two more off to the side) which show clock source, sampling rate, and lock condition. The power switch completes the front panel.

The rear panel is a little sparser, with a multivoltage IEC AC connector, a pair of word clock BNCs (with 75-ohm termina-

tion and thru on/off switches), and the USB port. The rest is just standard I/O jacks—a pair of balanced TRS jacks at +4 dB for monitor out, a pair of balanced XLRs for main master out, and the aforementioned coaxial RCA digital output. Finally, we come to the four RCAs for digital input, and a pair of unbalanced 1/4-inch analog inputs.

For the spec-conscious, the ADC is done at 24-bit, 64X oversampling, the DAC at 24-bit, 128X oversampling, and the internal processing is 56-bits fixed. The unit can be set to 96 kHz, 48 kHz and 44.1 kHz internal clock, but can accept external clocks all the way down to 32 kHz, as well as 88.2 kHz. Digital Input 1 can accept varispeeded rates and pull-ups/pull-downs, while inputs 2, 3, and 4 will lock only to the standard fixed sample rates.

The USB connection is supported by Windows XP/2000, Windows ME/98, and the Mac OSs OS X down to 8.6. "Advanced Mode" and "Standard Mode" USB drivers are supplied on a CD with the M-1000.

IN USE

So what happened at my big classical recording session last week that made the Roland M-1000 such a lifesaver? Well, the short story was that the Digital Audio Denmark ADDA 2408 (which I was using as a multichannel monitor DAC) — just like all other digital mixers which accept eight-channel digital inputs — didn't want to allow me to audition playback of my Superscope PSD-300 CD recorder through a stereo pair of its four AES/EBU

continued on page 24 ►

Applications:

Digital studios, keyboard rigs, remote recording setups — anywhere one needs to connect lots of different pieces of digital gear.

Key Features:

24-bit; digital line mixer with four stereo pairs of digital inputs; built-in sample rate converters; 56-bit internal processing; USB and word clock I/O; stereo analog and digital outputs

Price:

\$695

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Roland at 323-890-3700,
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—Tom Jung, *Pro Audio Review*, May 2003



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► Roland from page 22

inputs. The problem was that the other three AES/EBU inputs were being fed from six channels of my DTRS recorder, and my Danish review unit lacked its separate AES-S/PDIF I/O expansion card — that would have enabled multiple separate digital stereo monitoring scenarios. I really wanted to check the quality of the CDs I was making for the artist through those wonderful upsampling Danish DACs.

But then a light bulb went on I my head. What if I were to clock the Roland (at 88.2 kHz) from my Crane Song Spider mixer (which was the system clock on my session), input the digital output from the Superscope recorder into the Roland, and then send the Roland's sample rate converted output version of the CD-R playback to the Danish unit's AES/EBU input 4? Presto; it worked great! I know there were several other ways to skin that cat, but the Roland was there, and it did the job perfectly — just like a Swiss Army Knife is supposed to do.

Back at the studio, I was able to use the M-1000 in a more typical fashion. I filled its digital inputs with playbacks from my Sony TCD-D10 DAT recorder, that Superscope CD recorder, my Kurzweil K2600XS keyboard, and the stereo output from a Fostex VF-160 multitracker I had on hand for review, and its sole analog input from my Sony NS999ES SACD player. We're talking different sample rates, bit rates, analog — the whole nine yards.

I fed the Roland's digital output to my 96 kHz stereo master recorder (an old Sony PCM 800 with an Apogee PSX-100 and Spectral Translator Plus wrapped around it), its master analog output to a pair of Dynaudio BM-6A powered monitors, and its monitor output to my control room monitor preamp. Everything "sunk up" perfectly, and the sound of the Roland was quite nice. Perhaps I should point out that its built-in SRC circuits enable easy "upsampling" of 44.1 kHz CD and DAT playback to 96 kHz, and the M-1000's DACs sound very good. The sound of the Miles Davis classic *Kind of Blue*, as played back from the SACD, resampled into PCM at 96 kHz and converted back to analog in the Roland's output section — while certainly not identical to the source

Product Points
**ROLAND M-1000
DIGITAL LINE MIXER**
Plus

- + Can synchronize (and digitally mix) four completely different digital inputs
- + Word clock or 44.1, 48, or 96 kHz sample rates
- + Good sounding 96 kHz stereo DAC

Minus

- No provision for dithering 16-bit sources.

The Score

I know I'm not supposed to call anything a "Swiss Army Knife," but if this isn't one, I don't know what is! I've found it to be absolutely indispensable in my studio.

— was definitely more than acceptable.

The only caveat I noticed was that if one feeds the M-1000 with wide dynamic range 24-bit digital material, and connects its digital output to a 16-bit device like a DAT or CD recorder, the Roland's lack of dither and/or noise-shaping circuitry produces the typical truncation artifacts. But these days, most engineers are aware of this problem, and have learned to dither before reducing 24-bit material.

SUMMARY

So what's not to like about this versatile little gadget? It does things that nothing else in my studio does, sounds good, and is reasonably priced. I might even say that I can't live without it!

Dr. Fred Bashour holds a Yale Ph.D. in Music Theory, and currently performs as a jazz pianist and church organist, in addition to working as a classical music producer/engineer and consultant to university music libraries on the digital storage of course listening materials. During the past 25 years, he has received credits on hundreds of recordings released on over a dozen labels. He is also a contributor to Pro Audio Review.

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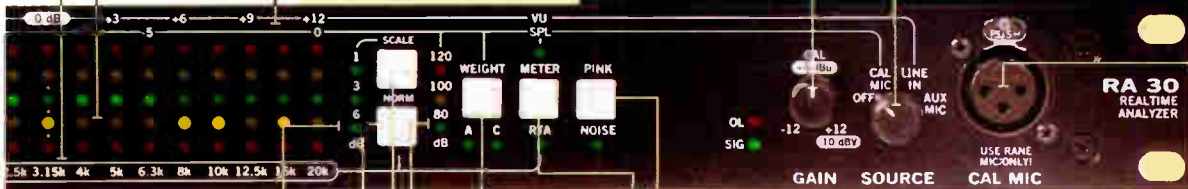
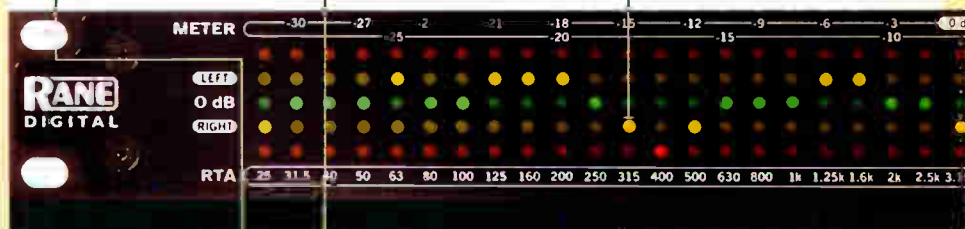
One rack space. Three precise measurement tools. If the RA 30 was just an RTA, it would be a super value: Thirty 1/3-octave bands with three display scales. Built-in pink noise generator with level control. And our laboratory-grade Rane MIC 2 condenser microphone.

Horizontal SPL and VU scales on the top.
RTA frequency bands on the bottom.
150 really bright LEDs.

Gain helps adjust the RA 30 to 0 dB in RTA mode, selects default SPL mode level, or chooses between +4 dBu and -10 dBV ranges in stereo VU mode.

Source switch selects between front panel microphone input, rear panel line input (stereo or mono), rear panel auxiliary mic input or OFF if you get tired of the light show.

How did we get a 24 dB measurement range calibrated in 1 dB increments into a one-rack-space analyzer? By giving you three scales: The RA 30 is switchable between 1 dB, 3 dB and 6 dB.



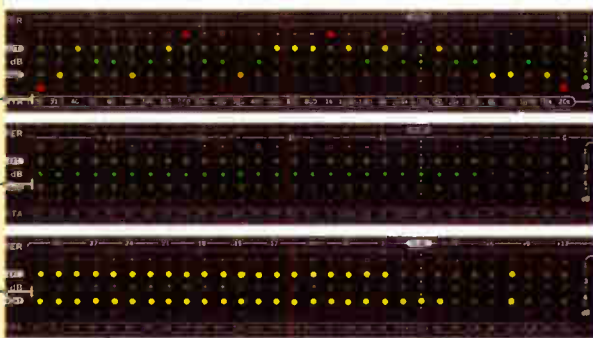
RTA range display: 1, 3 or 6 dB.
Normalize selects 0 dB reference point in RTA mode; enables Peak Hold function in stereo VU mode.

Selects A- or C-weighting for SPL meter.
LED array shows SPL maximum range: 120, 100 or 80 dB.
Scale selector.

Although it's gray, this is the Pink Noise generator button.
Meter button toggles between RTA and SPL/VU modes.

Front panel input for the calibrated test microphone we include free.

RA 30 as a super-accurate realtime analyzer.
RA 30 as a super-accurate Sound Pressure Level meter.
RA 30 as a super-accurate Stereo VU meter with Peak Hold.
Included with the RA 30 is a measurement microphone with 25-foot cord.



But the RA 30 is more than just a highly accurate RTA. It's also a Sound Pressure Level meter with switchable A- or C-weighting. Finally, the RA 30 is an incredibly accurate stereo VU meter — according to one reviewer, "...the only meter I have tested that correctly indicates the 3 dB peak-to-rms ratio of a sine wave." Visit our website or call us for more information on the RA 30, the world's first Triple-Play RTA.

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Blue Sky ProDesk Sat5

Active Satellites and Sub8 Active Subwoofer

On the Bench: Page 28

BY BRUCE BARTLETT

This monitor system is the most realistic and musical sounding I have heard in many years. The Blue Sky ProDesk system (\$1,195) includes two small satellite speakers and one subwoofer. Applications include monitoring for stereo recording, broadcast and digital audio workstations.

FEATURES

Each satellite speaker cabinet is very dense and inert, measuring just 6.6 inches (H) x 10.9 inches (W) x 10.2 inches (D) and weighing 24 pounds. Finished in satin gray, the cabinet walls are made of 3/4-inch MDF with a one-inch baffle on front and rear. Styling is sleek and attractive, and construction quality is excellent.

In each satellite is a shielded 3/4-inch tweeter with a dual-concentric diaphragm and integral waveguide. The acoustic-suspension woofer is a shielded unit of 5.25-inch diameter with a cast aluminum frame, aluminum alloy cone and 1.5-inch voice coil.

On the rear of the cabinet are the amplifier heat sink, on-off switch, IEC power connector,



gain pot (0 to infinity dB) a switchable 80 Hz high-pass filter, and an XLR input that accepts balanced or unbalanced signals. The satellite amplifier provides 60W for the woofer and 60W for the tweeter at 0.01 percent THD.

Behind the black fabric grille of the subwoofer we see an 8-inch high-excursion woofer with an aluminum alloy cone. The woofer has a cast aluminum frame and two-inch voice coil. Cabinet walls are 3/4-inch with one-inch baffles on front and rear. The sub measures 13 inches (H) x 16 inches (W) x 13.4 (D) and weighs 48.5 pounds. Conical isolation feet are included. The sub has a 4th-order low-pass filter at 80 Hz. Built into the sub cabinet is a power amp that provides 100W at 0.01 percent THD at 100 Hz. On the back panel are the amplifier heat sink, IEC power connector, on-off switch, gain pot (0 to infinity dB), and six XLR connectors. These connectors are labeled Right in/Right out, Left in/Left out, and Sub in/Sub out.

According to the manufacturer, the satellite frequency response is ± 1.5 dB from 200 Hz to 10 kHz (-3 dB at 80 Hz - 20 kHz), while the sub response is ± 3 dB from 35 Hz to 200 Hz in a typical room using a direct feed (i.e. without the low-pass filter engaged).

The user manual is clear, offering tips on setup, signal connections, controls and con-

nectors, and specifications. Instructions are given for calibrating the system with pink noise, an SPL meter and a 1/3-octave RTA.

LISTENING TESTS

I found the ProDesk system easy and intuitive to set up, thanks to the large, clear block diagram on the sub's back panel. I placed the ProDesk satellites on stands behind my console, two feet from the rear of the speakers to an absorbent wall behind them. They were at ear height and toed-in to aim at me. The satellites needed to be placed far from adjacent walls to avoid a mid-bass buildup. I placed the sub under the console and adjusted its level by ear until it sounded balanced with the satellites. Here are my impressions of the ProDesk system reproducing some musical instruments:

Drums: Clear and smooth.

Kick drum: Tight. Good but not aggressive attack. A bass-drum roll is very audible, but is not ultra deep.

Cymbals and percussion: Smooth, delicate and sweet, with extended high frequencies.

Piano: Mostly uncolored. Slightly warm, not metallic or harsh.

Electric guitar: Combines warmth and "bite."

Electric bass: Fairly deep and tight. Full. Well balanced with the rest of the audio

continued on page 28 ►

Applications:

Studio, multimedia, project studio

Key Features:

Two powered satellite speakers; one powered subwoofer; satellite - 5.25-inch aluminum alloy cone woofer; 3/4-inch tweeter; magnetic shielding; subwoofer - eight-inch aluminum cone woofer

Price:

\$1,195

Contact:

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nuendo... a producer's dream



chuck ainlay

Arguably the hottest producer/engineer in Nashville, **Chuck Ainlay** recently put the flexibility of the NUENDO system to work on **Mark Knopfler's** latest solo release *The Ragpicker's Dream*.

"My progress from using NUENDO as an editor with EQ to a full multi-track recorder, processor, and sequencer has been astonishing to me!"

Chuck was able to combine tracks transferred from analog with comps of Mark and his guitar, overdubs by other musicians, and even material recorded on the rooftop of Mark's London studio with a laptop using the NUENDO Audiolink 96 series hardware. NUENDO gave Chuck the technical ability and sound quality that would have not been possible with analog while allowing him to capture all the magic of live recording.

"There are so many ways that I have found the NUENDO system superior to all others that I will never be able to go back."

nuendo producers group

This group of world-renowned producers includes industry notables such as Chuck Ainlay, Elliot Scheiner, Phil Ramone, Frank Filipetti, Alan Parsons, Rory Kaplan and Greg Ladanyi know what it takes to be the best. They also know why NUENDO is the best digital audio production tool available and have partnered with Steinberg to ensure that it will continue to meet the needs of tomorrow.



Nuendo - Another dream comes true.

► *Blue Sky* from page 26 range. Uniform loudness of notes. Very deep notes are slightly weak (maybe with some

BLUE SKY PRODESK

Plus

- + Smooth, uncolored and realistic
- + Tight, full bass
- + High value
- + Excellent detail and sharp imaging
- + Solid construction
- + Low distortion and listening fatigue

Minus

- Extreme deep bass is weak, but this might be my listening room.
- Slightly warm-sounding near surfaces (but this is easy to get used to).

frequency doubling).

Acoustic bass: Full but not overwhelming. Tight and well controlled.

Acoustic guitar: Gentle, delicate and warm. Sax: Realistic. Pleasantly warm and mellow. Edge or breathiness is somewhat muted.

Strings, brass and woodwinds: Natural timbres. No harshness.

Flute: Natural, with a realistic amount of breathiness.

Voice: "Human" sounding. Not too much sibilance unless the voice was recorded with a high-frequency boost.

I did some mixes on the ProDesk system and almost instantly I felt comfortable with its sound and found it very easy to work with. The mixes translated well to other speakers.

Overall, these Blue Sky monitors sound musical and pleasant. They have very low distortion and low listening fatigue. Imaging is sharp and the sense of depth is impressive. I heard unusually good separation of instruments in loud, complex mixes. What's more, the system provides excellent resolution of reverberation.

Blue Sky ProDesk Sat5

Active Satellites and Sub8 Active Subwoofer

Figure 1 shows the anechoic frequency response of the Blue Sky ProDesk system in a free field. It is nearly flat, ± 3 dB from 40 Hz to 19 kHz. There is a 3 dB dip around 2.2 kHz, which can contribute to a lack of harshness.

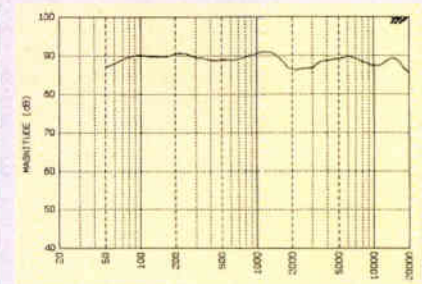


Figure 1. System anechoic frequency response, 1/3-octave smoothed.

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Bench Measurement

Not shown is the response at 30 degrees off-axis. It is very uniform, within 2.5 dB of the front response up to 12 kHz. A producer and engineer seated side-by-side will hear almost the same tonal balance from the ProDesk system (except for the usual phase cancellations of dual sound sources heard off-axis).

Figure 2 shows the Energy Time Curve of a satellite speaker, which correlates with its transient response. The direct-sound spike is very sharp, and delayed vibrations are down 28 dB or more. This sharp transient response contributes to the system's fine sense of detail in time and space.

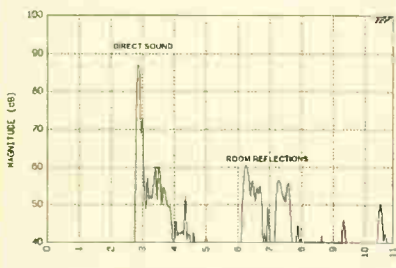


Figure 2. Energy Time Curve.

Figure 3 shows the Total Harmonic Distortion vs. frequency of the subwoofer (from 20 Hz to 80 Hz) and the satellite (from 100 Hz to 800 Hz). THD is inaudible except marginally at 100 Hz and below 50 Hz.

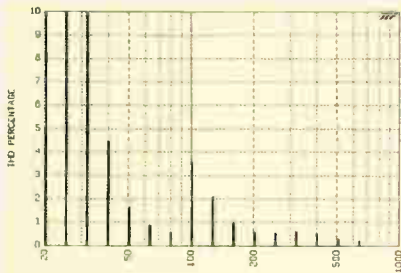


Figure 3. System Total Harmonic Distortion vs. frequency at 90 dB SPL, 1 meter.

SUMMARY

The Blue Sky ProDesk sub/satellite system sounds wonderful and has impressive measurements. It offers low fatigue and excellent resolution of detail. Near large surfaces, its sound becomes slightly warm in the upper bass but this is not judged to be a problem. Although the lowest bass notes lack weight, this might be an anomaly of my control room.

Since the ProDesk system is self-contained, easy to set up, and compact, a group of SAT5s and a SUB8 subwoofer could make an excellent surround monitoring system.

Bruce Bartlett is a technical writer, a recording engineer and an audio journalist. He is the author of Practical Recording Techniques, Third Edition, published by Focal Press.

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Westlake Audio Lc4.75 and Lc24.75 Studio Speakers

BY STEPHEN MURPHY

Westlake Audio, manufacturer of high-end loudspeaker systems for more than 30 years, continues the downward expansion of its popular Lc speaker line with the introduction of its smallest models to date.

The Lc4.75 two-way enclosure (\$1,125 per pair) and Lc24.75 two-way center channel speaker (\$1,125) are primarily targeted for use as a compact multichannel monitoring system, though the speakers will find their way to many other uses as well.

FEATURES

Westlake introduced its affordable Lc series six years ago to make the quality of its high-end BBSM line available to a much wider audience. The Lc line found great success with project and small-to-midsized commercial studios with many fans in the consumer audiophile market as well. About two years ago, Westlake extended its Lc range with the introduction of the fairly large Lc3w12 (105 lbs. each!) and the compact Lc5.75 (18 lbs. each) speakers.

Buoyed by the smaller speaker's popularity, and with an eye towards the ever-increasing home studio/home theater market, Westlake

recently rolled out the Lc4.75 and Lc24.75 compact speakers. One marketing concept is to use four or more of the ultra-compact LC4.75s with an Lc24.75 center speaker to form an affordable high-quality surround monitoring system.

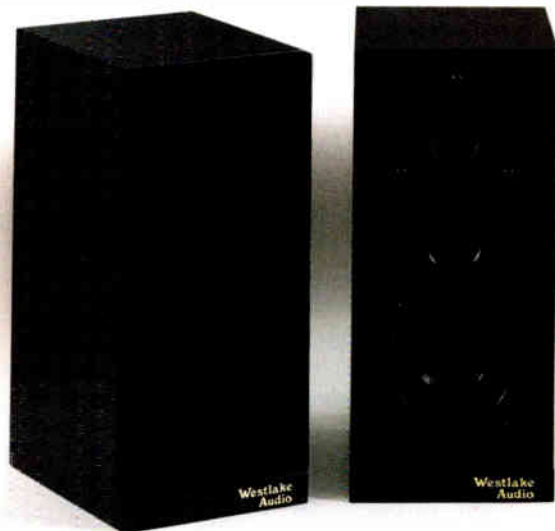
Other suggested uses for the new speakers include using two of the Lc24.75 center channel speakers in a stereo pair or to use a pair of the Lc4.75s for quality monitoring at a video or audio workstation. It should be noted that the Lc24.75 center channel speaker is also a good acoustic match for use with the slightly larger Lc5.75 model speakers.

The Lc4.75 is 5 x 12 x 7 inches and weighs in at just 12 pounds. The system is housed in a bass reflex-type enclosure featuring the manufacturer's trademark solid construction and extensive electro-mechanical and acoustical dampening.

The two-way system pairs a 4-inch woofer with a 3/4-inch soft dome tweeter and in traditional Westlake form, the speaker features a hand-built crossover with point-to-point wiring. Manufacturer's stated frequency response is 65 Hz - 20 kHz, ± 3 dB, sensitivity is 85 dB (at 1 meter/2.83-volt input). Max power handling of the Lc4.75 is 60 watts continuous and up to 200 watts peak; nominal impedance is 7 ohms, 4 ohms minimum.

The Lc24.75 center channel speaker features the same build characteristics as described above but is outfitted with dual 4-inch woofers flanking the 3/4-inch soft dome tweeter in the center. Departing somewhat from the traditional Lc design and appearance, the Lc24.75 features an elongated horizontal enclosure with dual bass reflex ports.

The magnetically shielded enclosure measures 6 1/4 x 16 1/2 x 7 inches and weighs 18



pounds. Frequency response is rated at 65 Hz - 20 kHz ± 3 dB, with a sensitivity rating of 89 dB (at 1 meter/2.83 volt input). Impedance is rated at five ohms nominal/three ohms minimum with power handling of 75 watts continuous/225 watts peak. Both models connect via dual banana, five-way binding posts and are equipped with removable speaker grilles.

IN USE

I must admit it was a funny site with the diminutive Lc4.75 speakers looking like something from "Honey, I Shrunk the Westlakes" as they sat next to my pair of Westlake Lc8.1 monitors. Although the Lc4.75 is less than a quarter of the size of the 8.1s, the "Mini Me" Westlakes packed some punch, as I found out during the evaluation.

Since movies were on my brain, I figured I would jump right into setting up the speakers in their intended surround configuration: as five channels of a 5.1 surround mix. So as not to start from scratch, I simply moved my existing (and carefully measured) surround speaker setup out and put the Lc4.75s in their place, raising the five speaker stands up nearly 4 inches to bring the new monitors up to ear level.

I ran high-resolution Audience speaker cable from a Bryston 9B SST five-channel
continued on page 32 ►

Fast Facts

Applications:

Studio, multimedia, broadcast and remote audio production

Features:

Lc4.75 - two-way; ported enclosure; 4-inch woofer; 3/4-inch soft dome tweeter;
Lc24.75 - two-way; shielded; dual 4-inch woofers; 3/4-inch soft dome tweeter

Price:

Lc4.75 - \$1,125 per pair;
Lc24.75 - \$1,125

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► Westlake from page 30

amplifier to the Westlakes. After some fine-tuning of levels, I was ready to go... almost. I still needed a subwoofer to reproduce bass-managed and LFE signals. Curiously, Westlake does not offer a matched subwoofer for the set. This poses a bit of a hurdle for those attracted to the integrated performance and simplicity of setup in a unified surround system.

But, like it or not, subwoofers are a necessity in surround mixing and reproduction. I tested several different subwoofers from other manufacturers during the evaluation. Speakers ranged from eight to 12 inches, and levels and crossover points were carefully set for each model.

For the initial “get familiar with the speakers” period, I spent several days auditioning the speakers without any subwoofer. On their own, the speakers pack an impressive and tight punch – one that seems ideal for close monitoring in tight spaces.



Westlake Audio Lc24.75

For lack of better adjectives, I can describe the Lc4.75s as having a focused, present middle range with a gradual de-emphasis in the upper reaches and a rather steep low cut off. Within their specified frequency range, the speakers exhibit a strong family resemblance to their big brothers, best characterized as tight, detailed and accurate.

In addition to auditioning the speakers on their own, I also regularly used the front left and right Lc4.75 speakers as an alt reference speaker pair during several stereo mix projects.

Once the pairs were level compensated, switching between the L8.1s and their smaller relations was an easy transition. On other projects, I used a pair of SP Technology Time Piece monitors as the main pair, with the small Westlakes as an alt pair; again the two sets of differing-sized speakers made a useful

continued on page 61 ►

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Denon DN-780R

Stereo Cassette Tape Deck

BY WAYNE BECKER

Amidst all of the reports and industry comments telling us how the cassette is dead, Denon has introduced yet another stereo cassette tape deck to the market, the DN-780R. But what's different about this deck? Where's the need?



FEATURES

A quick overview of the front panel reveals a dual-well, auto-reverse tape transport system with an HX Pro headroom extension system. Yes, a dubbing deck, but also much more. Each transport sports a veritable cornucopia of optional features and functions one would need for the most demanding cassette duplication process. Of course there are the standard transport controls; the master/slave control is used to set the deck for standalone operation or linking them (slave) with other DN-780Rs. Next, you can select between none or Dolby B or C noise reduction, and an input level control adjusts both channels' input levels. There is a headphone level control and a headphone monitor select so you can choose Deck A, B or a mix of both.

A line input select allows you to choose Line A or B input. Microphone inputs are available and can be selected and adjusted

Applications:
Installation, studio, broadcast

Key Features:
Dual autoreverse transports;
synchronized recording;
cascade recording; Dolby B & C and HX Pro; pitch control;
independent and combined
headphone monitoring; music
search

Price:
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www.usa.denon.com/pro.

with the main input level control, but they are 1/4-inch unbalanced inputs, so obviously this deck is not meant for a professional recording gig, but could work well for a meeting or dictation. There is a Reverse Mode button that allows you to choose One Side recording, Continuous (both sides) Relay (relay playback) and Cascade for continuous recording/playback on multiple units! Next to that is the Twin Recording button. Pressing this button will set both decks A and B to the recording pause mode. A pitch control varies the speed approximately 12 percent. A tape counter (relative not actual) along with a counter reset button. The illuminated display is easy on the eyes and very well laid out. I should point out that counter controls are available for both transports.

On the rear panel things are somewhat less congested. There are phono jacks for inputs and outputs for both decks A and B; a Deck A Output Select; either Deck A or a mix of Deck A and B. An external sync in and out (you connect these with a common dual phono to phono cable), a cascade in and out (connect these for cascading multiple decks) and an RC-in control jack for a wired remote. There is an RS232 control 9-pin D-sub connector and a parallel 25-pin D sub connector. Whew!

IN USE

Well, thank goodness the manual is written in seven languages (and very informative), or I would be lost. But seriously, at least all of the instructions are sectioned by language and easy to follow. The deck is so intuitively laid out that

I had no problem popping in a tape and getting a level. The input level controls are large and easy to manipulate, and the input select was well marked. Having a deck with two bidirectional, auto-reversing transports provides a lot of flexibility. Thanks to the direction indicators on the display, you always know what mode and tape path direction a transport is in. I know this may seem like a simple thing, but this deck offers quite a few recording, dubbing and cascading options, and depending on what you are doing, you will be referencing these displays. I made a recording from some CDs using pop music with female and male vocals as well as some jazz and classical genres.

The display LED level meters were very small due to display real estate, but were easy to read and facilitate a level.

Typical of today's decks, it should be noted that in the monitoring mode (record button depressed but transport not engaged), you are not monitoring though a repro head but the input to the record head. You will need to know the formulation and headroom of the tape you are using and make a test over the loud portion to ensure you do not whack the tape with too much level. Especially with HX Pro, it seems that the more you increase the level to tape, the brighter the audio gets. The reproduction of the music was probably as good as the cassette medium can provide.

When using the Dolby B for the same selection, the brightness was diminished but some image depth was lost. I also noticed when trying to find certain cuts on the cas-

continued on page 36 ▶

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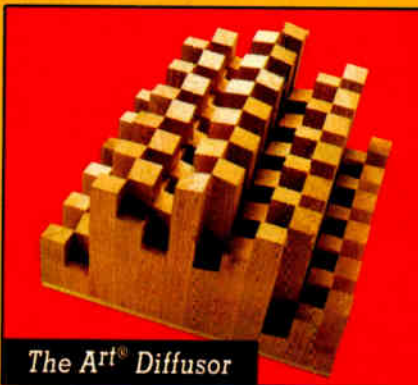
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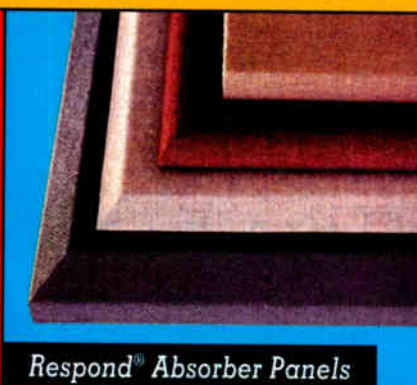


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► Denon from page 34

sette that the music search function did not pick up the beginning of some tracks. This is due to the search function's need for a four-second gap between cuts.

The Twin Record Mode worked well and looks like it would be especially useful when making multiple tape copies and cascading multiple units. Keep in mind that you have to be sure you check the tape direction of both bidirectional transports before hitting the record function to ensure you are recording the tapes on the same side. The twin record button does not automatically adjust this for you.

The microphone inputs are for unbalanced high-impedance microphones. I only have balanced microphones and would have had to convert them through a transformer, so the test would not have been completely accurate. My recommendation is that in this day and age if you are going to put microphone inputs on any recording deck, they ought to be balanced, low-impedance capable. I was also unable to test the cascading function of the deck since I only had one unit to test. But the directions to facilitate this type of operation seemed straight-forward and simple. The combined output mode that allows you to monitor the record and playback of both transports with a single program input is very useful. There are also separate outputs available for each transport as well. The headphone output located on the front of the unit has its own level control and monitoring selector as well.

SUMMARY

Denon has always been known for its product quality and feature sets. The DN-780R does not disappoint and offers a well-designed, robust feature set for recording using the cassette medium. The sound quality is good and the machine is well-built.

Wayne Becker is vice president of sales for Communication Systems, Inc. and has worked in the pro audio and systems integration business for 23 years. He also owns Westwires Digital USA, a music production and consulting company based in Allentown, PA. He can be contacted at wbecker@systemsbycsi.com.

REVIEW SETUP

Yamaha O3D console; Crown PS200 amplifier; Fostex RM856 monitors; Fostex T-20 headphones.

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Step 2: Attach Docking Plate.



Step 3: Terminate wiring and position docking plate.



Step 4: Attach Speaker.

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HEAR THE POWER OF TECHNOLOGY

Audio-Technica AT899

Subminiature Microphone

BY TONY ANGELINI

When considering a microphone for use in the theatre, musical or otherwise, size does indeed matter, as does sound quality. Audio-Technica's new AT899 subminiature condenser microphone certainly delivers in both departments, and with characteristics that compare with larger A-T microphones it will leave the budget conscious sound designer quite satisfied.

FEATURES

The AT899 (\$299) element housing is .63 inches long and .20 inches in diameter with a non-reflective black finish. The long 9.8-foot cable is 0.08 inches in diameter. Its three-pin TA3F output connector mates with a three-pin TB3M connector on the provided AT8537 power module, which terminates to a three-pin XLR connector.

The mic element is a fixed charge condenser with an omnidirectional polar pattern that boasts a frequency response of 20 Hz to 20 kHz. The power module has a flat/low-rolloff at 80 Hz, 12 dB/octave. Phantom power can be provided by an external 11V to 52V DC phantom power supply, or a 1.5V AA battery placed in the power module should provide about 1,200 hours of continuous use.

The max input sound level is 138 dB SPL (1 kHz at 1% THD) with phantom, 116 dB SPL with battery. The mic's dynamic range

under battery power is 86 dB (1 kHz at 1% THD) and when powered with phantom expands to 108 dB (1 kHz at 1% THD).

Provided accessories are abundant. Included with the mic are: AT8537 power module, AT8439 cable clip; clothing clip base, viper clip base, magnet clip base and plate with lanyard, three single mic holders, two double mic holders, two element covers, two windscreens, battery and a protective carrying case. Options include beige finish for the mic and accessories.

There is also a version for wireless systems with proper terminations.

IN USE

I wanted to test frequency response and dynamic range for vocal reinforcement (singing as well as speaking) and for recording. I designed a production of *Dames at Sea* in a well-known theatre in Maryland, and one of the performers agreed to help me test out the microphone by singing a few songs with an accompanist onstage after a matinee performance. She stood onstage and performed four songs – two with the lav on her head and two with the lav clipped to her shirt.

The first thing you notice about the AT899 when you open up the leather-like case is its compact size. When deciding on a mic to use in a theatrical situation, size is a consideration. This microphone is small enough to mount on the forehead just below the hairline so it's exposed without reading too badly from the audience. The actor told me that it was comfortable to wear, and she pretty much forgot it was there. That's important because an actor that is thinking about her mic is not thinking about what she should be thinking about when performing.

This lav performed surprisingly well for a capsule of its size. I have to say that in general



I find that the smaller the mic, the crispier it sounds – but the 899 was undistorted and uncolored from the quiet to the very loud. It needed a minimum of EQing to the room, and its coverage area allowed for little proximity effect. She told me that the mic was so light that she forgot it was strapped to her head.

She sounded very present in the recording as well, with a natural attenuation of the background noises made by those stage hands.

The next test was on a man that had never spoken in public before. He was the new house manager and was tasked with getting in front of the audience for the pre-show announcements. We clipped the mic to his lapel and he nervously made his way onstage. Again, the mic performed just as well as the "expensive" mics we used in the show, with smooth transitions as he jerked his head to and fro while speaking. He was nervous and spoke softly, so thankfully there was plenty of headroom, and loads of gain before feedback.

SUMMARY

The AT899 is a good value. It reproduces vocals dependably, can be hidden on a performer comfortably and virtually invisibly. I would have absolutely no problem recommending this lav to small to mid-sized theatres as a very fine alternative to the most expensive models.

Tony Angelini is a Washington D.C.-based audio engineer specializing in theatre.

Fast Facts

Applications:

Theater, broadcast

Key Features:

Sub-miniature size; omnidirectional pattern; many clips and mic holders

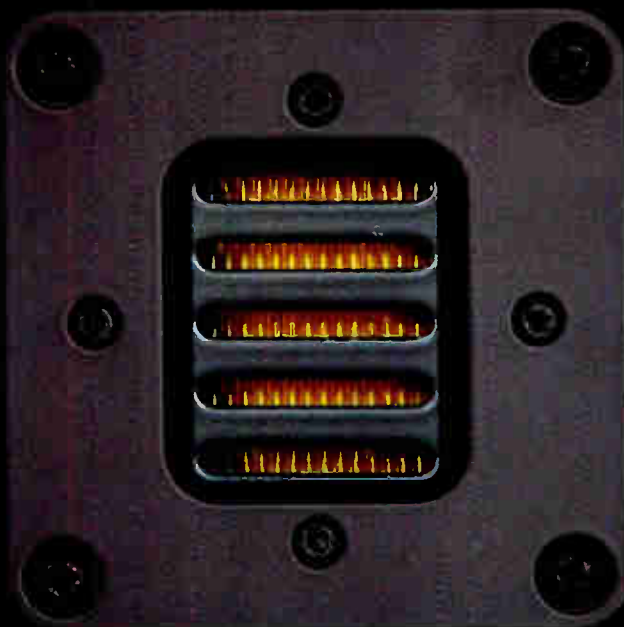
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World Radio History



Groove Tubes DITTO Box

BY RUSS LONG

Groove Tubes has entered the tube direct box market with the DITTO (Direct Input, Tube Transformer Output) Box. Although the DITTO has a list price of only \$399, Groove Tubes proclaims it the highest quality tube DI box available anywhere and they may be right.

FEATURES

The ruggedly built DITTO is encased in a heavy duty, well-ventilated steel chassis with large rubber feet. At unity gain, the box has a frequency response of 6 Hz to 200 kHz (± 3 dB). To achieve the highest quality sound, the DITTO uses a custom nickel core output transformer and Neutrik connectors throughout.

Two unbalanced 1/4-inch jacks wired in parallel provide the box's high-impedance instrument input and an un-buffered loop output. The box's high impedance input level of one mega-ohm make it a perfect match for virtually any synthesizer, electric or acoustic guitar, bass or drum machine.

A male XLR connector (pin-2 hot) provides the DITTO Box's all-tube, transformer-coupled low impedance audio output. The output level is 18.5 dBm terminated at 600 ohms. The box has +30 dB of available gain and a dynamic range of 118 dB.

The DITTO is also equipped with a ground lift switch which isolates the signal ground from earth ground when activated. The switch does not unbalance the XLR transmission line or induce any noise or hum. A neon-blue power-status LED illuminates when the box is on.

The gain control pot allows the adjustment of the output gain. When the gain is set to 0 dB (unity gain), the signal's output level is identical to the input level although it is a balanced signal. Rotating the gain knob clockwise adds up to +30 dB of all tube preamp gain. This is enough gain to record direct to most tape or computer based recording devices.

On the panel opposite the audio input/output panel is a power switch, fuse holder, and IEC connector for the detachable AC cord.

Truthful



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Bob Katz - Mastering Engineer - Digital Domain, Orlando, FL

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The DAC1 is essential equipment for any location that requires uncolored monitoring. Locations such as mastering and recording studios, broadcast facilities and even high-end home audio environments. The price? An unbelievably low \$795. Call today and experience what is certainly one of the finest DACs in the world.

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The box's input voltage is internally selectable between 100, 120, and 230 volts, 50-60 cycles.

The DITTO's tube character is derived from two triode tubes in the audio path. In the gain control circuit, a 12AX7 buffers the input signal and provides the gain. The box's gain control determines the amount of negative feedback returning to this input stage that varies the amount of gain output by the 12AX7. Then a 12AU7 tube drives the unit's custom-wound output transformer. The DITTO's high output makes it the only tube DI that I've encountered that doesn't require the use of a microphone preamp to attain adequate record levels. The DITTO's powerful tube driver makes cable runs of 500 feet or more are possible without any loss of signal strength or character.

IN USE

I had exceptional results using the DITTO Box to record electric bass guitar on several tunes. The sound was round and tight, with exceptional bass frequency definition. The box worked equally well recording a Nord Lead

synth bass patch. While tracking a Nichole Nordaman concert for a live album, I had nice results combining the signal of the DITTO on the pickup of an upright bass with that of a Neumann KM 84.

I found that while recording electric guitar through a Line 6 POD, the DITTO works particularly well between the POD's output and the input of my ProTools rig, adding a nice tube texture before entering the digital world.

I fortunately had a pair of DITTO boxes for my review so I was able to put them to use on a variety of stereo sources, the first being a handful of synthesizer tracks. The DITTO is perfectly suited for both analog and digital synths. The box has a smooth top end that did a wonderful job rounding the edge off the high frequencies of an unusually harsh synth patch. In this situation, I found the DITTO's audio quality to be reminiscent of analog tape saturation.

While recording an electric guitar with the musician in the control room and his amp about 50 feet away in an isolated room, I found the DITTO to work very well as a unity gain

DI box. The DITTO was able to drive the signal this distance without any loss of audio performance or dynamic range.

SUMMARY

The DITTO Box provides exceptional audio quality and accurate unity gain with the added clarity, dimension and dynamic response of tubes. Whether you are on a budget or not, the DITTO Box is a phenomenal tube direct box.

Contact Groove Tubes at 818-361-4500, www.groovetubes.com.

Russ Long is an award-winning Nashville-based engineer and a long-time contributor to Pro Audio Review.

REVIEW SETUP

Apple 400MHz PowerMac G4; Pro Tools Mix Plus v5.1.3; iZ RADAR 24 hard disk recorder with a Nyquest 96 kHz card; Lucid Gen-X-96 clock; Line 6 POD; Mogami cabling; PMC TB1, Yamaha NS-10M monitors; Hafler amplification.



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Pro Audio Review – June 2003

World Radio History

41

World's Best Loudspeaker?

Part 1, The Trip



THE HIGH END

BY TOM JUNG

Recently I was invited to Bang & Olufsen's headquarters and manufacturing facilities in Struer, Denmark. The purpose of the trip was to introduce a handful of

journalist to an all-new and radically different type of loudspeaker. B&O set the bar about as high as you can get when they laid down a goal to design and build the best loudspeaker in the world. Traveling to Europe on the first week of the war with Iraq was not something that I was looking forward to but I have to say that the trip was well worth the added anxiety.

DENMARK

Located among farms along the beautiful Linfjord shores in a remote corner of Denmark is home to Bang & Olufsen, just outside the small town of Struer. Peter Bang & Svend Olufsen started making radio receivers in this area back in 1925. They went on to create a very successful product called the Eliminator (power supply) used to power radios that you could actually plug into a wall outlet or mains as the Danish call it. Up until that time batteries or accumulators as they called them, were used as power sources for all radio equipment and needless to say they were not very efficient.

When war broke out in 1940 the demand for radios increased dramatically and B&O was at the forefront of radio production in Denmark. In January of 1945 Hitler, probably intimidated by the radio equipment manufacturing capabilities of B&O decided to bomb the factory. The setback had in fact paved the way for a renewal, with more product ideas and with a focus on aesthetic design that went on to set the groundwork for what this company is today. I guess you could say that B&O is serious about engineering with over 10 percent of the 3,000 or so employees being engineers.

Shortly after our arrival in Struer we had a brief introduction to Bang & Olufsen by Torben Ballegaard Sorensen the company's CEO. We were then escorted into a listening room where the new speaker was hidden behind an acoustically transparent (well almost transparent) drapery. I was lucky enough to get the front and center sweet spot for the demonstration, which consisted of a variety of music genres and to my surprise some that I had recently recorded.

The sound was different than anything I had heard coming from a loudspeaker. The first thing that hit me was the lack of my usual pet

peeve, crossovers. Was I listening to a one-way full range speaker? I thought not since there was extreme low bass, good dynamics and extended high frequencies, and as much as I fanaticize over a full range one-way I am afraid that physics dictates that it is just not possible, at least with current driver technology. The next thing that struck me was that I was not aware of any individual drivers, I can often times zero in on at least the tweeter, but this sounded very together and cohesive.

LISTENING

As I listened moving my head side to side I could hear no beamy tweeter artifacts, which led me to believe it must be a ribbon. Wrong again. The more and harder I listened, the more confusing it became, just what was this thing behind the black curtain.

Finally the music stopped and they raised the drapery, and just like the sound was different than anything I had heard, it looked different than anything I had ever seen. My first impression was, what the hell is this? And how does it work? Luckily we spent the next three days asking questions, learning and listening.

Since I don't have a pair to thoroughly check out in my own room just yet, I am not going to go into too much more detail on the subjective side of things.

In the listening session I wouldn't have believed this was a four-way system, normally three crossovers are three too many for me. The Beolab5 uses a massive down firing 15-inch woofer (now I know where all that deep bass was coming from), nicely integrated to a front firing 6.5-inch mid-bass driver, all reasonably conventional so far. Next is where things get a bit different, a three-inch dome, firing upward onto what looks like a smallish flying saucer, and the same goes for a 1-inch tweeter, smaller in diameter and mounted directly above the upper mid unit. These drivers radiate upwards and the sound is redistributed by being reflected off of the saucer-like disc. Called the Acoustic Lens, this technique is based on a patent held by Sausalito Audio Works, a company primarily owned by *TV Technology* contributor Dave Moulton and Manny LaCarrubba.

The Beolab5 is powered by four separate switching amplifiers fundamentally the same as the Bel Canto Class T amplifier (see "The High End," *Pro Audio Review* 8/02) that I am so fond of and have been using in my studio for some time now. The sound? As much as I would like to tell you more, I think it's best to save the nitty gritty details and subjective evaluation for Part II in August 2003.

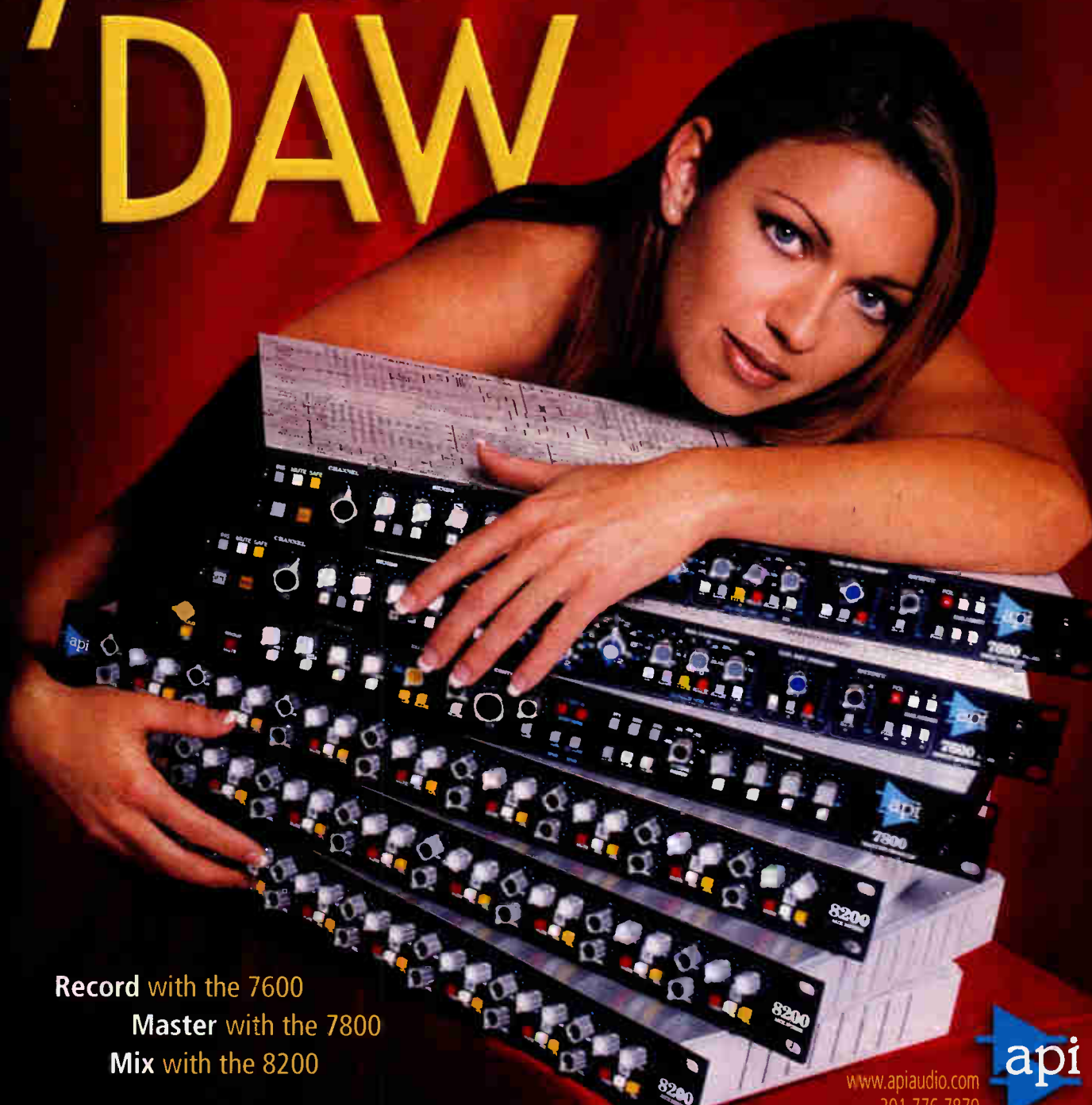
Tom Jung is Pro Audio Review's technical advisor.



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Gordon Instruments Microphone Preamplifier System

BY RUSS LONG

A few years ago, Gordon Instruments' Grant Carpenter noticed that, in regards to microphone preamplifier technology, there is a considerable

difference between "state-of-the-art" and "state-of-the-industry." His move to change that resulted in the creation of the Gordon Microphone Preamplifier System. (starts at \$3,500), a concept in preamplifier design that could single-handedly transform (read:

improve) the sound of modern recordings. The Gordon offers 70 dB of gain in 5 dB increments (+/-0.1 dB) with an amazing bandwidth of 0.7 Hz – 700 kHz (yes, that's somewhat beyond the response of the human ear).



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FEATURES

The Gordon preamplifier is a transformerless, FET-based device with a completely discrete signal path. In order to maintain audio purity (minimum distortion and maximum dynamic range) the preamp uses switched, variable gain amplifiers without the use of feedback or attenuators. This is significant since most preamps amplify the signal by more than 100 dB before attenuating the signal back to the level of desired output and thus creating undesired sonic artifacts and coloration.

The Gordon Microphone Preamplifier System consists of the Preamp and the Gain Control. The preamp is a two-channel 16-inch deep 1RU device weighing 11 lb. The Gain Control, also a 1RU device, is 3 inches deep and weighs 2.2 lb. Each gain control can control two channels of amplification and is upgradable to four. To ensure the highest quality sound is attained, the Gordon pre is designed to be placed as close to the microphone or instrument as possible. To eliminate multiple trips between the control room and the studio, the gain control unit is designed to be placed in the monitoring position with the engineer. This provides all of the technical advantages of having the shortest cable run between the microphone and the preamp with-

Fast Facts

Applications:
Studio

Key Features:
Two or four-channel models;
separate gain control unit

Price:
\$3,500 (options available);
freestanding outrigger
available at no charge

Contact:
Gordon Instruments at 615-
665-1005,
www.gordonaudio.com.



out losing the ability to make adjustments from the control room. The Gain Control and Preamp are connected with a standard microphone cable. This control cable can be run through the studio's patch bay without any interference problems or it can be a standalone cable that simply runs from one room to the next. The cable has a high tolerance to noise and can be several hundred yards long without any adverse effects.

The gain control consists of identical controls for two or four preamp channels. The Control Range adjusts the gain in 5dB increments. The peak indicator level lights when the output level reaches +24 dB (6 dB below clipping). The mute button allows the preamps signal to be muted. The invert phase switch inverts the phase of the preamps output by reversing the signal of pins 2 and 3. Older versions of the Gordon Mic Pre (including the one

I tested) included the invert phase switch on the preamp rather than on the gain control. Having to reverse the phase on the actual preamp instead of on the gain control was my only complaint with the operation of the Gordon Microphone System. This improvement was announced by preamp designer Grant Carpenter at the Fall 2002 AES show.

All of the connectors and controls on the Preamp are on the front panel except for the power connector, the ground lift switch and the gain control connector. The power connector, a standard IEC-320 connector with fuse holder, provides power to the preamp (the manual recommends at least 20 minutes of warm up before use). The gain control connector is a male XLR connector which allows a standard microphone cable to be used as a control line to the gain control.

The Low Input Z switch changes the input impedance from 2M to 1k ohms. The 48V switch activates phantom power. When the phantom power supply is turned on or off audio is briefly muted eliminating the potentially speaker blowing pop associated with most preamps (shouldn't someone have thought of this before?). When phantom power is activated, the high input impedance drops to 13.6 kohms. The Status lamp lights to

indicate the normal operation of the preamplifier and gain control.

The Preamp's input and output connectors and additional controls are located on the front panel. A pair of female XLR connectors and balanced TRS 1/4-inch jacks (wired in parallel) provide audio input. Audio output is provided via a pair of male XLR connectors. The Gordon Preamp automatically senses the combined impedance connected to the output (determined by cabling, connectors, the input impedance of the next device in the signal path, etc.) and sets the operating parameters for the lowest possible distortion.

Carpenter devoted significant time and energy to the exterior design, even to the selection of the buttons and knobs. Unlike the majority of today's equipment designers whose design is simply based on what looks hip and cool, the Gordon Instrument design is based on functionality and durability. After spending time at equipment rental shops and speaking with technicians, he found that some of the trendy high dollar designs don't necessarily hold up that well in the real world. Gordon offers a warranty to repair or replace any unit found to be *continued on page 47* ▶

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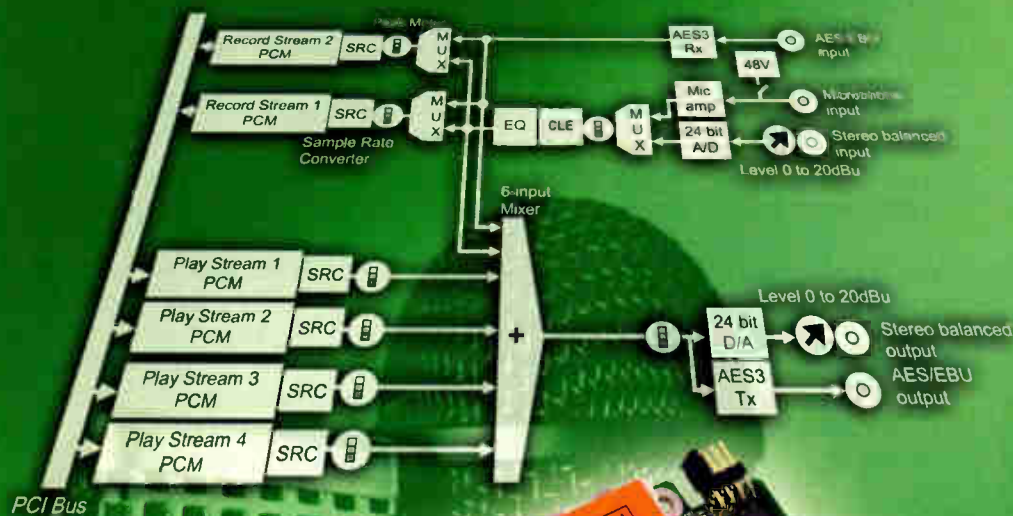
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► *Gordon Instruments from page 45*
defective due to factory materials or workmanship for a period of five years.

IN USE

I have been fortunate enough to be able to use the Gordon preamplifier for the last several months and I have continued to be impressed over and over again. In regards to accuracy and sonic purity, the Gordon mic preamp is simply the finest preamplifier I have ever encountered. Given that the Gordon pre automatically calculates and optimizes itself to the output load impedance, not only does the Gordon sound amazing but the next device in the signal path is likely to sound better.

The Gordon does a fantastic job recording kick drum. Rather than adding color to the sound (which is not always bad), the Gordon allows you to hear the true sound of the microphone and drum. I found I needed far less EQ than I typically use when recording kick drum and in a couple of instances I used no EQ at all (this rarely happens). I also found that all of my kick drum microphones sounded good. I routinely switch between an AKG D 112, an Electro-Voice

RE20 and a beyerdynamic M-88 for kick and usually only one sounds good with a particular kick and pre. With the Gordon all three sounded good, so it was a matter of determining which sounded the best for the particular song.

Recording snare drum was equally satisfying. I again found that I needed very little EQ. The pre did an outstanding job capturing the crack of the snare's attack as well as the fullness of the drum. The resulting snare drum sound was big without being boomy and bright with out being brittle. I had great results with a pair of Sennheiser 421s to record the toms on a four-piece kit. I also had great results with using the pre along with the Royer Labs SF-12 for drum overheads.

The 1/4-inch inputs on the front panel work well. I had no problems recording both keyboards and bass direct. Bass guitar through the Gordon is stellar. The sound is punchy and tight with a huge bottom end. Studio legend Willie Weeks (Doobie Brothers, Wynonna, etc.) liked the sound so much he purchased one for his bass rig. I also had good results using my Demeter Tube DI along with the Gordon to record bass.

The Gordon really shines with acoustic instruments and vocals. I used the Gordon and a pair of Earthworks SR-77s to record hammered dulcimer with doctoral student and percussionist extraordinaire Michael Aukofer. Having recorded the instrument dozens of times over the last decade, he was amazed at the sound and quickly proclaimed it the best dulcimer sound he has ever attained.

I recorded vocals through the Gordon using the Sony C-800G, the Brauner VM1-KHE, and the EV RE20 and in every instance I had fantastic results. If I owned the Gordon, the only reason I can imagine using another preamplifier, ever, is if preamp coloration was necessary to attain the desired sound.

SUMMARY

Although Gordon Instruments is still a relatively small company it has already begun to make its mark on the music industry. With dedicated users in all genres of music, the pre is quickly becoming a necessity to top-knobs everywhere. If you can afford it, there is no reason not to make the Gordon Microphone Preamplifier System part of your assortment of gear.

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PreSonus DigiMax LT

Preamp/Converter

BY ANDREW ROBERTS



Since computers have become so prevalent in recording studios, there is an increasing need for high-quality microphone preamps and analog to digital converters. While there are some small and medium format consoles that have excellent microphone preamps and A/D converters, many leave something to be desired. This explains the proliferation of multichannel, out-board preamp/converters in today's market. A pioneer in this class of gear has been PreSonus Electronics of Baton Rouge, La. It is my belief that PreSonus is one of the best-kept secrets in our trade. It manufactures superb dynamics processors and mic preamps at very reasonable prices. One of the most recent additions to the lineup is the DigiMax LT, a multichannel preamp/converter with digital outputs.

FEATURES

The DigiMax LT is derived from the original DigiMax, which was released in 2000. Like the original DigiMax, the LT is one rack space with eight channels. Each channel features a low noise, wide gain, dual-servo mic preamp, phantom power, a 20 dB pad, Neutrik combo input connectors (XLR and 1/4-inch balanced), a 1/4-inch unbalanced insert point, a tricolor LED signal indicator and a gain control. The unit also has a sample rate selector (32 kHz, 44.1 kHz and 48 kHz), an external clock switch (bypassing the manual rate selection), an ADAT lightpipe optical output, and

word clock in/out connectors (BNC). One thing the LT does not have is dedicated analog outputs. However, the inserts can be used as such by modifying TRS cables. This would, of course, eliminate the possibility of using dynamics processing while recording incoming signals.

When the original DigiMax came out, it had a sample rate of 48 kHz. Recently, PreSonus unveiled the next generation of the DigiMax, upping the sample rate to 96 kHz while adding a variety of digital I/O, instrument inputs, onboard limiting and more.

What about the people who already had eight channels of dynamics, 48 kHz DAWs or MDMs and who do not need a whole range of digital outputs? To fill the void, PreSonus created the LT, which sells for just \$999.

IN USE

While I certainly could see using the DigiMax LT in the field, my evaluation consisted exclusively of studio work. I recently had the opportunity to work with an awesome female vocalist from Indonesia named Shakila. She has had successful major label releases in Indonesia and consequently, she has excellent microphone technique. Acoustically, her voice is dynamic with a smooth, full bass, modest midrange and a beautiful high end that is not harsh at all. I put her in front of a Lawson L47 microphone, which ran into the DigiMax LT and into a PC.

I often consider the language that manufacturers use in their promo material to be somewhat overblown. In PreSonus' case I would consider it conservative. The materials refer to these dual-servo, electronically balanced mic preamps as *pristine* and they are exactly that. Shakila's voice sparkled with a brilliant high end that rivaled preamps that cost much more than this unit does (and it has eight channels!). On a ballad, I had her get very close to the pop screen for a little proximity effect. The vocal sound through the DigiMax LT was a lesson in

detail — it yielded a recording that sounds like she is whispering right in your ear. During more powerful moments, I inserted a little compression via the LT's insert point. Again, the unit did a superb job capturing all the power and nuance of her performances.

Later, I used the LT on drums with a local band with whom I am doing an album project. The drummer is a very dynamic hard hitter. I needed several channels of compression so I simply patched in my PreSonus ACP88 eight-channel comp/limiter and I had a great little eight-channel front-end rig. Sound quality and affordability aside, it is quite an accomplishment to have eight channels of preamps, A/D and full-featured compression in just three rack spaces. Again, the sounds created were excellent and rivaled many I have recorded in the past. The kick drum sounded tight and thunderous, the toms were robust and punchy, and the cymbals were crystal clear.

One thing the LT lacks is an analog output for zero-latency monitoring. As mentioned earlier, you can use the insert points as monitor outputs but you lose the possibility of dynamics processing while recording. However, with today's computers, latency has become less of an issue than it was just several years ago.

SUMMARY

While some imitators have begun to appear in the marketplace, the PreSonus DigiMax LT is the real deal. This American-made beauty is a fantastic sounding multichannel mic preamp and an A/D converter. And, with eight line inputs, it can also serve as just a converter. It has most of the features that are essential to producing great multi-track recordings with a computer or MDM and it is very reasonably priced. PreSonus has hit another home run. Next batter please.

Andrew Roberts, a regular contributor to Pro Audio Review, is a sound reinforcement and recording engineer.

Fast Facts

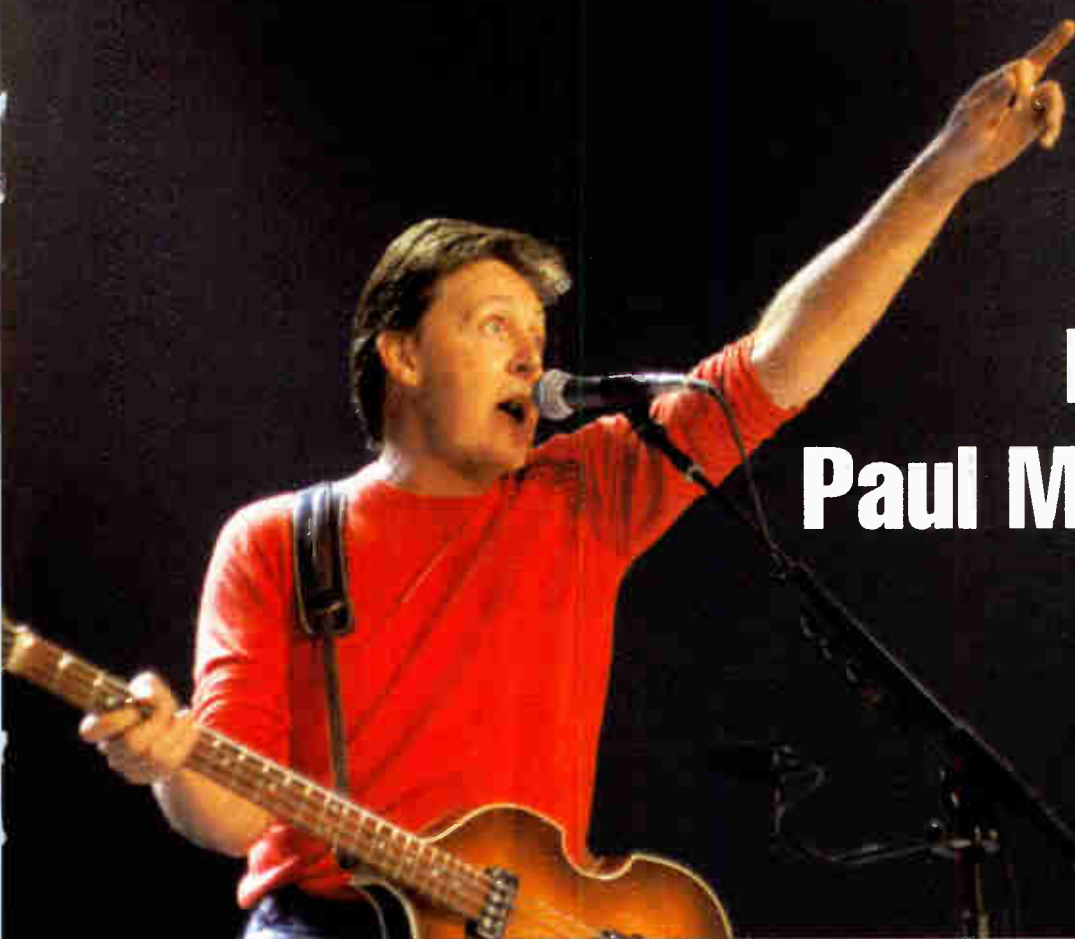
Applications:
Studio, location recording

Key Features:
Eight channel; A/D converter;
32 kHz, 44.1 kHz, 48 kHz
sample rates; preamplifier

Price:
\$999

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BY DAVID RITTENHOUSE

Can you pack everything you will ever need at front of house into one convenient easy to use system? Everything from speaker processing, crossover, EQs (both graphic and parametric), system compression, dual real time analyzers, mixer/router distribution amp - all available digitally? Well, dbx has done just that with the DriveRack complete equalization and loudspeaker management system. Combining every form of processing needed to drive signal from the mixer to the power amps, the DriveRack allows you to eliminate all other devices normally found in large systems; but is it all it says it is?

FEATURES

The system setup that I used for this review consisted of the 480 (master brain), 481 (slave), 442 (additional EQ unit), and a 480R (remote controller for the whole system). Starting with the 480, which is described as the flagship of the DriveRack line, it offers four inputs with eight outputs all on XLR connectors. Each channel has EQ in

the form of a nine-band parametric or a 31-band graphic and notch filters. From this you can also have a high-pass, low-pass, or band-pass filter set. Dynamics are available across all channels with a compressor/limiter that is set to emulate the classic dbx 160s. Butterworth, Bessel, or Linkwitz-Riley are available as your crossover filters and you can choose from 27 different crossover configurations. In the delay capabilities there is allotment for both speaker transducer and time adjustment. Speaker compensation EQ (post crossover) is also provided which is pre house and show EQs. The dual EQ component (house and show) is an outstanding feature with individual control and functionality. Two real time analyzers can also be run simultaneously with RTA source inputs capable of being remotely switched on the fly. The 480 is fully programmable from the front panel, with the

480R remote control, or through a PC based computer via the GUI (RS-232) interface port. Triple redundant back up is featured with all parameters when running the unit in a network, 480, 480R and PC. All units can be networked together with dbx's proprietary RS-485 control cabling.

The 481 and 482 are merely slave units to the 480 and include all of the functionality and features of the 480. Euroblock connectors are featured on the 481 while XLRs are on the 482. The main functional difference is that these units have no front panel controls like the *continued on page 52* ►



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~ Tony Levin (Peter Gabriel, King Crimson, Pink Floyd)

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~ EQ magazine

"Radial gives you the natural sound you only get with a very high quality box!"

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~ Billy Sheehan (Steve Vai, Mr Big, voted 5 times Guitar Player 'best rock bass player')

"No matter what type of signal I put through them, the Radial DI's sounded round and natural. ... Radial Engineering has done a superb job with these DI's."

~ Keyboard magazine

"... I can say without hesitation that you won't find anything out there offering better performance or more durability for the money."

~ Electronic Musician

"The JDI is a vision of purity, the platonic ideal of DI's."

~ Recording

"The Radial DI gave me a special sound that was natural, with a fine presence. The engineer said 'What is that?' I've got to get one!"

~ Will Lee (Letterman, Show, Billy Joel)

"... the bottom end was thunderous and tight. The top exhibited an openness I have yet to hear with any other DI. It literally sounded like I put new strings on the bass."

~ Professional Sound

"My bass sounded better than I had ever heard it sound. It came to life, natural, pure and plenty of level."

~ Mark Egan (Pat Metheny, Sting)

"... dramatically better sound, more defined attack, richer bottom, almost 'holophonic'... it seemed to step out of the speakers."

~ Khaliq Glover (Markus Miller, Herbie Hancock)



"The JDV was the hands-down winner."

~ MIX



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~ Pro Audio Review

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~ Audio Media magazine

"Top tone, best built, most innovative... The Radial JDV can handle any situation."

~ Bass Player magazine



Radial JDI

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Developed specifically for use with the limited current from 48V phantom power, the Radial J48 is capable of exceptional level handling and dynamics without choking. The internal rail voltage is stepped up using an internal switching supply that allows input levels to 9-volts before distortion. Smooth, natural sound, with extra 'reach' the Radial J48 is perfect for live and studio. List \$200.



Radial JDV Mark-3

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► dbx from page 50

480 and have to be networked to a 480, or 480R to perform all programming functions. Any combination of 480s, 481s, 482s, and 442s can be controlled on a single DriveRack network consisting of up to 100 units.

The 442 is a four in and four out unit. The primary function is the 31-band graphic or nine-band parametric EQ on each input. It also has time adjustment delays and separate house and show EQs. As with the 480 it has XLR connectors for each in and out.

Now the cool, flashy piece in the DriveRack system is the 480R dedicated remote interface. It features thirty-one motorized faders to control the EQ functions as well as 32 assignable hot keys with up to 64 different assignable capabilities. The 480R also has a built in real time analyzer with an XLR input at the rear of the unit equipped with a 48 volt phantom power switch for a measurement microphone. The 480P is the power supply for the remote and is sold with the 480R. Yet another feature is the ability to link via MIDI to various other equipment. The 480R with respond to MIDI commands from mixing consoles including Soundcraft SM20 and Series 5 along with Allen & Heath ML4000 and ML5000.

IN USE

Testing out new gear has always been fun to me and solving problems when something fails is the never-ending challenge of life. With that said I was not expecting the result I would get after opening up the boxes of the new DriveRack systems. To make what could be a long story short... I smoked the first two units. Apparently, you can not plug the units together (using the proprietary RS-485 cable) with the power on. The ports will burn up... Always connect the network with the power off! (According to dbx this problem has been identified and fixed though dbx still advises against hot-swapping.)

Programming the units was easy and for a company like us, who uses a lot from one speaker manufacture, the DriveRack worked great and provided every parameter necessary. Through out the last several months I have had the pleasure of taking the DriveRack on numerous shows. Everything from the corporate "talking head" shows to full on rock-n-roll. Top to bottom the DriveRack has performed with out a flaw. The system works the best when you use the 480R remote. Actually, I wouldn't use the system without it, even though I would still be able too. Every function is at your fig-

Fast Facts

Applications:
Live sound, sound reinforcement, installation

Key Features:
Speaker processing; crossover; graphic and parametric EQs; system compressor; real time analyzers; mixer/router distribution amp

Price:
480 - \$2,700; 480R - \$3,499;
481 - \$2,200

Contact:
dbx at 801-568-7660,
www.dbxpro.com.

ure tips when using the hot key assignments on the remote, and let's face it, moving faders are still cool. The only downfall is that the 480R is not wireless. Having the freedom to walk around to all the zones in the room and be able to tweak that zone from the listening area it is firing into would have been a nice add-on. The total flexibility of the system is the most beautiful selling point. If I have outputs from a console consisting of: left, right, front fill, outfill, and three delay taps the system will allow you to process, EQ, system compress, time adjust and function as an RTA... all in one package less than half the size of all the equipment that I used before. And the most important part, it sounds great!

The EQ is precise and accurate and the shear capability to work in every area of the signal flow, from mixer to amps, on one system is fantastic. Every artist's engineer I have worked with from Charlie Daniels to Natalie Cole, and to churches with big gospel bands have all been pleased.

dbx also has downloadable software available at their web site for PC operation without the need for the 480R remote. Although I have not worked with the PC-driven software I have spoken with others who prefer it to the 480R due to the multiple windows aspect.

SUMMARY

Overall the dbx DriveRack meets with my approval. The ease of use and the fact that it is a powerhouse that takes up less than half the space of all the old drive gear is amazing. It impressed everyone at RCI Sound Systems so much that we bought DriveRacks for all of our systems.

David Rittenhouse is a senior live sound engineer at RCI Sound Systems and a regular contributor to Pro Audio Review.

Sony Microphone, Extensis Digital File Manager, Sound Professionals Preamp

MICRO VIEWS

BY FRANK BEACHAM



Sony ECM-MS957

quality at very low cost. Problem is most models need an external microphone connected through those infamously fragile 3.5mm stereo mini jacks. Generally, the accessory microphones sold to work with these machines fail to match the sonic quality of the recorders. Most pro users make custom XLR to mini adapter cables in order to record with better mics.

There is, however, a nice compromise solution. In the high-end of its prosumer microphone line, Sony offers the ECM-MS957, a stereo microphone that's an ideal match for these recorders in features, cost and audio quality. The 957 is a mid-side (M/S) stereo microphone with a frequency response up to 18 kHz and 90 dB dynamic range. It's convenient to carry, and useful for nearly any application ranging from handheld street interviews to music recording.

Its M/S design allows the mid capsule to pick up monophonic sound while the side capsule picks up left/right difference sound; subtracting and adding the two capsule signals to yield separate left and right channels. The user can choose a 90-degree pickup angle for a single voice or 120 degrees for wide coverage across a stage.

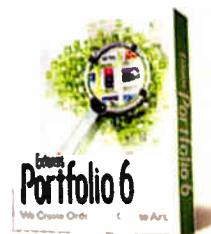
The 957's cable configuration is quite reliable — more so than most custom-made configurations. On the recorder end is a gold L-shaped stereo mini plug. This plug is molded onto very supple, high quality oxygen-free copper Litz cord. The mic end incorporates a Cannon XLR connector. Power is supplied to the mic from an internal AA battery.

Though the ECM-MS957 costs as much as many of the portable recorders for which it was designed, this microphone makes an excellent general purchase field microphone with first rate sound and solid reliability.

Extensis Portfolio 6 Digital File Management (\$199.99). Most of us think of media asset management software as a filing system for digital photographs. However, as the multimedia information culture evolves, every competent audio/visual storyteller must learn to create, manipulate and combine sounds, pictures, documents and other media files on even the most basic projects. That's why the latest generation of digital file management software can wrangle and control every file type associated with a project — including audio. I examined Extensis Portfolio 6, one of the most popular new applications for media professionals.

The task of properly labeling and organizing a jungle of media ele-

ments has always been a project of better intentions than results. Extensis Portfolio 6 promises to make it easier. This cross platform media asset manager is designed to help organize, share, retrieve and distribute digital files that work groups create and use every day. I found its picture handling ability to be quite efficient. But what about audio that we wanted to group by project with related pictures? Portfolio 6 displays an icon for each audio file in its gallery views and allows playback using its internal preview function. Supported audio file types include WAV, AIFF, AU Audio Macintosh Sound, MIDI and MP3. All are tied together with metadata.



Extensis Portfolio 6

I can't begin to cover Portfolio 6's new features here, but much of the earlier drudgery associated with handling media assets are simplified in this new version. Advancements include folder monitoring, better database management, thumbnail previews, streamlined cataloging plus a new Portfolio Express floating palette that lets you quickly access your cataloged files from any application. Works on all Windows and Apple Mac OS 9 and X.

Sound Professionals Plug-In Preamp for Pro Microphones (\$199). Common problem: You need to plug a professional microphone into a consumer recording device that has only a line level input. Solution: Sound Professionals' battery-powered preamp that converts a pro mic's output to line level.



Sound Professionals Plug-In Preamp

SP's Plug-In Preamp snaps into the base of a high or low impedance mic with an XLR connector. Gain can be adjusted to achieve proper level (0 dB for very loud music; 29 dB gain for normal levels; and 50 dB for very quiet sounds). The preamp has been tested and is compatible with virtually all MD, DAT, MP3, cassette, and video devices with line inputs.

The compact (1 x 2.4 x 3-inch) preamp runs over 75 hours on a single nine-volt battery. That battery can provide "plug-in-power" to consumer mics that normally depend on the mic input of the recording device, though it does not supply phantom power to pro condenser mics. The 48-inch output cable can be ordered with mini, phone or XLR connectors.

For more information contact:
Sony at 800-686-7669, www.sel.sony.com/SEL/consumer/ss5/generic/accessories/microphonesfordigital/index.shtml
Extensis at 800-796-9798, www.extensis.com
Sound Professionals at 800-213-3021, www.soundprofessionals.com



Audio, Video Converge

Perhaps no trade show represents the future of entertainment media more than InfoComm, June 3 – 5, in Orlando. Sure, NAB shows with impressive digital video tricks and winter NAMM is loud and has music superstars roaming the aisles but InfoComm is part NAB with spectacular video displays, part NSCA with the latest in audio/video networking technology, part CES with gadgets galore and a lot of “how can we put all this together and make it bigger, better, faster?”

CONVERGENCE

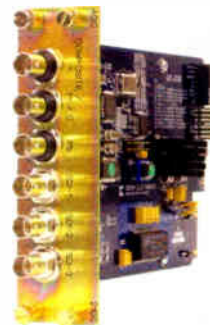
Several years ago digital processor manufacturers and facility designers realized that in the digital world any and all signals are nothing more than data packets needing to be steered around. With the right types of processing and routing modules a system processor could serve either a live sound venue, a broadcast facility, a large church, a stadium or a building’s multimedia system. Or all of them.

Such an animal is Symetrix’s SymNet. New for InfoComm is version 3.5. The major improvement here, besides the usual improvement in processor performance, is additional avenues for remote control throughout the system. Such new avenues could be wall-mounted controllers and lighting systems.

Reflecting this idea of convergence is a new console from Innova

SON, the Sy80. The Sy80 is aimed at touring venues, broadcast facilities and fixed installations such as churches and performing arts theaters. According to pre-press info the Sy80 takes full advantage of its digital nature by offering routing and processing flexibility far beyond what has been seen in traditional consoles.

More traditional for broadcasters, yet trading in the growing signal distribution world of InfoComm is Sigma Electronics and its audio and video converter card/frame systems. The latest for InfoComm are the DA5305 and DA5310 audio converters (for the S5000 frame). Both audio converters are AES/EBU 24-bit. The DA5305 analog to digital converter is four-in/two-out while the DA5310 digital to analog converter mirrors is with two-in/four-out.



Sigma DA5305

Communications Specialties is rolling out new members of its Pure Digital Fiberlink series of fiber optical distribution tools. Top of the list includes the 8100 series (up to 12 channels) and the smaller 8000 series (four channels) and the fully modular Flex series. Audio-only fiber optic distributors include the 16-channel 4160 and the 32-channel 4320.

Telex proves that technology spilling from one product can influence others. Its new RTS Cronus Digital Matrix Intercom has DSP features more similar to systems processors than traditional intercoms. It also sports a complex 128-port matrix router.

OTHER STUFF

One area that seems to have weathered the recent downturn has been installation microphones. Almost every major mic maker has brought out new lines in the last year. Sennheiser is seriously expanding its installation line with the Contractor series of podium (and table) mics. Utilizing three interchangeable capsules (including a shotgun), the series offers various goosenecks and mounting options.

A bit more mundane, though no less important, are the new intercon-

nects to be seen at the show. Neutrik has an improved EtherCon RJ45 Ethernet connector that promises to be more rugged while Gepco will show its new X-Band flexible audio cable.


Lastly, RCI Custom Products is debuting a



Symetrix’s SymNet 3.5

solution to an age-old problem, adapting old studio furniture to new missions. The MPD Media Presentation Drawer is a drawer that installs to the underside of a table (or desk). The MPD offers VGA, CAT5, phone, audio and power connectors. When not in use the connectors can be slid away.

Anyone who has heard it knows ...



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Studio Monitors

Alesis M-1 Powered Monitor

Features: Two-way; 6.5" carbon woofer; 1" silk dome ferrofluid-cooled tweeter; biamped; 75W low-frequency amp; 25 W high-frequency amp; input level control. Price: \$649 per pair or \$325 each.

Contact: Alesis at 401-658-5760, www.alesis.com.



Yamaha MSP10 Studio Powered Monitor

Features: Two-way; 8" cone woofer; 1" titanium tweeter; biamplified; onboard 120W low-frequency amplifier; onboard 60W high-frequency amplifier; magnetic shielding. Price: \$999 per pair.

Contact: Yamaha at 714-522-9011, www.yamaha.com/proaudio.



Carvin SRS6.5A Active Studio Reference Monitor

Features: Two way, 6.5" woofer, shielded, contour/flat switch; onboard 100W amp; DuraTex scratch-resistant finish. Price: \$219 each/\$439 per pair.

Contact: Carvin at 800-854-2235, www.carvin.com.



Legacy Audio Focus 20/20 Monitor

Features: Five way, twin 12" carbon poly woofers, 12" carbon midwoofer; twin 7" Kevlar Hexacone midbass drivers; 1.25" soft dome midrange; 4" ribbon tweeter. Price: \$6,200.

Contact: Legacy Audio at 800-283-4644, www.legacy-audio.com.



Hot House PRM 165 Active Reference Monitor

Features: Two-way 6.5" long throw woofers 1" recessed soft dome tweeter; magnetic shielding. Price: \$1,299 per pair.

Contact: Hot House at 845-691-6077, www.hothousepro.com.



Thiel Audio PowerPoint Monitor

Features: Two-way; 6.5" woofer; 1" coaxially-mounted dome tweeter; 45 degree baffle; wedge-shaped cabinet. Price: \$1,300.

Contact: Thiel Audio at 859-254-9427, www.thielaudio.com.



M Audio BX8 Reference Monitor

Features: Two-way 8" mineral-filled polypropylene cone woofer; 1" silk ferrofluid-cooled adjustable tweeter; onboard 65W LF amp; onboard 65W HF amp; magnetic shielding; EQ control. Price: \$599 per pair.

Contact: M Audio at 626-445-2842, www.m-audio.com.



PMC DB-1 Monitor

Features: Two-way; 5.5" woofer; ferrofluid-cooled aluminum tweeter; transmission line design; optional magnetic shielding; optional center channel design; optional finishes. Price: \$895 per pair.

Contact: PMC/Bryston at 800-849-2914, www.bryston.ca.



Genelec 2029A Digital Stereo Monitoring System

Features: Two-way 8" aluminum low frequency driver; .75" magnetically shielded dome; onboard D/A converter; master/slave operation; S/PDIF connector; level control. Price: \$1,325 per pair.

Contact: Genelec at 508-652-0900, www.genelec.com.



Dynaudio Acoustics AIR20 Powered Monitor

Features: Three way, 10" polypropylene cone woofer; 5.5" polypropylene midrange driver; 1" soft dome tweeter; onboard amplifiers; onboard DSP; compatible with all Dynaudio AIR series speakers. Price: \$4,930 for master/slave pair.

Contact: Dynaudio Acoustics/TC Electronic 805-373-1828, www.dynaudioacoustics.com.



Phonic P8A Powered Studio Monitor

Features: Two way 8.75" woofer 1" silk dome tweeter; biamped; EQ controls; clip limiter. Price: \$499 per pair.

Contact: Phonic America at 813-890-8872, www.phonic.com.



A.D.A.M. S3-A Powered Monitor

Features: Two way twin 7" woofers 2.8" ribbon tweeter; triamped, onboard Class AB amps; bass ports; gain controls; bass, treble controls. Price: \$3,995 per pair.

Contact: ADAM Audio USA at 805-413-1133, www.adam-audio.com.



Blue Sky ProDesk Sat5 System

Features: Two satellite speakers and subwoofer; 5.25" aluminum alloy cone woofer; .75" tweeter; 8" aluminum cone woofer for subwoofer; satellites are biamplified; onboard 100W amp for subwoofer. Price: \$1,195.

Contact: Blue Sky/Group One at 631-249-1399, www.abluesky.com.



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The Professional's Source

 <p>Yamaha Montif 7</p>  <p>Roland Fantom</p>	 <p>Roland XV-3080</p>  <p>Roland XV-5080</p>	 <p>Korg Karma</p>  <p>Korg Triton-Rark</p>	<p>Steinberg</p> <p>Houston</p>  <p>Cubase VST</p>  <p>Halion</p>
 <p>Motu 828</p>  <p>Digital Performer 3</p>  <p>Motu 836</p>	<p>Propellerhead</p>  <p>Reason</p>  <p>eBirth</p>  <p>Recycle</p>	<p>Emagic</p>  <p>Logic Control</p>  <p>Logic Audio Platinum Ver. 5</p>  <p>EXS-24</p>	<p>Digidesign</p>  <p>Digi 001</p> <p>Factory Bundle</p>
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WE SHIP WORLDWIDE

► *Studio Monitors from page 56*

Tannoy Ellipse 8 Active Monitor

Features: Three way, Dual Concentric midrange/woofer; SuperTweeter; Tannoy Wideband technology; heat sink; EQ controls. Price: \$3,595 per pair.

Contact: TGI North America at 519-745-1158, www.tannoy.com.



Behringer Truth B2031 Speaker

Features: Two-way; 8.75" polycarbonate woofer; 1" ferrofluid-cooled titanium dome tweeter; biamplified; 75W HF amp onboard; 150W LF amp onboard; onboard limiter; shielded. Price: \$499 per pair.

Contact: Behringer USA at 425-672-0816, www.behringer.com.



SP Technology Timepiece 2.0 Monitor

Features: Two-way; 8" aluminum cone; 1" ferrofluid-cooled textile dome tweeter. Price: \$2,795 per pair.

Contact: SP Technology at 219-324-6800, www.4sptech.com.



HHB Circle 5A Active Monitor

Features: Two-way; 8" polymer cone with 1" aluminum voice coil; 1" ferrofluid-cooled tweeter; PolySwitch tweeter protection; two-channel onboard amp; volume control; magnetic shielding. Price: \$1,490 per pair.

Contact: HHB Communications USA at 805-579-6490, www.hhbusa.com.



JBL LSR28P Powered Monitor

Features: Two-way, carbon fiber woofer; 1" titanium composite HF driver; Differential Drive technology; onboard twin amplifiers; magnetic shielding. Price: \$1,179.

Contact: JBL Professional at 818-894-8850, www.jblpro.com.



ATC SCM50ASL Super Linear Pro Speaker

Features: Three way, 9" Super Linear bass driver; 3" soft dome midrange driver; 1" tweeter; six onboard amp modules; EQ controls. Price: \$11,750 per pair.

Contact: ATC/Transamerica Audio Group at 702-365-5155, www.transaudiogroup.com.



Westlake Audio BBSM-6 Monitor

Features: Three way; twin 6.5 polypropylene woofer; 3.5" cone midrange driver; 1" soft dome tweeter; biampable; magnetic shielding; SuperFlex wiring. Price: \$5,788 per pair.

Contact: Westlake Audio at 805-499-3686, www.westlakeaudio.com.



Quested F5 Powered Monitor

Features: Two-way; 5" woofer; .75" soft dome tweeter; biamped; magnetic shielding. Price: \$695.

Contact: Quested/Trian Electronics at 608-850-3600, www.quested.com, www.triancorp.com.



Fostex PMO.5 Studio Monitor

Features: Two-way; 5" woofer; .75" polyurethane film laminated cloth tweeter; magnetic shielding; onboard 40W LF amp; onboard 30W HF amp; heat sink. Price: \$349 per pair.

Contact: Fostex at 562-921-1112, www.fostex.com.



Nady Audio SM250A Powered Monitor

Features: Two way, 5" woofer; 1" ferrofluid-cooled soft dome tweeter; biamped; magnetic shielding; bass port. Price: \$269 per pair.

Contact: Nady Audio at 510-562-2411, www.nady.com.



E. M. Long NFM 6C Time Align Nearfield Monitor

Features: Two way, 6.5" inch coaxial driver with 1" soft dome tweeter; time-aligned. Price: \$695.

Contact: E.M. Long at 408-923-4450.



Earthworks Sigma 6 2

Features: Two-way; 6.5" Vifa woofer; Vifa tweeter; magnetic shielding; gold-plated connectors; WBT wiring. Price: \$3,500 per matched pair; \$5,000 per matched cherry pair.

Contact: Earthworks at 603-654-6427, www.earthworksaudio.com.



FBT J-5 ra Powered Studio Monitor

Features: Two-way; 5" woofer; 1" Mylar dome tweeter; volume control; onboard 60W amp; polypropylene cabinet. Price: \$239.

Contact: FBT North America at 800-333-9383, www.fbt.it.



Mackie HR626 Active Monitor

Features: Two-way; 6.5" mineral-filled polypropylene cone woofer; 1" aluminum ferrofluid-cooled tweeter; biamped; onboard 100W LF Mackie FR amplifier; onboard 40W HF Mackie FR amplifier; EQ controls. Price: \$899.

Contact: Mackie Designs at 800-258-6883, www.mackie.com.



Roland DS-50A Monitor

Features: Two-way; polypropylene cone woofer; .75" soft dome tweeter; onboard 24-bit D/A converter; biamplified; high-frequency, low-frequency trims; input level control; compatible with Roland COSM speaker modeling. Price: \$349.

Contact: Roland at 323-890-3700, www.rolandus.com.



continued on page 60 ►

"Awesome..."

Don 'Turk' Schell, Front of House for Lucinda Williams, Ryan Adams

"Best kick drum mic I've ever used. Replaced my kick drum mic I'd been using for 15 years!"

*Paul Rogers, Front of House
George Strait*

"The D6 was designed with just one goal in mind: to be a no-compromise contemporary kick mic... If you want a painless way to get an absolutely rocking professional sound with a ton of serious beef on the bottom and that Lars type 'click' on the top, then this is the stuff."

*Mark Parsons, Modern
Drummer*

"Every day in sound-check we wrestle with that first channel. We know the ideal mic for any application is one that sounds natural with no EQ. The D6 is the 'swift kick' we've all been waiting for. Thanks Audix."

*Mark Frink, Monitor Engineer
k.d. lang*

"The introduction of the D6 from Audix has made an impressive impact. We've had many requests from high profile drummers to install them in their custom kick drums using our May Miking System..."

Randall May

"Audix continues to impress us with its latest kick drum mic." 2003 PAR Excellence Award Winner, Pro Audio Review

"I am extremely happy with the D6 as I have been looking for a excellent sounding Kick mic. It is great to finally find a dynamic kick mic that has clean clear low end without that "unnatural resonant low boost" that so many so-called "Kick Mics" have."

*Dave Rat, Front of House,
Red Hot Chili Peppers*

"The D6 was awesome right out of the box. In a recent TV performance with Lucinda Williams, the D6 shook the ground to the point where the high definition camera men asked me if I could please high pass the bass!"

*Don "Turk" Schell,
Front of House
Lucinda Williams, Ryan Adams*



MADE IN USA
CE



"The D6 delivers a crisp, modern sounding kick sound right out of the box and is also a useful mic to have in the locker for bass miking."

*Martin Ostrowski
Gig Magazine*

"With the D6, attaining an authentic kick sound requires no effort as I don't need to spend my time researching crossover points and hacking at EQ's."

*Steve Besty, Mobile Engineer
Real Image Recording*

"The first time I put the D6 in our drummer's (Rickie Fataar) kick drum was in sound check at one of our gigs. We didn't even get through the first 8 bars when he asked what I did to the kick drum sound. He said it was shaking the whole stage and that he could really feel the improved low end. The D6 is now part of our sound."

*Paul Middleton,
Front of House, Bonnie Raitt*

"Love the D6-sounds so natural and does not color the sound at all. It barely took me 2 minutes on the first day of tour to get Matt Cameron's kick drum sound and I have not messed with it since."

*Kerrie Kops, Monitor Engineer,
Pearl Jam*

"In my 18 years of doing this, I have never received more compliments on my kick drum sound than I do now. I only travel with three things: two pieces of Kussy English outboard gear and an Audix D6!"

*Chris "Bully" Sullivan,
Front of House, Jaci Velasquez*

"I like the fact that the D6 has all the lows and can handle the SPL of large, low frequency drums, but still allows the drum to sound the same as it does acoustically. At Blue Man Group, we use many drums with frequency ranges that go even lower than average kick drums...the D6 does a great job of reproducing them accurately."

*Ross Humphrey,
Sound Supervisor,
Blue Man Productions*

"FORGET EQ. YOU DON'T NEED IT. OUTSIDE, SIX INCHES FROM THE DOUBLE-HEADED JAZZ DRUMS, THE SOUND WAS ROUNDED, FULL, AND WOOLLY... INSIDE A 22-INCH ROCK KICK, THE RESULT WAS PUNCHY AND TIGHT, WITH SOUL-SHAKING LOWS. THE D6 WAS CONSISTENT NEARLY ANYWHERE WITHIN THE KICK, WITH A SOLID, NO-HASSLE SOUND...."

ON STAGE OR IN SESSION, THE D6 ROCKS - LITERALLY!"

GEORGE PETERSEN, MIX MAGAZINE

....right out of the box!"

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World Radio History

► Studio Monitors from page 58

Edirol MA-20D Near-field Monitors

Features: Two-way onboard 20W amp, volume control; digital inputs.
Price: \$295 per master/slave pair.
Contact: Edirol at 360-594-4273, www.edirol.com.

SLS S8R Near Field Studio Monitor

Features: Two-way; 8" woofer; 5" ribbon HF driver; optional finishes.
Price: \$775.
Contact: SLS Loudspeakers at 417-883-4549, www.slsloudspeakers.com.

NHT Pro A-20 Monitor System

Features: Controller amp/speaker combo, two-way speaker; 6.5" treated paper cone woofer; 1" aluminum dome tweeter; magnetic shielding; separate rackmountable amp with gain, proximity controls.
Price: \$1,800 for amp, two speakers.
Contact: NHT Pro at 707-748-5949, www.nhtpro.com.

Hafler TRM8.1 Active Monitor

Features: Two-way; 8" polypropylene cone woofer; 1" soft dome tweeter; biamplified; balanced/unbalanced, mute, input sensitivity, bass shelving, treble shelving DIP switches. **Price:** \$1,850 per pair.
Contact: Hafler at 480-581-3157, www.hafler.com.

Miller & Kreisel MPS-2510 Main Channel

Features: Two-way twin 5.25" woofers, three 1" soft dome ferrofluid-cooled tweeters; switchable wide/narrow directivity control; biamplified; twin 150W amps onboard. **Price:** \$1,999.
Contact: Miller & Kreisel at 818-701-7010, www.mlprofessional.com.

Bag End MM-8 Near Field Monitor

Features: Two-way; 8" cone low-frequency driver; 1.75" aluminum compression horn high-frequency driver; EQ controls; Time-Aligned. **Price:** \$1,320.
Contact: Bag End at 847-382-4550, www.bagend.com.

D.A.S. Monitor 8 Speaker

Features: Two-way polypropylene cone; 1" soft dome tweeter; Line Quadratic Spherical waveguide. **Price:** \$459.
Contact: D.A.S. Audio at 860-434-9190.

Yorkville Sound YSM-1p Monitor

Features: Two-way; 6.5" low-frequency driver; 1" silk dome ferrofluid-cooled tweeter; tone control; onboard 70W LF amp; onboard 30W HF amp. **Price:** \$449 each/\$640 per pair.
Contact: Yorkville Sound at 716-297-2920.

Event PS6 Direct Field Monitor

Features: Two-way; 6.5" polypropylene cone woofer with 1" voice coil; 1" ferrofluid-cooled silk dome tweeter; onboard 70W LF amp; onboard 30W HF amp; magnetic shielding. **Price:** \$699 per pair.
Contact: Event Electronics at 805-566-7777, www.event1.com.

KRK Systems Expose E-8 Monitor

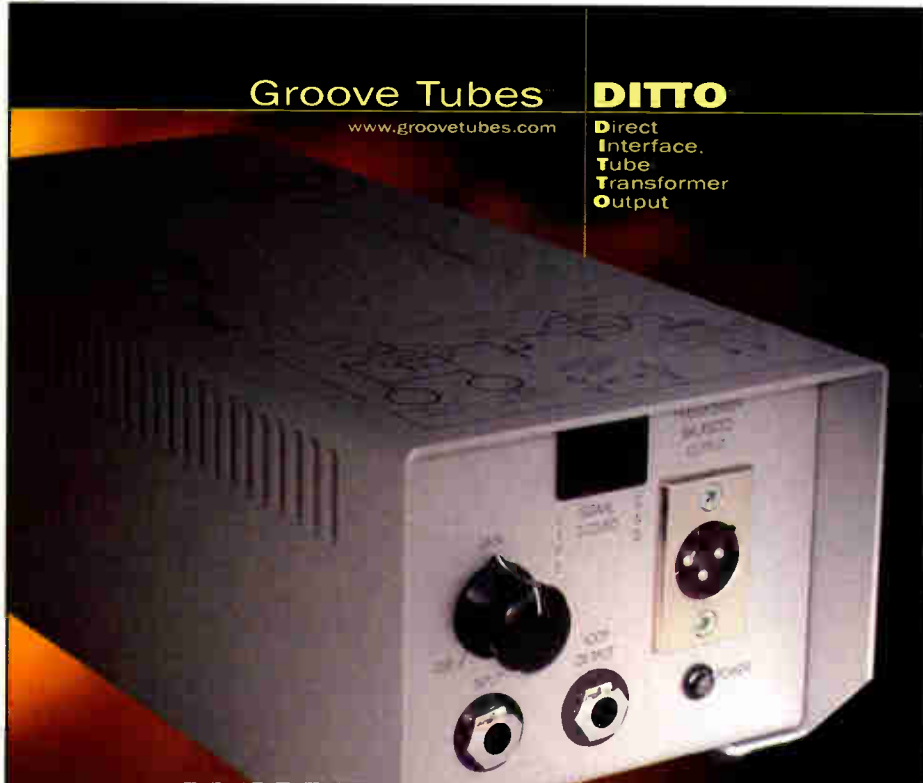
Features: Two-way; 8" Kevlar woofer with double spider; 1" titanium tweeter; biamped; twin onboard 140 W amplifiers; driver protection. **Price:** \$4,295 per pair.
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► *Westlake from page 32*
reference set.

With a properly set subwoofer, the Lc4.75/Lc24.75 set made a surprisingly capable surround mix system. This seems to be where the system really shines: you get high-resolution Westlake performance in the areas that count the most, and a good subwoofer picking up the slack.

In remixing several surround projects I had done on the 8.1s, I found the results eerily similar to the original mixes – certainly due in part to familiarity, but I found myself making almost identical EQ choices, which indicates to me that these speakers hold their ground in the Westlake Lc family.

Despite their smaller size, the Westlake system would also be a substantial improvement to many home theater systems boasting far

larger (yet woefully inaccurate) speakers.

SUMMARY

Bottom line on the Westlake Lc4.75/Lc24.75 surround system: When used with high-quality amplifiers and a decent sub, the set presents a means to experience trademark high-quality Westlake fidelity at a greatly reduced entry price. The low-profile system is perfect for postproduction and multimedia professionals and studios with space constraints.

As with any surround monitoring system, proper setup is critical for real-world speaker translation, but once there, this little system just might become your new best friend.

Stephen Murphy, contributing studio editor for Pro Audio Review, is a recording engineer and producer.

► *Legacy from page 21*


Mastering engineer Herb Powers, who has used the Legacy subs extensively at the Hit Factory in New York, said a pair of the Legacy Point Ones put out “massive” amounts of clean, 35 Hz and under bass. He recently mastered several Hip Hop recordings using the Point Ones. Powers noted that using a separate sub that can go well below 20 Hz is also useful as an analytical tool for finding sonic anomalies, such as very low frequency pops, which are not as audibly apparent in closefield monitors. Legacy also recently installed a pair of the Point Ones in the executive office of Arista Records chief, Antonio “LA” Reid.

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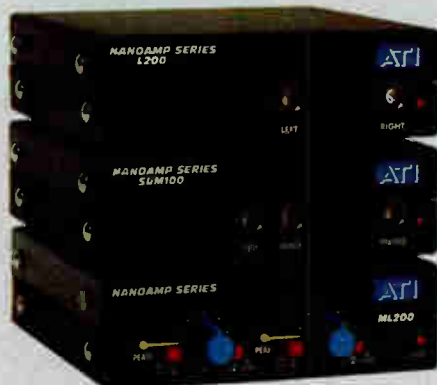
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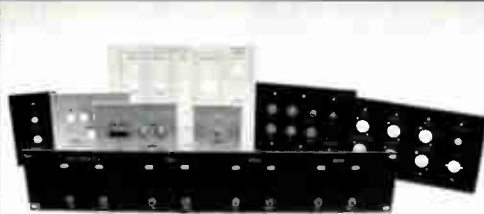
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Live's "Heaven"

Single
Slice

BY CHUCK TAYLOR

SINGLE: "Heaven"

ALBUM: *Birds of Prey*, (RadioActive)

DATE RECORDED: September 2002

ENGINEERS: Jim Wirt, Phil Kaffel, C.J. Eiriksson

OTHER PROJECTS: Incubus, Hoobastank

SINGLE SONGWRITERS: Ed Kowalczyk

SINGLE PRODUCER: Jim Wirt

STUDIOS: Village Recorders, Los Angeles; 4th Street Recording, Santa Monica; Sterling Ted Jensen, Los Angeles

CONSOLE: Neve 8048

RECORDER: Studer A800; Pro Tools digital audio workstation

MONITORS: Genelec 1031 active monitors

MICROPHONES: Sennheiser 602 (kick drums); Shure SM57 (snare drums); AKG 251 on top and Electro-Voice RE20 below (toms); Neumann U 67 (overhead and room); Neumann KM84 (high hat); Royer 121, Shure SM57 (guitars); Shure 67 (vocals)

PREAMPS: Neve (microphones); Demeter (bass DI)

PROCESSORS: Pro Tools plug ins; UREI compressor



Engineer's Diary

When enduring rock outfit Live entered the studio to start recording its sixth album, *Birds of Prey*, lead Ed Kowalczyk was determined to lay down the tracks whole, playing as a live outfit. "We tried, we really tried," recalls producer and engineer Jim Wirt. "We'd booked time in Studio A at Village Recorders, and they tried to make it work by letting us use Studio B, too. We had video cameras and all this digital equipment set up to communicate and it was a big mess."

Finally, the band succumbed to the reality that the music would have to be recorded the customary way, in pieces. For "Heaven," the first single and first track recorded, the band spent two days recording drums, then segued to 4th Street Recording in nearby Santa Monica to record guitars and vocals. "And that's the way it pretty much went for the whole album," Wirt says. "These guys are on the road all the time, so we recorded for two weeks, then they'd tour, then two more weeks in the studio, then more touring. It was all spread out."

Wirt continued to tweak the songs as the process went on. "It was great having time at the end of each session to make it all consistent." Which was in line with the precision demanded by Kowalczyk, whose dramatic singing, writing, and arranging define Live's larger-than-life sound. "He's a very thoughtful musician, so he pretty much has things down the way he wants it," Wirt says. "He's very enjoyable, but very intense."



Ed Kowalczyk & Jim Wirt

Chuck Taylor, a regular contributor to *Pro Audio Review*, is senior editor at *Billboard* magazine in New York.



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