

# PRO AUDIO REVIEW



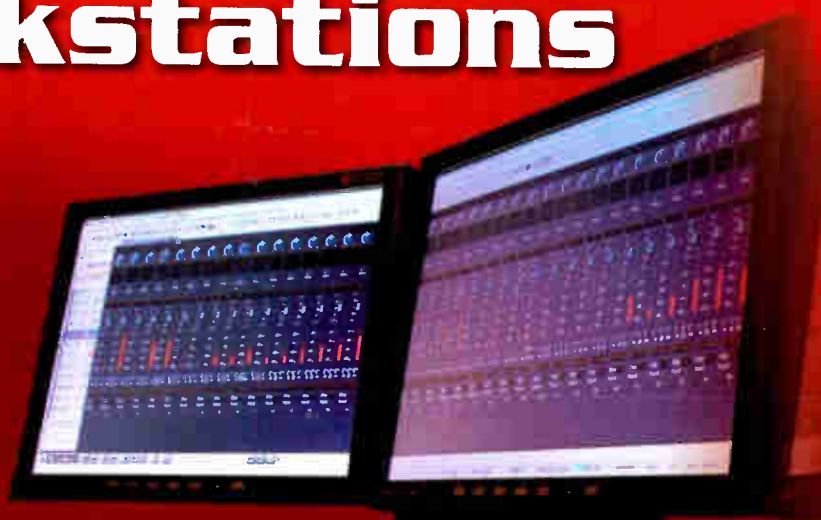
**Kelly Clarkson**  
page 90

The Industry's Equipment Authority

October 2003

## Digital Audio Workstations

**PAR Exclusive!**  
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### New Review Sections!

- Pyramix, Nuendo and Digi for the Studio
- Crest's New Pro 8200 Live Sound Amp
- New Mic For Broadcast – Lawson AIR
- TOR's DP-206 Contracting Processor
- Perfect for Project PCs – Echo Indigo



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**Preview: AES back in New York**

World Radio History



*"The KSM44 has amazing presence on vocals. It's a great all-around condenser mic."*

-Eddie Kramer (Jimi Hendrix, Led Zeppelin, Kiss, the Beatles, ...)

*"I found the KSM44 to have an excellent natural quality with good presence and a nice open top end. This mic is so smooth in the midrange, even a banjo sounded good!"*

-Joe Chiccarelli (Beck, U2, Elton John, ...)

*"I tested the KSM44 on vocals, bass, guitar, and drums, and haven't stopped using it since. It's hard to describe, but there is an immediacy to the KSM44 that is very appealing - sort of like a dynamic mic, but more elegant."*

-Brad Wood (Smashing Pumpkins, Liz Phair, Better Than Ezra, ...)

***For a mic with such low self-noise, it sure creates a lot of buzz.***

*"The KSM44 is the quietest microphone I have ever used, and one of the best sounding too."*

-Tom Jung (Pro Audio Review, DMP Records, ...)

*"As I compared the KSM44 to a mic I consider to be an old favorite, my ear immediately chose the KSM44. Shure has a fantastic studio mic that I can use for critical recordings - it's going to become a standard, very fast."*

-Bil VornDick (Alison Krauss, Bela Fleck, Mark O'Connor, ...)

*"My first impressions of the KSM44 were warm, round, full - dare I say it? Fat!"*

-Bob Ross (Recording Magazine)

*"The KSM44 is a remarkable achievement. I am especially impressed with the versatility of this microphone and have yet to find its limits."*

-Steve Albini (Nirvana, Page and Plant, PJ Harvey, ...)

*"I was given the KSM44 prototype early-on, not knowing its intended purpose - so I tried it on everything. Guess what, it worked on everything!"*

-Chuck Ainlay (Trisha Yearwood, Mark Knopfler, George Strait, ...)



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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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Mike Goodreau  
Ace Audio - East Hampton, CT



Bob Jeremias  
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World Radio History

# PAR's Neat and Tidy Look

**W**elcome to the new *PAR*. Since 1995, *PAR*'s mission has been to review the gear and software in all facets of pro audio: recording studio, live sound, post, contracting, broadcast production and project studios. Over the years, we have lined up a top-notch group of real-world pro engineers to do our reviews in those niches

Up to this point, we have reviewed the products in an "open" style of layout with products from different areas placed randomly in the book. Beginning with this October, 2003 issue, however, we have sectionalized the magazine. There are now separate sections for every area. In this issue, you will find sections for studio, live, contracting/installation, broadcast production and the ever-growing area of pro home project studios.

All appropriate reviews are now organized in their respective sections, based on the primary application. Of course, we know that products cross over many niches, thus, the secondary uses will be labeled in our Fast Facts summary for each review. Another bonus from our new layout is that instead of one new product page for the entire book, each section will open with a page of new products and industry news updates. Here that manufacturers; I'm taking care of ya.

Another feature that we plan for *PAR* next year is reader feedback section to comment on product reviews. The Review Feedback section will allow readers to voice their opinions about products we have reviewed. Those interested in sending in their comments should e-mail their comments to [PAR@imaspub.com](mailto:PAR@imaspub.com).

Oops. I got so excited about the new sections I almost forgot about the reviews in this issue. Check out Alan Silverman's firsthand evaluation of the latest Merging Technology's multitrack Pyramix recording/editing/mixing system. Whether you are working with SACD, DVD-A or plain old 44.1 kHz, the Pyramix is equally adept at handling any chore you throw at it. Other reviews of note include Lawson's new AIR voiceover/broadcast condenser microphone and Crest's Pro 8200 sound reinforcement amp. This issue

also contains our AES product preview from companies that provided us with info on the new stuff they will be showing in New York this month.

Happy Reading!

## MULTICHANNEL SIMPLICITY

Since more and more studios are working with multichannel SACD and DVD-A, more 5.1 preamps are being made that provide a simple analog in/analog out with volume pre-amp. The audiophile side has a number of good ones; many contain built-in decoding and tone management, but since DVD-A players and SACD players have their own decoders, I like the simple ones.

A couple of years ago, *PAR* reviewed the RE-Designs SCPA-1, which at the time

Those interested in  
sending in their  
comments to Review  
Feedback should  
e-mail us at  
[PAR@imaspub.com](mailto:PAR@imaspub.com).

received rave reviews, but it was a bit ahead of its time. Now the market has caught up to the SCPA-2 — with its high-quality, analog parts build-simplicity and just enough control to do the job: a master volume, six individual trim pots for level matching and the six unbalanced ins and outs on the back. The result is a very transparent, multichannel preamp for quality checking your final high-res disks. (Contact RE Designs at 781-592-7862. The box isn't cheap at \$2,795, but in this case big bucks will buy you big sound).

*John Gatski is publisher/executive editor of Pro Audio Review.*

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# QW™

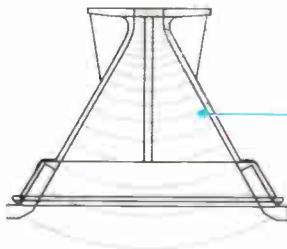
## The Sound of Science



- QW 1**  
 Power Handling (program):  
 1200 + 200 Watts  
  
 Enclosure Components:  
 Two 10" Black Widow™ speakers and a  
 44XT™ HF driver w/Sound Guard™ 44
- QW 2**  
 Power Handling (program):  
 1,600 Watts  
  
 Enclosure Components:  
 44XT HF driver w/Sound Guard 44  
 Pro Rider™ 15" woofer
- QW 3**  
 Power Handling (program):  
 2000 Watts  
  
 Enclosure Components:  
 RX™22 and 6-1/2" mid-range speaker  
 coupled to a CH™ 746qt H/MF horn  
 Pro Rider 15" woofer
- QW 4**  
 Power Handling (program):  
 2800 Watts  
  
 Enclosure Components:  
 44XT HF driver w/Sound Guard 44  
 Dual Pro Rider 15" woofers
- QW ML/MR**  
 Power Handling (program):  
 2000 Watts  
  
 Enclosure Components:  
 44XT HF driver w/Sound Guard 44 Pro  
 Rider 15" woofer
- QW 215**  
 Power Handling (program):  
 2000 Watts  
  
 Enclosure Components:  
 Two direct radiating Pro Rider 15" woofers
- QW 118**  
 Power Handling (program):  
 1600 Watts  
  
 Enclosure Components:  
 Direct radiating Low Rider™ 18" woofer
- QW 218**  
 Power Handling (program):  
 3200 Watts  
  
 Enclosure Components:  
 Two Dual direct radiating Low Rider 18"  
 woofers

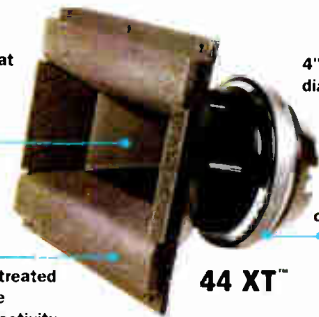
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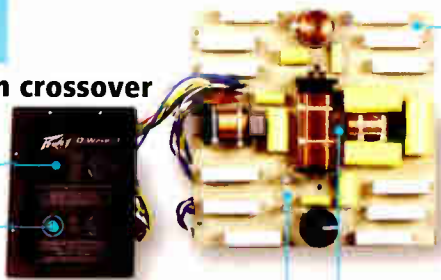
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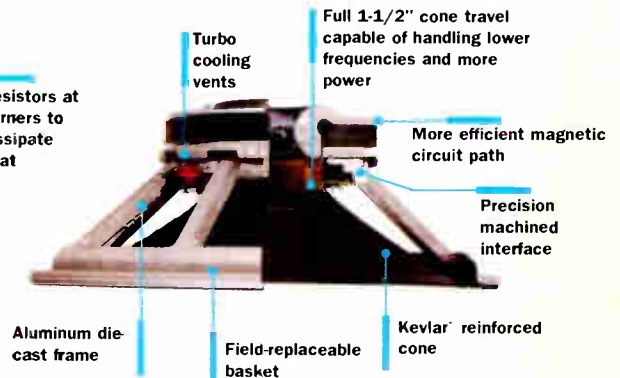
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Pro Audio Review – October 2003

# NEW PRODUCTS

**Soundtracs** has sold almost a dozen of the new DS-00 digital production console. Buyers include Londonj-based producer Peter Vettese...

**TL Audio** has placed a new 48-channel VTC (Vacuum Tube Console) into Studio A of London's EMI Publishing (picture below). Norway's Klepp Lydstudio (Egersund) snagged a 32-channel VTC in July.



Crystalphonic, a brand new studio in Charlottesville, Va., opted for **ATC** monitors in several of its rooms. SCM300As, SCM100As and SCM20A were chosen. Also in the facility are several **Z-Systems** Detanglers and **Brauner** VM1 microphones in the mic cabinet (including two Klaus Heyne Editions).

On that note, Ricky Martin's "English" album features Martin's vocals through a **Brauner** VM1 Klaus Heyne Edition. The album is being recorded in Miami at The Beat Entertainment studio and Gustavo Celis is overseeing production. Martin's earlier album, *Almas del Silencio*, also utilized VM1 KHE.

In San Francisco, another new studio, San Francisco Soundworks, has taken delivery on a **Solid State Logic** SL 9000 J SuperAnalogue console.

## Event Studio Precision 8 Powered Monitor

Event Electronics has launched a new "flagship" powered monitor, the Studio Precision 8. Not surprisingly the Studio Precision 8 sports an 8-inch woofer with bass ports to extend low-frequency performance. The tweeter is metal domed with a neodymium magnet. The speaker is biamplified and has an 80 Hz high-pass filter. Inputs are XLR and 1/4-inch. The finish is a stylish piano black with gold trim. Price: \$1,499 per pair. Contact: **Event Electronics** at 805-566-7777, [www.eventelectronics.com](http://www.eventelectronics.com), [www.event1.com](http://www.event1.com).



## Leigh Audio Design 6+4 DVD Audio Interface

Do you have this problem? You need to play a DVD-Audio disc in your studio but you suddenly realize that no one has made a player with balanced/XLR outs? Brad Leigh had that problem and decided to do something about it. His solution is the 6+4 DVD Audio Interface. Using top-quality components he put together a box that



takes in six channels on RCA plugs and outputs those six channels via male XLR connectors – all in a single RU box. Price: \$599. Contact: **Leigh Audio Design** at 917-584-9767, [www.leighaudiodesign.com](http://www.leighaudiodesign.com).

## Studio Electronics C2s 1176 Type Stereo Compressor

At one time a box such as the Studio Electronics C2s would be rare and expensive. But we live in wonderful times and you seemingly can't swing a dead cat without



hitting some type of 1176/LA-2A/Neve knock-off. The Class A Studio Electronics C2s offers input, compression ratio, attack, release and output controls per channel along with bypasses and LED meters. It sports high-end components and materials inside the steel chassis so of course it's made in the U.S.A. Price: \$2,495. Contact: **Studio Electronics/Wave Distribution** 973-728-2425, [www.wavedistribution.com](http://www.wavedistribution.com).

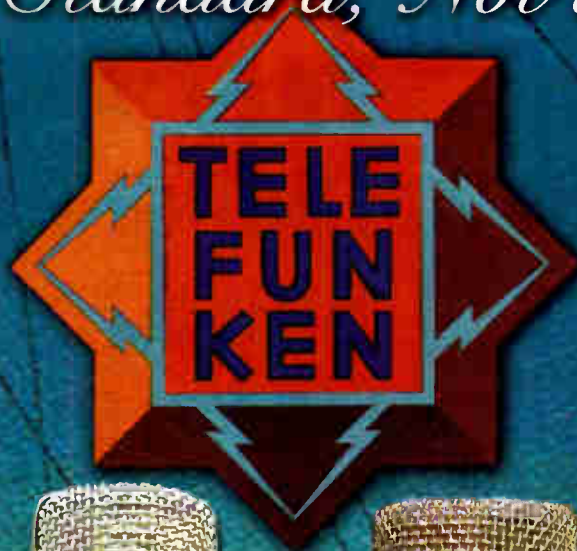
## SE Electronics H 3500 Microphone

Imitating an infinitely expanding universe, the affordable large-diaphragm mic galaxy continues its expansion - this time in the form of the H 3500 from new kid on the block SE Electronics. The H 3500 is a Class A FET cardioid modeled after the big mics of you-know-who. It ships with a flight case and heavy-duty shockmount. Price: \$599. Contact: **SE Electronics** at 408-873-7670, [www.seemics.com](http://www.seemics.com).





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*Audition:*

# TASCAM SX-1 Digital Production Suite

*In collaboration with the Conservatory of Recording Arts and Sciences, one the country's leading pro audio teaching facilities, PAR has introduced a regular series of in-depth reviews conducted at the Conservatory's state-of-the-art teaching faculty in Phoenix.*

**BY MAC MURPHY**

Just a few years ago, it would have taken a sizeable budget and a sizeable room to accommodate all the tasks available from the TASCAM SX-1. From tracking to mixing, from effects processing to automation (with moving faders), from DAW-style editing to MIDI sequencing, and even CD-burning capabilities; the SX-1 offers all the tools necessary to record a quality project in a single affordable (\$5,999) unit.

## FEATURES

The SX-1 is an all-in-one music production center, ideally suited for the songwriting home-engineer. The 24-bit, 48 kHz system offers 16 mic/line inputs with phantom power available in banks of four. The outputs on hand are stereo output (XLR, RCA),

## Fast Facts

### Applications:

Studio, project studio, broadcast

### Key Features:

16 mic/line inputs; 24-bit; 48 kHz sample rate; 40 GB hard drive; CD-RW drive; MIDI sequencing; integrated LCD screen; motorized faders; jog/shuttle dial; expansion slots

### Price:

\$5,999

### Contact:

TASCAM at 323-726-0303,  
[www.tascam.com](http://www.tascam.com).

studio output (two sets of TRS), Aux 1-4 Out (TRS), and two headphone jacks. Not to mention the 16 insert points! There is also a set of lightpipe in and out to provide a purely digital path. As is common with TASCAM products, the SX-1 is equipped with expansion slots to provide for additional inputs and outputs (ADAT lightpipe, TDIF or AES/EBU).

As well as being a fully functional mixer/hard disk recorder, the SX-1 is a powerful MIDI sequencer. As such, a single MIDI in, four MIDI outs, and a dedicated MTC In (MIDI Timecode) port are provided. For word clock, there are three BNCs – in, out, and through. Last, but certainly not least, the SX-1 is a computer and therefore has a standard VGA monitor output (as well as built-in LCD display), two PS2 ports (for the mouse and keyboard), a set of video in

and through jacks and a SCSI 68-pin connection for adding an external hard drive (though the SX-1 does have a 40 GB internal hard drive). Additionally, the SX-1 allows you to load software and perform project backup/restore via a CD-RW and even provides a 5.25-inch drive bay where a standard Data Express removable drive system is installed in the SE model.

The Control Room section of the SX-1 is simple to use and rather flexible. There is a dedicated section for both the studio and control room output, each capable of accepting input from the following sources: stereo, cue, Aux 1-2, Aux 3-4, Aux 5-6, 2trk/CD, Digital In. The Studio Section allows for talkback to be added to the mix, while the Control Room Section provides an option for large or small speakers (TRS) as well as Dim and Mono.







The SX-1 is a fairly easy to use production environment. In general, the SX-1 follows the same logic as TASCAM's previous family of digital mixers (DM-24, TMD-4000, TMD-1000) in that by using soft keys in conjunction with the LCD display you can access every function of the unit. However, the SX-1 is fully equipped for use as a computer with standard connections for a VGA monitor, keyboard, and mouse. In this mode the SX-1 shows its true capability and, honestly, becomes easier to use.

### IN USE

While tracking, I found the top panel access to the mic preamps to be convenient. Though the mic-pres are not earth shattering, they are clean, relatively transparent, and certainly useable. The routing

of the SX-1 may be its best feature, for you can truly route any input into any track on the HDR as well as route any HDR output (including aux sends) to any physical output. Included in this flexible routing is the capability for an effects processor to accept input from any the aux sends, from the inserts, from the track output, and even from the input (by using mixer bypass mode). As a locator, the SX-1 has common features needed for a professional environment – 999 locate points, pre and post roll, and loop playback.

In mixdown, The SX-1 is again very simple to operate. The output of the HDR is naturally fed to the second bank of touch-sensitive faders; and each track is provided with four auxes, an insert point, and solo/mute buttons. The automation system follows traditional concepts – providing capabilities for automation write, update, and trim on both a global and a per fader basis. If you are using the VGA system, it is possible to draw break-point automation (as is common in DAWs) on every track. Though usable, I found the on screen automation tedious and frustrating to use. Adjusting the resolution of the breakpoints, the motion of the pencil tool, the need to go to a different page to automate another track all seemed unnecessarily difficult. Though an experienced user familiar with the logic of TASCAM would have no difficulty accomplishing their goals, I would imagine the complexity and counterintuitive automation system would confuse a novice.

As I mentioned, the routing of the SX-1 is perhaps its most attractive feature. Simply put, any input may be routed to any track; and any track or aux send can be sent to any output. Correspondingly, the faders can be programmed in a user fashion to control any aspect of the mix desired – simply select the input and output of the desired fader and begin changing level. By default the fader banks receive signal as follows: Layer One - Source 1-16; Layer Two – HDR (17-32); Layer Three – Aux Returns 1-8 and Group Master Faders 1-8; Layer Four – Buss 1-8, Aux Masters 1-6, and Two Cue Masters; Layer Five – Layer Eight are dedicated for MIDI channels in banks of 16.

The effects processing section of the SX-1 is also truly impressive. Onboard,

there are four virtual effects slots that can accommodate up to four processors at a time (with some limitations). But the most notable part of the effects system is that like the DM-24, the effects include the full line of TASCAM processing, the Antares Mic Modeler, Antares Speaker Modeler and TC Electronic Reverb. These three third-party processors remove the need for the user of the SX-1 to have outboard processing – a good move for an all-in-one unit. One severe limitation, however, is that the TC reverb takes up two of the effects slots – meaning one reverb and only two other processors (or just two reverbs) are available at a given time.

The SX-1 boasts editing capability common in most DAWs. Again, though present, I found the editing capabilities to be awkward and difficult to use. Though the logic being used is similar to that of our major DAWs, the execution of said logic leaves something to be desired. The process of making selections is not as intuitive and more difficult than need be. Again, an experienced user who is familiar with the logic of TASCAM will have no problem figuring out how to do what they want, but a novice or someone with limited experience editing digital audio will find the process utterly confusing.

As a MIDI sequencer, the SX-1 is a very capable machine. The sequencer can support up to 128 tracks (with 64 MIDI channels of output) each able to send signal to any of the four MIDI out ports. As mentioned above, there is a dedicated MTC in port for slaving the SX-1 to another device via MTC (the MIDI equivalent of SMPTE). Most traditional sequencer functions are available on the SX-1; quantization, transposition, step-write record, an event list, and the generation of click track (complete with count-off, accents, and options for when the click will playback). Most noticeably absent, however, are an arpeggiator, a pattern mode, and a score editor – granted these are specialized features not needed for the mass user, but would be nice to see. The MIDI side of the software is a little friendlier than the audio side, but it is more like working with keyboard workstation than with a DAW. That is, you must go to a new tab for each MIDI

*continued on page 12* ▶

► **TASCAM from page 11**

ability rather than having a dedicated screen with all functions immediately available. Again, though usable and certainly better than using the LCD display, I found the interaction with the software to be unnecessarily cumbersome.

The SX-1 also contains an impressive library that allows you to store all processor settings as well as routing configurations. Perhaps the most impressive aspect of the library is that you can setup the SX-1 to do a library recall as an automation event – so you can change a EQ from one preset to another within automation. Or even call up a different routing configuration in the midst of a mix.

I should also mention that the SX-1 does provide capability for surround sound, but obviously an expansion card would be needed to provide convenient input and output – though it is possible to use the aux sends outputs, so you could send L and R to the stereo outs and C, LFE, LS, RS to the individual aux outputs.

Being that the SX-1 is a computer and a HDR it makes sense that there is a powerful

native file management system. One can store sessions to the internal 40 GB hard drive or backup each session to a CD-RW using the onboard CD-RW burner. It is possible to load files from an existing session into a new session; however no option is

backs-up after every change, so there is no need for a manual save. However, one can imagine the confusion that the lack of a save feature brings to an engineer who has imprinted it on their mind to hard save after every significant move.



TASCAM SX-1 getting a workout at the Conservatory.

provided for merging pre-existing sessions. Probably the weirdest feature of the whole device is that there is no way to hard save your session. The SX-1 automatically

provided for merging pre-existing sessions. Probably the weirdest feature of the whole device is that there is no way to hard save your session. The SX-1 automatically

**SUMMARY**

In general, I found the SX-1 to be a nice amalgamation of recording and songwriting necessities in a fairly convenient and easy-to-use package. The SX-1 is the beginning of a new niche market – the non PC-based, all in one recording studio. Though this studio-in-a-box concept began with TASCAM's Portastudio, the SX-1 takes that concept to a new level of power and professionalism.

*Mac Murphy is an engineer/instructor at the Conservatory of Recording Arts and Sciences. For more information about the Conservatory's pro audio*

*engineering curriculum, call 800-562-63-83. For more information about the TASCAM SX-1, call TASCAM at 323-726-0303; or visit the TASCAM web site.*

**Second Opinion**

**T**he TASCAM SX-1 gives the impression of a high quality professional product that is unique unto itself. In this case, I'm not sure if this is a good thing for TASCAM. Imagine the iconic all-in-one Portastudio, which has always been synonymous with TASCAM, revamped for high-end professionals. The problem is that the advantage of portability, and an inexpensive price are gone. It's like trying to sell an oversized luxury Volkswagen Beetle.

The SX-1 combines two of TASCAM's premier products – the mixing section is right out of TASCAM's DM-24 digital mixer, and the hard-disk recorder takes its power from the MX-2424. One down side of the mixer is that, like the DM-24, there is no dedicated solo

button for each channel; rather the mute buttons must be toggled into solo mode. As a hard disk recorder the SX-1 is as powerful as the MX-2424, but limited to only 16 tracks. At this price, 24 tracks should be mandatory.

— Robert Brock,  
Digital Department Head

**I** love the fact that the SX-1 has an external screen option, and that a mouse and keyboard can be plugged directly into the unit. The interface for the VGA monitor boasts a colorful and well laid out system. Unfortunately the dedicated quick access buttons on the front panel only control the small, built-in LCD display, so I found myself reaching for the mouse a lot. This makes it feel more like working on a desktop computer, which is why it is hard to see the advantage of the SX-1 over a computer-based system with a

control surface. Such combinations offer much more flexibility for the same, or even less money. The main advantage of the SX-1 provides is that you don't have to configure anything yourself. If you want the features of digital technology, but don't want to build a system yourself, then perhaps the SX-1 is for you.

— Jason Losett,  
Instructor

**I**'m happy to say that the MIDI sequencer is one of the better ones I've seen on a dedicated piece of hardware. It won't compete with the better computer based sequencing programs, but it is very capable of meeting the basic needs of MIDI based music composition. I especially liked the nondestructive MIDI tools.

— Chris Bailey,  
MIDI Instructor



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BY J. ARIF VERNER

**W**ith the release of OS X 10.2.3, Digidesign has made the leap into Apple's Unix-based operating system. One of the most striking differences with OS X is the smooth new interface. Everything looks shiny, slick and vibrant. As with most things in life, this will please some people while others will be distraught.

Digidesign had to walk a fine line with the integration of OS X. How much do you change the look and feel of Pro Tools while still maintaining its integrity? Is it possible to keep everyone happy all the time with this major upgrade?

## FEATURES

Let's get to the big news first. It is called DigiBase. This new feature is a file management utility similar to the Mac's Finder or Windows Explorer. Think of it as a mega-database for Pro Tools. With its browser-style interface, DigiBase provides searching, sorting, auditioning and importing of audio, session, OMF and other types of files. Without question, this one feature alone will make users happy to jump on the upgrade bandwagon.

When volumes are mounted, DigiBase provides a plethora of information. Listed items include file names, kind of file, waveform overview, duration, dates, size, sample rate, bit-depth, timestamps, location and IDs. Don't need all that information at once? DigiBase has five preset buttons similar to those found in

# Digidesign Pro Tools 6.0.1

the Edit window. This allows users to save custom display settings as View Presets.

For anyone who likes to add documentation to their projects, up to 256 characters may be entered in the comment section. Comments are searchable and support both PC and Mac platforms. Additionally, DigiBase handles modifiers, wildcards and text strings. This makes life easier when trying to locate hard-to-find files.

The TDM version of Pro Tools adds several enhancements to DigiBase not available in the LE version. By using aliases, DigiBase Pro creates custom Catalogs of user-defined files kind of like a Favorites folder for Pro Tools. This is a great way to organize your collection of Sousaphone or kazoo samples. Unmounted files in Catalogs appear grayed-out, yet still provide all the information associated with the file.

In my opinion, the best feature is the ability to audition files. This works regardless of file formats or sample rates. In one easy step, files may be dragged and dropped from DigiBase into the current Pro Tools session. This includes automatic file copy and conversion. No problem dragging a new 24-bit, 96 kHz file into an old 16-bit, 44.1 kHz session. Pro Tools immediately takes care of the housecleaning chores. Moreover, Pro Tools 6.0 handles these tasks in the background while you continue to work. At the same time, the new Task Manager monitors and manages the background processes.

Digidesign has also beefed up Grid mode for audio and MIDI. In standard Grid mode, a moved region snaps to the beginning of the Grid's boundaries. With the new Relative Grid mode, the moved region maintains the offset of the grid from which it was moved. This helps retain the original feel of the performance. Also new is Suspend Grid mode. By holding down the command key, Grid mode automatically changes to Slip mode. This alleviates the need for menu hopping.

By far, one of the coolest features in Pro Tools is Beat Detective. Imagine quantization for audio. Digidesign takes Beat Detective a step further with DigiGroove Templates. Beat Detective in Pro Tools 6



enables users to extract and generate DigiGroove templates based on selected audio performances. These templates may be applied to other parts of the audio. When using MIDI, Groove Quantize adjusts note locations and durations according to DigiGroove Templates. Engineers working with drummers who follow a different beat will surely appreciate these features.

Speaking about MIDI, OS X has eliminated the need for OMS. Now it is handled through Apple's Audio MIDI Setup. Like OMS, users will still need to configure their MIDI devices, but the process is much simpler. Another addition is the introduction of MIDI Time Stamping. MIDI musicians using Digidesign's MIDI I/O interface have the benefit of this streaming technology. MIDI Time Stamping promises to tighten the flow of the MIDI data to less than a millisecond. Also new is support for 960 PPQN (parts per quarter note) for increased MIDI resolution. And MIDI track count has been increased to 256. Does anybody really use that many tracks?

Two other features worth noting are Flatten and Restore Performance. Working non-destructively, Pro Tools can restore MIDI data from the original performance where it was created. This includes tracks, notes and controller data. Once your MIDI masterpiece is perfected, use Flatten Performance to update the file as a new reference point for Restore Performance.

Moving on to plug-ins, Pro Tools 6.0 initiates opening plug-ins on-the-fly. There is a short dropout while the plug-in is loading; however, the transport keeps playing. Another great addition is a built-in click generator for RTAS and TDM in

*continued on page 16 ►*

## Fast Facts

### Applications:

Studio, post production, project studio

### Key Features:

MIDI sequencing; DigiBase; TDM, RTAS-compatible; DigiGroove Templates; Flatten and Restore Performance; Suspend Grid mode; Timeline and Session indicators; multiple plug-ins

### Price:

Upgrade is \$195 from any previous TDM version and \$75 from any previous LE version

### Contact:

Digidesign at 800-333-2137, [www.digidesign.com](http://www.digidesign.com).



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Yamaha DM1000. Big things come in little packages (even little brothers).



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World Radio History

► *Digidesign from page 14*

the DigiRack plug-ins. What a welcome surprise! Also, DigiRack includes the DPP-1 Pitch plug-in along with the D-fx package of delays, chorus and flanger. These were previously available only as a separate purchase.

As we all know, the days of floppy disks are gone. Plug-in authorizations are now handled by an iLok Smart Key (\$39.95). Simply install it into any USB port. Users can also set up an online account at iLok.com. This offers significant flexibility for managing and authorizing plug-ins.

**IN USE**

When I loaded Apple's Jaguar into my G4, I opted to install it on a separate partition from OS 9.2.1. This allows me to start my Mac in either operating system. Now I can run Pro Tools 6.0.1 or 5.3.1. Why would I want both? The main reason is that I have different plug-ins on both platforms. Not to mention, some of my OS 9.2.1 programs are not yet available for OS X.

My main concern with this upgrade is downtime. Since I was in the middle of recording an acoustic guitar library for Sonic Foundry's ACID, the last thing I

**WHAT'S NEW IN PRO TOOLS 6.1?**

One of the main functions of this upgrade was to bring PC users up to speed with the Mac folks. Many of the features in the Mac version 6.0 are now incorporated in the PC update 6.1. These include the new user interface, Digibase, new editing and MIDI features, DigiRack processing features, Beat Detective Groove Template Extraction and Groove Conform, Timecode and MachineControl enhancements.

On the Mac OS X side of things, the new features in version 6.1 are less dramatic but still very useful. Improvements include AVoption|XL and FilmFrame 2.0 support; Digibase browser display of OMF video metadata; support for Advanced Authoring Format (AAF) with DigiTranslator 2.0; new plug-ins and processing features; 32 levels of Undo (up from 16 previously); and Scroll Wheel navigation of Pro Tools windows.

— J. Arif Verner

needed was a studio meltdown. Hey, I was installing a new operating system, a new version of Pro Tools, new plug-ins with the iLok, adding a Glyph FireWire drive, configuring Digidesign's MIDI I/O for OS X and adding several other audio programs. I have had far simpler installs go haywire. But the good news is everything worked flawlessly. I was able to keep recording and editing throughout the whole process!

Pro Tools' new features went to work instantly. DigiBase makes it easy to audition and locate sounds in my extensive sampling library. DigiBase even cataloged and played a disc with MP3s. Also valuable is the Suspend Grid mode function. While working on Acid loops I am always going from

Grid mode to Slip mode. Prior versions of Pro Tools made this a multistep menu process rather tedious. As for MIDI, I do not honestly hear much difference with MIDI Time Sampling (however, I am not using 256 tracks). The Flatten and Restore MIDI Performance commands are useful. There is no need to hit "Revert to Saved" every time I want to get back my original performance. Last but not least, the Click plug-in is great. But I am so used to the old clave sound in my Kurzweil, it will be hard to change.

**SUMMARY**

There are just too many features in Pro Tools 6.0 to adequately squeeze into this *continued on page 18* ►

**New Plug-ins for Digidesign Pro Tools**

BY J. ARIF VERNER

Several new plug-ins for the Pro Tools format have crossed my desk. The quality of these software products just gets better and better. As to be expected, as DSP algorithms improve, more horsepower is needed. Yes, life is a package deal. So while you are saving pennies for that new Process card, take a look at these new plug-in offerings.

**MASSENBURG DESIGNWORKS HI-RESOLUTION EQ**

In an already crowded plug-in market comes the Massenburg DesignWorks Hi-Resolution EQ (\$795). Designed by industry legend, George Massenburg, the MDW EQ is available exclusively for the Pro Tools HD format. There are no AudioSuite or MIX platform versions available.

While most manufacturers are trying to make their plug-ins look like the hardware counterparts, Massenburg DesignWorks is doing the exact opposite. Draped against a background of pastel colors, the interface is an example of simplicity. Under the hood is a different story. The MDW EQ features Double Precision 48-bit internal processing supporting a maximum audio sampling rate of 96 kHz. Interestingly, the MDW EQ processes audio at 88.2 kHz and 96 kHz even

when the session is set to 44.1 kHz or 48 kHz respectively. The end results are fewer artifacts, a wider dynamic range, and more predictable filter curves.

Users familiar with Massenburg's venerable GML 8200 will be happy to know that the plug-in emulates the hardware's constant shape reciprocal filter curves. But unlike the hardware, the frequency range is an impressive 10 Hz to 41 kHz with input levels from -24 dB to +6 dB. Three small indicators light up when overload occurs at the input, EQ or output sections.



*Massenburg Hi-Resolution EQ*

Personally, I prefer meters, but I'm sure that would consume more resources. Each band has a pulldown menu that selects one of eight different filter types. If that's not enough, Band 5 provides four additional filters for a total of 12.

This is a DSP intensive plug-in so it is available only in mono or dual mono. Instantiating it in dual mono for stereo operation uses one DSP chip. Like other manufacturers, I would hope that Massenburg DesignWorks consider *continued on page 18* ►



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► *Digidesign from page 16*

limited review. Other goodies include Timeline and Session indicators to determine online and offline tracks; the ability to import specific track attributes from one session into another; enhanced color coding for edit tracks; a Playback Cursor Locator; MIDI editing capabilities with the Pencil and Trim Tools; an enhanced Selector tool

for zooming and choosing multiple tracks; Virtual MIDI inputs for receiving data from other applications; a Machine Profile utility for MachineControl; and timecode and synchronization enhancements.

While it may not be possible to please everyone all the time, users of Pro Tools 6.0 should be very happy. Digidesign struck the perfect balance integrating OS X. The new

features are impressive and the stability of the program is rock-solid. And for anyone in doubt, this major upgrade still has the look and feel of Pro Tools even with the polished look of OS X!

*J. Arif Verner, the owner of Infinite Sound, a project studio specializing in music, film and audio production, is a regular contributor to Pro Audio Review.*

► *Plug-ins from page 16*

including a three-channel version of their MDW EQ in their package. This would benefit users who need basic EQ when DSP resources are tight.

So how does it sound? I used the plug-in on a variety of material from full mixes to individual instruments. It is smooth, accurate and transparent – even at extreme settings. With such a wide frequency range, there is plenty of room to add “air” into a mix or remove any subliminal rumble. And with so many filter curve choices, the Massenburg DesignWorks Hi-Resolution EQ should please even the most discriminating engineers.

**Features:** Five-band equalization; Double Precision 48-bit processing; wide frequency range; multiple filter types

**Price:** \$795

**Contact:** Digidesign at 800-333-2137, [www.digidesign.com](http://www.digidesign.com) or [www.massenburg.com](http://www.massenburg.com).

**UNIVERSAL AUDIO COMPRESSOR BUNDLE**

If there was a definitive list of classic gear from the 1960s, the 1176LN and the LA-2A compressors would be near the top. From vintage hardware to Pro Tools software, Universal Audio has released the Compressor plug-in Bundle (\$695). Universal Audio not only modeled the equipment’s frequency response but also how it performed with a variety of program material. What’s really interesting, though, is how uncannily these plug-ins look like the original hardware!

The 1176LN was the first compressor to use a field effect transistor (FET) as a voltage controlled variable resistor. This design helped create presence and

color in the audio by adding brightness and clarity. Universal Audio captured other critical characteristics from the original hardware. Still intact is the ultrafast attack time of 20 microseconds along with program dependent response times. This means the release responds differently as the input signal changes. Vocals, for example, will compress differently than drums.

Also unique to the 1176LN were four ratio buttons. These controlled the compression and limiting ratios from 4:1, 8:1, 12:1, to 20:1. One popular trick was to push all the buttons in and turn the attack and release controls to their fastest setting. This was known as Grit mode. What you get is a very interesting gritty, distortion effect. It also works on the plug-in.

Likewise with the Teletronix LA-2A, its compression ratio and response curves vary with the frequency response and the release time is also

Reduction knob adjusts the amount of gain reduction as well as the relative threshold. The gain knob controls the output level up to 40 dB. A small switch on the left sets the response to either limiting or compression.

The LA-2A plug-in is very DSP-efficient and supports sampling rates to 192 kHz. The 1176LN is a different story. This plug-in was designed with a floating point algorithm rather than a fixed point algorithm. Because of the additional number crunching, it only goes to 48 kHz. In lieu of this, Universal Audio includes another plug-in called the 1176SE (Second Edition). This “lite” version uses much less DSP while retaining the basic 1176LN sound. Sampling rates for the SE go to 192 kHz.

User’s not familiar with these older compressors may be surprised at how different they sound and feel from the current breed of plug-ins. The LA-2A is subtler, richer and smoother while the 1176LN brings out more detail and width in the sound. Another advantage with the software is that they are stereo. The original hardware boxes were monaural. Pro Tools users looking to capture the analog sound of classic compressors without the high cost of vintage hardware should definitely audition Universal Audio’s Compressor Bundle.

**Features:** Identical look, control and operation of the original analog compressors; mono or stereo operation; fast attack and release times with FET gain reduction emulation in the 1176; distortion-free optical attenuator emulation with the LA-2A

**Price:** \$695

**Contact:** Universal Audio at 831-466-3737, [www.uaudio.com](http://www.uaudio.com).



UA LA 2A



UA 1176 LN

program dependent. Universal Audio also captured the sound of the original opto-electrical attenuator circuit. This resulted in a fat, warm tone. It was especially popular on vocal tracks. Like the hardware, the plug-in has only two knobs that control the sound. The Peak





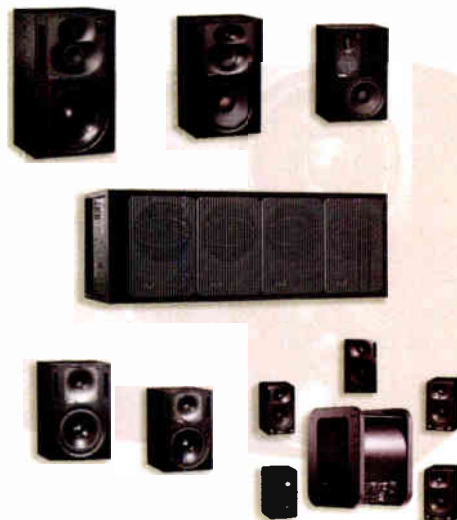
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BY ALAN SILVERMAN

I became vaguely aware of the existence of Merging Technologies on an AES exhibit floor ten years ago. Far in the back of the convention hall, in the distinctly unglamorous area usually reserved for the vendors of bulk cassette pancakes, was a small, unassuming display consisting of an Intel 386 PC on a folding table with a few placards introducing the "Pyramix Virtual Studio." Two gentlemen in suits sat nearby and their conversation seemed mainly between each other as the crowds passed them by to ogle at the latest large-format consoles and digital tape machines. Cut to 2003 and Merging Technologies is still here, offering what is arguably the most universal and full-featured audio workstation on the planet. Audio workstations tend to specialize. The usual areas are multi-track production, audio-for-picture post-production, nuanced editing, CD mastering, and high-resolution DVD-A or SACD production. Most DAWs are best suited for a single discipline and only marginally support the rest. With version 4.1, Pyramix Virtual Studio offers an all-in-one solution that will satisfy professionals at the highest level in all of these crafts.

## FEATURES

At the core of the Pyramix platform is the Mykerinos PCI card, now in its fifth generation of development, built around an advanced Philips Trimedia DSP engine. At AES in October, Merging will release a

## Fast Facts

### Applications:

Studio, post production

### Key Features:

Turnkey system; Mykerinos dedicated DSP card; DirectX, VST-compatible; up to 384 kHz; SMPTE timecode; video-compatible; PCM; DSD; Scarlet Book SACD; expansion options

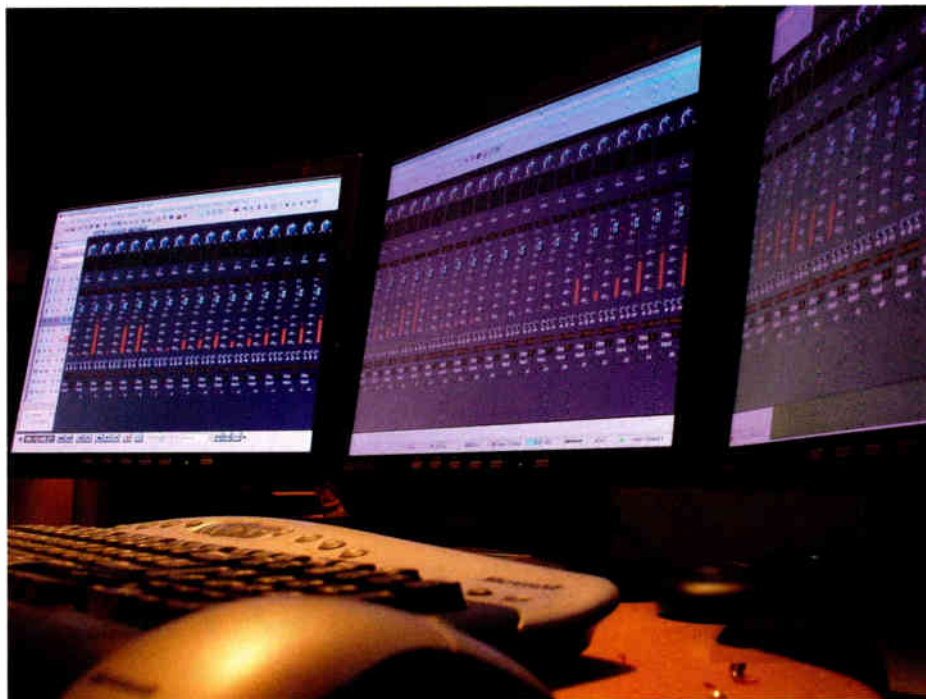
### Price:

starts at \$3,495

### Contact:

Merging Technologies at 847-272-0500, [www.merging.com](http://www.merging.com).

# Merging Technologies Pyramix V4.1



firmware upgrade that will raise the channel capacity of the card to 128 inputs and 128 outputs of 32-bit floating point audio at sample rates of 44.1 kHz or 48 kHz (1 Fs). With the upgrade, there will also be 128 available internal mixer channels freely configurable as input strips, auxes, and busses. For example, a 100-input, 12-aux, 16-bus mixer is possible at 1 Fs. The maximum sample rate supported is 384 kHz (8 Fs) and for each doubling of rate the I/O channel and mixer bus counts are halved. Multiple cards interconnect via the company's HDTDM bus and, at AES, Merging will show a four-board system capable of 16 channels of DSD, an industry first. The Mykerinos virtual mixer offers EQ, dynamics and effects, all of exemplary audio quality and very low-latency. Merging's close association with Philips also opens Pyramix to the latest Trimedia chip software developments, such as a new SRC and DSD-PCM conversion algorithm soon to be added to the system. In addition, some of the industry's most gifted designers have written Mykerinos plug-ins.

Connection to the outside world is handled

by an assortment of daughter boards supporting all standard digital formats. At the most basic level, an inexpensive Pyramix system with a single Mykerinos board and a "MADIX" daughterboard makes for a complete 64-track 48 kHz sampling digital recorder/editor/mixer, with tape machine-style auto-input monitoring, SMPTE chase lock, and full parameter automation! Multichannel analog converters are not included, although the Mykerinos card has a 96 kHz stereo analog utility output with automatic down-conversion from sources at higher than 96 kHz. Onboard sync options are video/HDTV, LTC, VITC and word clock.

Track, clip and media management are thorough and flexible almost to a fault. There are so many ways to customize the workspace and keyboard operation that there is the real possibility of getting lost. Tracks can be linked, collapsed, expanded, grouped and color-coded at will. For example, track grouping can be defined according to solo/mute/record status, input/output connection, automation, and media folder. Clip

*continued on page 22* ►



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► *Pyramix from page 20*

grouping seems limitless and mind-warping complexity is possible.

Multiple projects can be open simultaneously, with full drag-and-drop or cut-and-paste between projects. Media management is quite thorough as well and is designed to integrate Pyramix into large environments of networked users and extensive libraries. Project interchange is supported between AES31, Akai DD, CMX, DDP, OMF, OpenTL, Pro Tools and Sonic Solutions platforms. The software also comes with various presets of keyboard shortcuts to enable users of other platforms to feel at home, as well as a macro editor for building repeatable complex operations. A macro library that will be familiar to Sonic users is included. Version 4.1 also offers background digitizing. This feature, of vital importance to busy facilities, enables a complete project to be input while simultaneously editing another project in the foreground. Background digitizing is further augmented with autoconform of a CMX format EDL via 9-pin machine control.

Pyramix operates in two main windows – the Composition window and the Project Tabs window. Compositions are clip-based, each clip carrying its own non-destructive volume level, fade in/out, and sync point. As the mouse is moved over a clip, various handles become active allowing edges, levels, and fade times to be adjusted. A volume envelope feature is available for creating any number of points within the selected clip that can be stretched to create a complex level ride. The corresponding rides move along with the clip anywhere on the composition's time line permitting less dependence on the system's automation. Crossfades between clips are automatically activated by a hot key and further refined with the precision "multi-point" crossfade editor. A source-destination editing model, indispensable for classical music and dialog editors, is fully implemented, and enhanced by the extensive grouping options. Crossfades are virtual, permitting adjustment at any time, without rendering fade files.

At the left of the composition window sits the track header panel providing I/O and mixer assignments, solo/mute/record/play/monitor/automation status, as well as playlist access. Playlists are enabled for audio clips and automation passes, permitting punch-in compilations from multiple takes or mix passes to be easily recalled within a single composition.

Even though tracks can be grouped, nested and color-coded, dual monitors are strongly recommended. The Project Tabs window, which accesses all the organizational features of Pyramix - EDLs, libraries, groups, playlists, markers, customizable workspaces, the fade editor, CD P/Q sheets, machine control, etc. –

DSD projects, bringing advanced processing tools to the formerly untouchable rarified atmosphere of SACD production.

PCM and DSD metering is well implemented. Peak/RMS levels, crest-factor, phase, and stereo Lissajou patterns are displayed with animation that is crisp and smooth. Perhaps as



*Pyramix 4.1 screenshot*

is best left open on a second screen.

A new project requires the configuration (or selection) of a virtual mixer and here is where the processing power of the Mykerinos and the expertise of the designers who have created its DSP code really shine. Aside from the richly textured 3D graphics throughout, the mixer's sound quality is impeccable. Mykerinos "effects" that are currently available include EQs, dynamics, reverb, a denoiser/declicker, and various meters and utilities. There is also support for DirectX and VST plugs but these run on the host computer's CPU. All Mykerinos-based plugs are capable of operating at the maximum sample rate of 384 kHz and their parameters can all be automated, whereas DirectX/VST plug-ins typically run at 96 kHz maximum and are not included in the system's automation.

The remarkable Algorithmix NOVA restoration processor has been implemented in Mykerinos as well. This package creates a 2-D color map interface that allows the user to identify and remove extraneous sounds such as coughs and chair squeaks from a recording. Mykerinos plug-ins are capable of running in

a way of paying homage to founder Claude Cellier's stint at Nagra-Kudelski (where he designed the Nagra-T) there is a "modulometer" plug-in which produces a photo-realistic animation of the round VU meters on the original Nagra, complete with proper ballistics. The modulometer plug is quite amusing. In DSD mode, the VU meter displays ultrasonic and DC levels to assure compliance with Scarlet Book SACD standards. Surround mixing up to 5.1 is presently supported. By creating a surround master section in the mixer, all track strips automatically receive a full 5.1 panning module with divergence and LFE control. A "jelly fish" style meter indicates coverage patterns as a channel is panned, and divergence values are shown both numerically and as an "orbit ring" graphic.

One of the most interesting new features in Pyramix 4.1 is the "Virtual Transport" application. VT is a client-server agent that enables Pyramix to communicate with and synchronize to external applications (clients) on the same computer, or on networked computers. Among the clients currently available are

*continued on page 24 ►*



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### ► Pyramix from page 22

Video Play, MIDI-sync, Sony 9-pin sync, and Server. Video Play allows frame-locked picture to chase Pyramix’s play cursor. Video can be in a variety of codecs as well as DV imported via FireWire. The MIDI sync client sends and receives MIDI timecode for synchronization with sequencers and other MIDI-based hardware. This deftly lets Pyramix off the hook from having to support MIDI composition internally since there are so many such programs that are already fully developed. The Sony 9-pin app permits control over compliant hardware via LTC, VITC, or control track, including track arming and the Server app includes the master transport control, the client launcher (called the ‘lounge’), and the network frame where slave/master status is set.

### IN USE

The review system arrived just in time for mastering the SACD release of Patricia Barber’s latest recording, “Verse.” The original source was analog tape and I had already done a pass from the 1/2-inch, through a Manley Massive Passive EQ, directly to a Meitner DSD converter. I loved the simplicity and purity of the resulting DSD recording, but there were also some areas that needed work in order to end up with something that was not only simple and pure, but also a good record. There were a few edits, vocal plosives and sibilance in spots, and an aggressive trumpet solo needed some dynamic control. All easy enough in the double-sampling 2 Fs PCM world but, until now, I had no way of dealing with this at anything approaching DSD quality. Pyramix supports DSD mastering with a two-stage work flow. The load-in and play-out of pure DSD is done in what is called a “DSD recording” session. In DSD recording mode, clips can be created, trimmed, and moved, but no level changes, mixing or processing are possible. This is by virtue of pure DSD being a 1-bit stream. Any processing on pure DSD would result in samples of more than one bit, which, by definition, is no longer DSD; therefore, transcoding to some form of PCM is required. The Sony Oxford Sonoma system does its work by converting to what is called “PCM-narrow,” also known as “DSD-wide,” which consists of 8-bit samples at the native DSD rate of 2.8 MHz. Merging opts to transcode to 32 bits at 352.8 kHz sampling. Merging and Phillips have done research indicating that 32/352.8 kHz PCM is transparent

for DSD, and based on the experiences of a number of picky engineers, this author included, practice seems to support this theory. Once your DSD material is loaded, the “recording” project is closed and reopened as a DSD “editing session.” In this mode, DSD is real-time transcoded by the host computer to 32/352.8 kHz for processing by Mykerinos. Pyramix’s high-resolution strip tools then become available, as well as mixing, gain-rides, and cross-fades. At the output of processing, the 8Fs PCM is remodulated back to DSD in real-time for monitoring though an external DSD DAC. There is a caveat, however. It is not advisable to put your pure DSD through more than a few passes of transcoding/remodulating because the ultra-HF noise produced by DSD noise-shaping will become unmanageable. Pyramix allows you to keep the audio in 8 Fs format for interim processing steps as a way to avoid ultrasonic noise buildup.

I began working on “Verse” in edit mode and opened a parametric EQ and a dynamics processor. Listening to Mykerinos processing at 352.8 kHz sampling was a beautiful thing. If the computer were hidden inside a large metal box of glowing vacuum tubes with big Bakelite knobs on its face controlling Pyramix, I would have been totally certain that I was using first-rate analog gear. The Pyramix EQ was as smooth and easy to listen to as any analog EQ I’ve used. The compressor too had a surprisingly analog-like character and behavior. There was simply no perception of the kind of artifacts we normally associate (rightly or wrongly) with digital processing.

Once you’ve completed your DSD editing project the system provides an “SACD Edited Master” export that will create a DSD image file, including Scarlet Book track markers, text and speaker configuration.

### SUMMARY

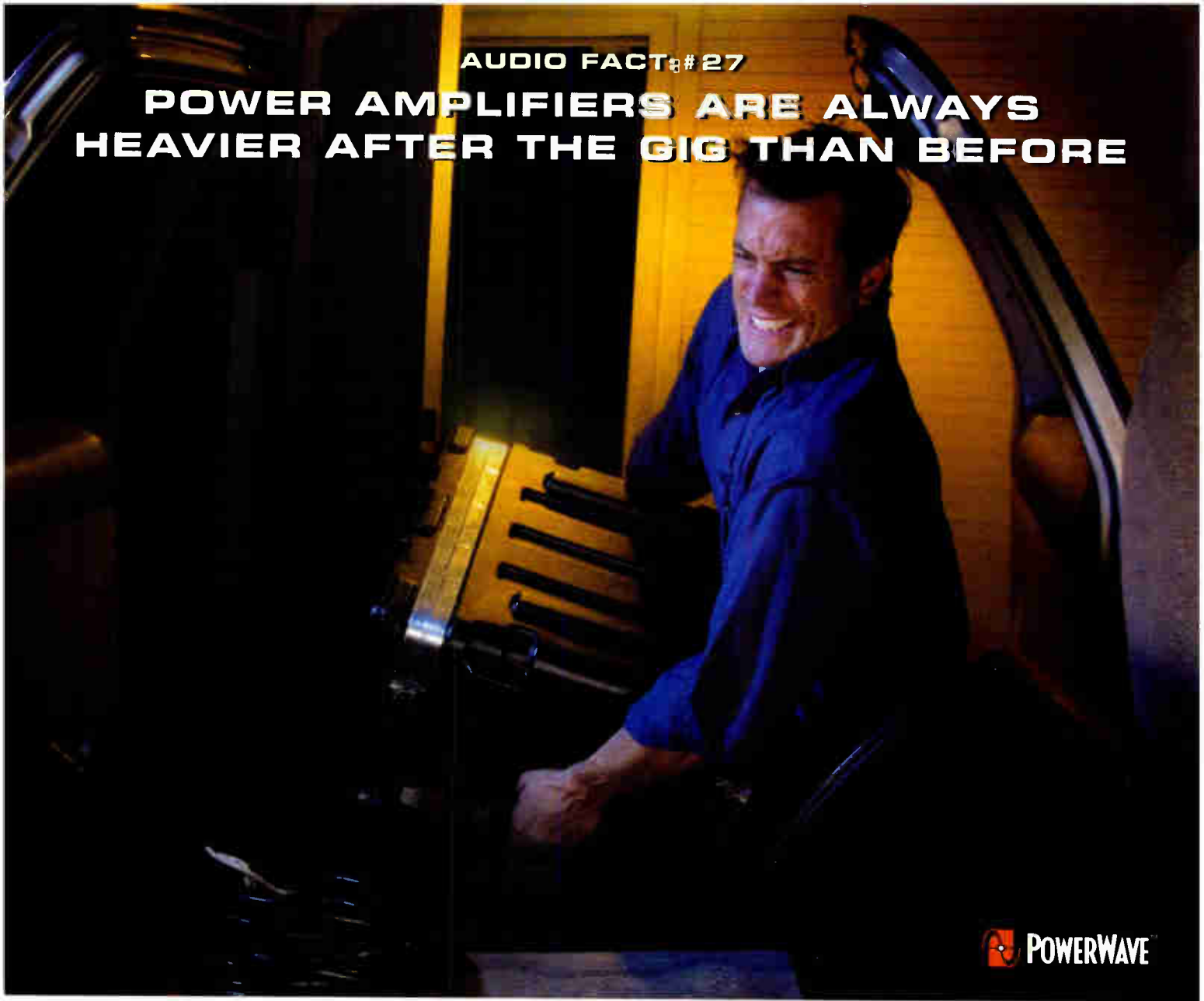
Pyramix Virtual Studio 4.1 is a significant accomplishment. Merging Technologies has produced a truly universal workstation capable of the most sophisticated tasks at the highest audio quality. As with any system of this complexity, there is on-going development and glitches will be discovered from time to time. Nonetheless, the system appears solid and ready for prime time.

*Alan Silverman, formerly an engineer at the late great A&R Recording, is founder of Arf! Digital, a CD/SACD/DVD-A mastering facility in NYC; www.arfdigital.com.*



AUDIO FACT #27

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8Ω: 20 Hz–20 kHz, 0.03% THD  
4Ω: 20 Hz–20 kHz, 0.05% THD  
2Ω: 1 kHz, 1% THD



BY STEPHEN MURPHY

**N**o one can accuse Yamaha of dragging their feet when it comes to digital mixers. In the last two years, Yamaha delivered significantly updated versions of its popular small-format mixers (02R96 and 01V96) and introduced two new-from-the-ground-up professional consoles: the scalable PM1D control surface and outboard audio processing system, and the self-contained DM2000 digital production console.

With twice the number of mix channels as the 02R96 and no reduction of functionality when operating at 96 kHz, the \$18,000 DM2000 won considerable acclaim from critics and mid-sized audio production facilities alike. Hot on the heels of the DM2000 comes Yamaha's compact and feature-laden DM1000 (\$5,299).

## FEATURES

The 48-channel DM1000 console is truly a chip off the digital block, sharing many of the features found in the 96-channel DM2000 (*PAR* 4/03). Apart from the number of channels, the most immediate difference between the two consoles is that the DM1000 can be squeezed into a standard 19-inch rack.

Using the supplied Studio Manager software, mix and settings data are easily shared among DM1000, DM2000 and 02R96 digital consoles, making the affordable DM1000 an attractive "off-line" console for multiroom facilities.

## Fast Facts

### Applications:

*Studio, postproduction, theater, live sound, fixed installations*

### Key Features:

*48-channel; eight-bus; all channels functional at 96 kHz; 20 analog inputs including 16 mic preamps; Studio Manager (Mac and PC) mixer control software included; optional meter bridge (\$949), wood side panels (\$349) and rack mount kit (\$27) available*

### Price:

\$5,299

### Contact:

*Yamaha at 714-522-9011 or [www.yamahaproaudio.com](http://www.yamahaproaudio.com).*

# Yamaha DM1000 Digital Production Console



Like the DM2000, all 48 channels on the DM1000 can operate at 96 kHz – a feat many other digital consoles in this price range cannot claim. The console can also operate at the lower sampling rates of 88.1 kHz, 48 kHz and 44.1 kHz. Internal processing is carried out at 32-bit resolution with 56-bit accumulators. Mix settings are completely recallable using both dynamic and snapshot automation.

Users can select up to four simultaneous internal effects processors featuring a range of stereo and surround tools. Effects banks and settings can be exported and imported using the Studio Manager software interface. Each of the DM1000's channels is equipped with its own four-band parametric EQ plus independent gate/expander and compressor sections.

The DM1000 comes as standard with 20 analog XLR inputs – 16 of which have mic preamps – and 12 analog outputs on XLR connectors. The mic amps are the same as found on the DM2000 console and feature individually selectable phantom power.

Analog inputs directly feed the mixer's on-board 24-bit/96 kHz analog-to-digital converters; all digital-to-analog converters operate at 24-bit/96 kHz as well.

Two expansion slots are available, each capable of handling 16 channels of I/O using Yamaha's mini YGDAl analog and digital expansion cards. In addition to Yamaha's multiformat expansion cards, the two slots are also compatible with Apogee's high performance A/D and D/A cards and the Waves Y56K plug-in effects card.

The control surface features 17 touch-sensitive 100-millimeter motorized faders (16 plus master). Four-layer fader switching selects channels 1-16, 17-32, 33-48 or the "master" layer (Aux 1-8 and Bus 1-8).

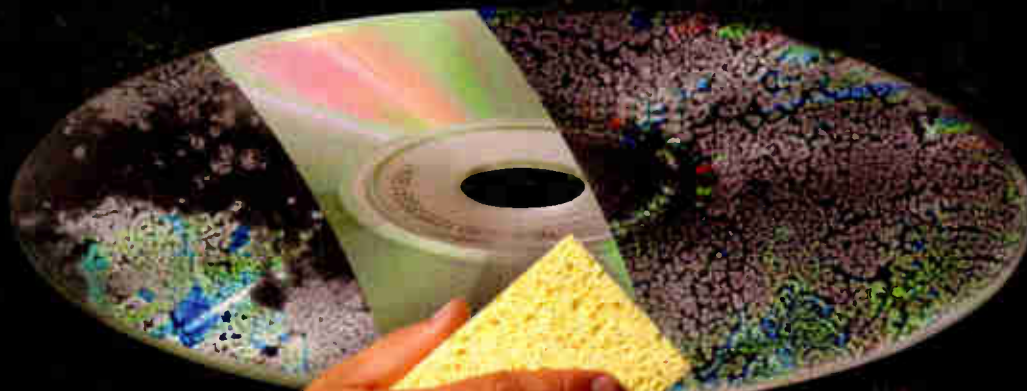
Each fader channel has a corresponding rotary knob/push-switch controller and the familiar Yamaha set of three buttons: Select, Solo and On (mute). A "Selected Channel" control section allows immediate access to the

*continued on page 28* ►



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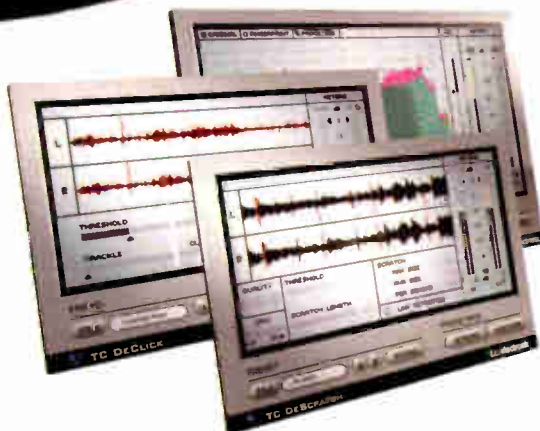
This new tool employs unique patented technology that eliminates clicks, scratches and even long disturbing dropouts. DeScratch is perfect for removing extreme impulsive-type errors in digital signals or scratched vinyl recordings. At last it's possible to eliminate extremely large scratches without audible artifacts.

### DeNoise

DeNoise removes broadband noise, from tape hiss to static environmental noise. The Denoiser is fingerprint-based and offers manual adjustment for very precise and predictable processing results.

### DeClick

The DeClicker repairs crackle and clicks with an extremely easy and fast user interface. The Audition feature allows monitoring of the removed signal parts for optimal results. In combination with the DeScratcher, small and large artifacts can be reduced dramatically in just one pass.



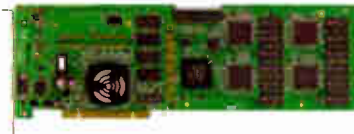
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► *Yamaha from page 26*

most used parameters on the currently selected channel via a series of buttons and knobs.

Smack in the middle of the console is the DM1000's Display Section, featuring a fluorescent backlit 320 x 240 LCD panel. Also located in the display section are the console's 32-segment stereo meter LED display, a LCD contrast control knob and a row of function and page-scroll buttons.

The optional MB1000 Peak Meter Bridge (\$949) features 16 12-segment level meters that can display pre-EQ and pre or post fader input channel levels. The meter bridge also provides eight 12-segment meters for monitoring the console's mix buses, and a large timecode location display.

The bare console (without meter bridge and side panels) measures 23 inches x 7.8 inches x 17.1 inches and weighs in at 44 pounds.

**IN USE**

During the review period, I primarily used the DM1000 to mix several stereo and surround productions in my studio. I also brought the console to another location to record basic tracks and overdubs on an ongoing production – the ability to easily transport the board was a big plus.

I was frequently impressed by both the quality and capabilities of this little charmer. Having worked for a time at a facility that employs 12 of the original Yamaha 02R consoles, I was happy to find that none of the issues I had with that board exist in the DM1000.

Yamaha deserves credit for producing a board this powerful feature-wise, while maintaining a high-road approach to the console's input,

conversion, routing and output signal paths. Across the board, sound quality was excellent.

The feature set with which I was most impressed is what many will recognize as the most important: the DM1000's extremely flexible digital patching abilities. It is this feature alone that makes the DM1000 more useful than any other compact digital console I have used (the DM2000 excepted).

In short, any of the console's analog and digital inputs, returns, auxes, busses and inserts can be assigned to any mix channels, aux busses, program busses or analog and digital outputs. With the expansion slots outfitted with digital I/O expansion cards (plus the console's built-in AES and S/PDIF digital I/O), I turned the DM1000 into an autonomous digital patchbay/routing system while still being able to mix using the rest of the console's inputs and bus outs. Complicated patch setups were recallable at the click of a mouse in the Studio Manager software.

Also adding value to the console is its comprehensive 5.1/6.1 surround mixing and monitoring capability. The built-in surround monitoring control is every bit as comprehensive and functional as the stand-alone several-thousand-dollar surround monitors I have used. By not having to bus signals out of the mixer and into an outboard unit, combined with the DM1000's internal routing abilities, saved a bunch of hassles and increased overall efficiency.

While I did not get to delve too deep into using the DM1000 as an advanced DAW control surface, it took practically no time to realize basic functionality. In less than 10 minutes, I was able to use the DM1000 to control transport, fader automation, solo/mute and panning functions within Steinberg's Nuendo software.

While the DM1000 can be described more or less as a half-size DM2000, there are two notable omissions in the DM1000 that can be found in the DM2000 feature set.

The first is ergonomic – the DM2000 has an extremely useful digital "scribble strip" that can display the names of each channel in the current bank. When flipping through multiple banks of channel faders, having the ability to quickly and accurately know what is on each channel is invaluable. This was probably cut to meet its price point – hence, a luxury we will have to do without.

The other item is a little more obstructive: unlike the DM2000, the DM1000 has no analog insert point before the A/D conversion of the microphone inputs. Call me old fashioned but I still like to use my favorite analog compressors on the way in to the conversion process.

**SUMMARY**

Without a doubt, the sonic quality and feature set of the DM1000 is an amazing achievement for Yamaha and an excellent value for production studios. Given its flexibility, the console also has excellent potential for use in theater, installations and sound reinforcement.

At \$5,299, the purchase of a DM1000 is not terribly hard to justify. Consider this: an equivalent outboard analog/digital routing system combined with a comprehensive standalone surround monitoring system would cost as much as the board itself. In this case, you can consider the automated mixer, mic preamps, dynamics processors and effects processors as a bonus!

*Stephen Murphy, contributing studio editor for PAR, has produced and/or engineered hundreds of recordings, including Grammy-winning and gold and platinum-selling releases.*

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BY RUSS LONG

# Steinberg



## Nuendo 2.0

**D**igital Audio Workstations (DAW) have become the foundation of modern recording. It has become extremely rare for an album to be completed without at least one stage (tracking, overdubbing, editing or mixing) to include the use of a DAW. Where Digidesign's Pro Tools has established itself as the industry standard, more recently many professionals have been finding that other systems such as Steinberg's Nuendo, MOTU's Digital Performer or Emagic's Logic might better suit their needs. As a longtime Pro Tools user I was excited to sink into the Nuendo world and see if all the talk was simply hype or if there truly is something to this environment that has turned so many heads.

### FEATURES

For PC use, Nuendo 2.0 requires 256 MB RAM, a 650 MHz Pentium or Athlon processor running Windows 2000 or XP, and 16-bit/44.1 kHz or better audio hardware with ASIO or Windows Multimedia driver and USB. For Mac use, it requires 256 MB RAM, PowerMac G3 or better running Mac OS 9 or later, with USB. These are of course minimum requirements. Typically, as with any host-based DAW, the more RAM the better it runs.

Nuendo 2.0 can import and export virtually any type of audio file (import options include WAV, Broadcast WAV, AIFF, MP3,

MPEG-2, REX, SDII [Mac only], audio CD, QuickTime, AVI, MPEG video, OMF, OpenTL 3.0, AES31, generic EDL, Premiere EDL, MIDI and Cubase songs; export options include WAV, AIFF, MP3, RealAudio, WMA, OMF and OpenTL) at sample rates up to 384 kHz. I found it extremely helpful that audio can be imported directly from a CD without first having to extract it.

One of Nuendo's many killer features is its ability to have multiple projects open simultaneously and to effortlessly drag and drop between projects or directly from a desktop folder into a project. Nuendo's Library feature helps organize samples, loops, sound effects, etc. Nuendo 2.0 offers an unlimited number of channels, effect returns, VSTi and group channels for simultaneous mixing (limited only by the host computer) in 16-bit, 24-bit and 32-bit floating point audio files of 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz and 192 kHz sample rates.

Although the Nuendo 2.0 windows are packed full of information, due to their highly intuitive layout they remain easy to navigate. The Project window is Nuendo's primary window, providing a graphic overview of the project and allowing easy navigation and the ability to perform large-scale editing. The Project window is divided vertically into tracks with a horizontal time line. The following track types are available:

Audio, Group Channel, MIDI, Marker, Master Automation, Plugin Automation and Video.

Audio tracks provide the recording and playback of Audio Events and Audio Parts. Each Audio Track has a corresponding Audio Channel in the Nuendo mixer. Each Audio Track can have any number of automation subtracks for automating insert effect settings and mixer channel parameters. With 2.0, every input, audio track, send, effect return, group and output offers up to 12 discrete channels.

MIDI tracks allow for recording, editing and playing back MIDI Parts. In Nuendo, MIDI Events are always gathered in MIDI Parts, which are essentially containers for one or more MIDI Events. MIDI Parts can be manipulated and rearranged in the Project window.

The Marker Track displays the markers and allows them to be renamed and moved directly in the Project window. Markers shown on the Marker Track are exactly the same as shown in the Marker window, so any changes made on the Marker Track are reflected in the Marker window and vice versa. Markers in the Marker Track are shown as Marker Events, which are vertical lines with the Marker name or number beside it. Each Project can only have one Marker Track.

Plugin Automation tracks contain  
*continued on page 32* ▶

### Fast Facts

■ **Applications:**

Studio, project studio, post production

■ **Key Features:**

Windows, Mac-compatible; imports almost every format audio file; exports all major audio file formats; up to 192 kHz sample rate; numerous plug-ins; surround sound; MIDI; compatible with VST synths; video-compatible

■ **Price:**

\$1,499

■ **Contact:**

Steinberg at 818-678-5100, [www.steinberg.net](http://www.steinberg.net).



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Bill Dudleston  
Chief Engineer

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► *Steinberg from page 30*

automation curves for the parameters of all Send and Master effects. Video Tracks allow Video Events to be played back. Each Project can only have one Video Track. Video files are displayed as Events/Clips on the video track, with film frames represented by thumbnails.

The Project browser window provides a list-based representation of the Project allowing the viewing and editing of all Events on all Tracks by using regular value editing in a list.

The Transport Panel features transport controls, much like those found on a conventional tape recorder. It can also be used for locating marker positions, setting tempo and time signature, etc.

All clips, audio or video, that belong to a Project are listed in the Pool. Each has a separate pool. In the pool you can organize, convert and audition clips among many other things. Multiple pools can be opened within a Project.

The Sample Editor allows audio to be edited by cutting and pasting, removing, drawing or processing audio data. All of the editing in the Sample Editor is "nondestructive," and at any point you can undo changes or revert to the original audio sample by using the Offline Process History. This dialog allows you to remove or modify audio processing at any time. This is one of Nuendo's strong points as it is even possible to alter or remove processing performed earlier while keeping all later processing.

MIDI data is edited in the MIDI Editor window. Nuendo 2.0 also offers Drum,

Logical, SysEx, List and Score editors, making the editing of MIDI information highly flexible. Packaged with 2.0 are several MIDI plug-ins including Quantizer, MIDI Echo and Compressor.

Audio channels are mixed using the completely re-engineered 32-bit, floating point mixer. The user-configurable mixer allows the user to choose between a variety of display options above the fader section including insert effects, effect sends, EQ or an additional view with input and output settings that include gain change and phase shift per channel. The new narrow view allows for the simultaneous display of more channels. The mixer now features effects return channels as well as input channels that allow effects to be processed while recording, if desired. For stereo mixes, Nuendo 2.0 offers the option of three panning modes for both the channels and the sends: balance, dual and combined. The new VST Connection Device provides an entirely new way of organizing inputs and outputs, allowing the user to customize multiple multichannel input/output configurations and store them as presets. Multiple input and output bus objects with respective sub busses can be created quickly and easily and then connected to the desired ASIO port. Any mixer channel can be routed to any of the input or output busses as desired and multiple input and output busses can be used simultaneously.

Nuendo offers extensive surround features including 25 different supported formats (including mono, 5.0, 5.1 and 10.2) with a surround architecture of 12 discreet

channels and an extremely flexible matrix routing. When mixing in surround, a surround panner is available for each send, allowing a source position for a 5.1 surround effect to be determined. Also included are multiple output configurations for multiple speaker setups. Users who routinely work with surround will want to consider the surround edition, which adds an assortment of true surround plug-ins (8-in/8-out) to the included stereo plug-ins. These include OctoQ (EQ), OctoComp (compression), OctoMaxx (loudness maximizer), Octoverb (reverb) and LFE control (LFE Splitter and LFE Combiner). Also available at an additional cost is the Nuendo Dolby Digital and DTS encoder.

Nuendo 2.0 offers an audio engine with completely rewritten code that provides improved performance on virtually every level. When used with a multiprocessor computer, Nuendo 2.0 ensures that the work is spread evenly between each CPU. All delays inherently created by plug-ins, regardless of where they are inserted, are compensated for by the 2.0 architecture.

Nuendo 2.0 includes a wide assortment of highly usable plug-ins including dynamics, EQ and effects, as well as the previously mentioned MIDI plug-ins. Of course, there are tons of VST plug-ins available typically at a price substantially less than their TDM counterparts.

**IN USE**

After spending several months running Nuendo 1.6 on both PC and Mac formats, I  
*continued on page 34 ►*

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*Phil O'Keefe, Sound Sanctuary Recording, Riverside CA*



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*Jim Chapdelaine*

*Independent composer/musician/producer, NYC, NY*

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*Richard Landis*

*Blueberry Hill Studios, Nashville, TN*

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*David L. Newman, film composer, Los Angeles, CA*

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### ► Steinberg from page 32

was excited to upgrade to version 2.0. The installation was a breeze and I was actually up and running in a fraction of the time that I anticipated. Both the Mac and the PC environments use a hardware key for copy protection. Of all copy protection schemes, this is my favorite. If your computer completely dies and you have to be up and running in no time, this is the protection scheme that makes that possible. It also makes software upgrades quick and easy. Although I would not recommend trying this at home, I am happy to report that my key is still working like new after going through a complete cycle in both the washer and the dryer after being accidentally left in the pocket of my jeans.

Since I spend a lot of time traveling, I was anxious to find a DAW that would run on my Sony PCG-FX340 notebook computer. The potential to get a mix roughed in or get some editing done while waiting to board a plane or during a long flight is quite appealing. I found Nuendo to be the perfect choice. I would have never guessed 10 years ago that someday I would actually be able to say that I did an almost complete mix on a flight from Nashville to Seattle. If you are lucky enough to have a CD-burner built into your notebook, you can actually burn a CD and run it up to the artist in first class and have him/her check the mix before the plane touches down.

Nuendo worked equally well with my Mac and a MOTU 828. I imported some SDII audio files from a Pro Tools session and went to work. My initial surprise was how intuitive the program is. I found that I rarely needed assistance and when I did, the program's Help menu was able to point me in the right direction.

I spent some time discussing Nuendo with longtime user John Mark Painter. He has put the system to work on a wide variety of projects over the last 18 months and has been extremely pleased with its performance. Painter, who does a large amount of video and film sound work, was exceptionally pleased with the video scrub feature. I also spent time discussing Nuendo with renowned producer/engineer Joe Baldridge, who has been living in the Nuendo world for over a year. He explained, "Nuendo's internal mixer has the width and depth of an analog mixer. I feel we make no sonic compromises mixing internally in Nuendo. The flexibility and speed of the automation allows us to go much further than the financial constraints of being in a \$1,200 a day mix room."

Steinberg's formation and ongoing support of the Nuendo Producer Group makes it apparent that the company is committed to the continued development and support of this incredible package. This group is made up of top producers and engineers in support of the Nuendo Media Production System and includes Chuck Ainlay, Elliot Scheiner, Phil Ramone, Frank Filipetti, Alan Parsons and several other top-knobs. The group's aim is to bridge the gap that typically exists between software designers and the end-user.

### SUMMARY

Although Nuendo 2.0 still lacks the user base that Pro Tools possesses, it is a powerful environment offering a host of features that will make Pro Tools users everywhere drool with envy. If you are in the market for a DAW, it is worth taking a good look at Nuendo 2.0.

*Russ Long, a Nashville-based producer/engineer, owns The Carport recording studio. He is a regular contributor to Pro Audio Review.*



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BY DR. FREDERICK J. BASHOUR

# Gefen Interfaces

After reading their MacWorld ads for several months, I called up Hagai Gefen at Gefen Inc., and ordered a quantity of what I've jokingly referred to as "Gefen Gizmos" — large and small black and silver boxes and rack units with orange lettering. After they arrived, I spent an entire weekend moving all my DAW equipment down to the basement machine room located directly beneath my control room, and running the Gefen cables through pre-cut holes in the floor between the two rooms. I also removed all my CRT monitors, leaving only the 22-inch Apple Cinema Display and 18.1-inch NEC 1850X perched on the same Roland master keyboard I used in Tennessee. Some things didn't have to change!

## IN USE

So what exactly did Gefen send me, and did I connect it? First, I'll list the equipment

I told Hagai I needed to interface. My MOTU/TC PowerCore DAW #1 resides in a Quicksilver dual-gig Mac, and it is that system to which the two LCD monitors, Apple keyboard and Kensington wireless mouse were originally connected. But then there's DAW #2 — my vintage '92 Dyaxis II setup with its own collection of hard disks. The Dyaxis processor presently runs on a Mac 9600 to which I've recently added a Sonnet Crescendo 800 MHz G4 accelerator. By simply adding a modern ATI dual-head video card to the 9600, that Mac became

capable of driving two large LCD monitors.

My third DAW is a Merging Pyramix PC, with its own collection of hard disks. It also is capable of dual-head video output to large LCD monitors.

Gefen first suggested one of their "ex-extend-it" series, the 2x2 DVI Switcher (\$799) — a single rack-space unit about five inches deep. Its rear panel is completely populated with connectors, enough on its input side to connect the dual-video outputs from two computers, along with their USB and stereo audio ports and, on its output side, connectors for the two monitors, two duplicate USB ports for keyboards/mice, and 1/8-inch stereo audio. From my point of view, the single most important connector on back is a little RJ-type female on the end of the right side, to which one connects a tiny wired remote control which duplicates the two front panel switches (labeled '1' and '2'). Thus, I can now switch between two computer systems either down at the switcher unit, or upstairs which, of course, was my goal.

After a little telephone troubleshooting help from Gefen's support staff, I was up and running. The 2x2 DVI Switcher was able to take, via appropriate adapter cables, my Apple ADC outputs, strip them of their USB connections in order to become plain and simple DVI signals, send them along their way upstairs to the Cinema Display and, through another tiny unit called the "ex-extend-it DVI to ADC Conversion Box" (\$149), output a signal which pleased the Apple monitor. The USB was sent separately; all I lost was the ability to power on the G4 from the Cinema Display's switch — a small loss considering all that I gained!

The VGA output from the other sides of my two Macs' video cards was similarly adapted to pass through the Gefen switcher's DVI-A connector as analog video,

*continued on page 52 ►*



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## Nuendo 2.0

The solution is clear. The choice is now yours.



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Pro Audio Review – October 2003

# NEWS

# NEW PRODUCTS

**Shure** is now distributing several Countryman mics with select wireless systems. Shure was also a major provider of microphones, wireless and wired, at several Montreux Jazz festival venues.

The Minneapolis club, First Avenue/7th Street Entry recently added **Electro-Voice's** N/D967 to its microphone list along with N/D468s, N/D868s, Cobalt Co4s and RE200s.

Mark Chesnutt, Joe Diffie and Tracy Lawrence, AKA the Rockin' Roadhouse Tour, used **Sennheiser** Evolution wireless handheld transmitters (Evolution 500 with 865 condenser capsules). Other Evolutions, wireless and wired, could be found scattered throughout the backup bands and singers. CDL Tours handled the shows.

**JBL** VerTec systems were out and about with several recent tours. Tour company Audio Analysts (vice president Albert Leccese picture below on-site) supplied Bruce Springsteen with over 150 VerTec speakers (mostly VT4889 speakers and VT4880 subwoofers).

**Crown** MA amps drove the speakers and **BSS** processors handled processing. In Turkey, Dogus Sound and Light Systems used 16 VT4889 line arrays and eight VT4880 subwoofers at several concerts.



**Apogee Sound** placed one of its ALA-3 line arrays into the main cluster at the Donna and Marvin Schwartz Center for Performing Arts at Emory University in Atlanta. The contractor was Electronic Engineers, Inc. of Montgomery, Ala.

## Whirlwind DrumDrop Snake

The DrumDrop is the latest addition to Whirlwind's Medusa snake family. The DrumDrop is designed for prewiring a drum kit (in its setup) thus allowing the kit to be wheeled out and with one multipin connection connected to the appropriate stagebox. The stainless steel-encased DrumDrop's XLR fanout, sold separately, is color-coded or you can use your own. Great for multi-act gigs. Custom configurations are also available for a bit extra. Price: starts at \$349. Contact: Whirlwind at 800-733-9473, [www.whirlwindusa.com](http://www.whirlwindusa.com).



## KV2 Audio EX10 High-Output Active Full-Range Speaker

KV2 Audio might be a new name to many but its crew is full of familiar faces from Mackie and RCF. And as with any new company there will be new products. New for KV2 is the EX10 powered speaker. The EX10 is a two-way speaker with a 10-inch woofer with a TransCoil voice coil and a 1.75-inch titanium compression driver. Driving are a 450W low-frequency amplifier and a 50W amp for the high-frequency driver. Additional features include a "Floor/Stage Monitoring Filter," cooling fan, Baltic Birch cabinet and integrated handle and mounting hardware. Price: \$1,699. Contact: KV2 Audio at 425-402-4600, [www.kv2audio.com](http://www.kv2audio.com).



## InnovaSON Sy80 Digital Console

Designed for live sound, installation or broadcast, the Sy80 from InnovaSON is a multipurpose digital console. The Sy80 has 80 inputs, 80 outputs, 80 faders and 48 mix busses. It offers the latest version of InnovaSON's Sensoft 8 console software. It also features the newly developed XFAD fader scheme that expands fader assignability and routing. Price: starts at \$71,000. Contact: InnovaSON/Sennheiser USA at 860-434-9190, [www.innovason.com](http://www.innovason.com).

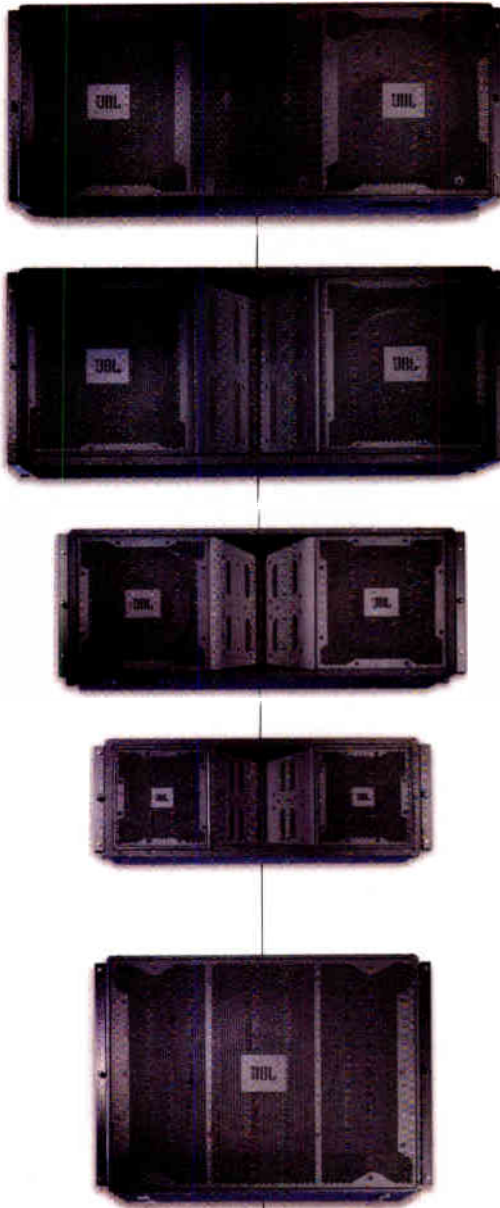


## Sound Physics Lab B-DEAP32 Subwoofer

Okay, it might not be the greatest name (for the curious B-DEAP stands for Boundary Dependent External Air Path) but SPL's B-DEAP32 is trying to make a name for itself. According to the designer, Tom Danley, the B-DEAP is designed to create the performance of a much larger box in a smaller, 42-inch x 42-inch x 18-inch bass horn cabinet and with 12-inch woofers. In the correct setting the subwoofer can go down to 30 Hz. The cabinet weighs in at 175 pounds. Price: \$2,785. Contact: Sound Physics Lab at 847-724-5500, [www.servodrive.com](http://www.servodrive.com).







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BY WILL JAMES

# Crest Pro 8200 Power Amplifier

For many years, Crest amplifiers were the leader of the pack, offering highly roadworthy, high-output power amplifiers. Crest now offers a new line of power amps for the pro sound industry, appropriately named the Pro Series.

## FEATURES

The Pro Series 8200 (\$2,630) is a two rack-space amplifier, weighing in at 25 pounds, but having a rather hefty output. Crest rates the 8200 at 825 watts RMS at 8 ohms; 1,450 watts RMS into 4 ohms, 2,250 watts RMS into 2 ohms (all ratings at both channels driven simultaneously); and 4,500 watts at 4 ohms bridged mono. Crest rates the slew rate (a power amp's speed at which it can process changes in volume and frequency) at 15 volts per microsecond. Crest offers two other power amps in this product line, the 7200 and the 5200.

The 8200 is a clean-appearing package, with a succinct presentation of controls and connections. The front panel's most noticeable feature is the good-sized cooling port, which draws fresh air in through a perforated section that occupies about one-sixth of the total front surface area. There are two separate recessed rotary level controls that click-stop at even intervals between -80 dB to 0 dB input sensitivity.

Immediately above the rotary controls are a series of attractively colored LEDs that indicate different levels of operation and speaker protection activity such as clipping and overheating.

For protection the amp has AutoRamp soft start, DC and short circuit to keep prob-

lems to a minimum.

The front panel also contains a solid rocker switch for on/off control.

The rear panel's most impressive features are the dual three-inch cooling fans that draw fresh air through the aforementioned intake grilles. Air is drawn directly across the heat fins of the amplifier stage of the 8200. The input connections are Neutrik concentric 1/4-inch TRS/XLR connectors, with an operation selector switch that allow the left and right input connectors to be run independently as stereo inputs or as parallel inputs requiring only one connector to be used, or to switch the 8200 into bridged mono mode.

The output connections are both Neutrik NL4 and standard binding post/banana plugs. The power cord is a large IEC-type locking female cable, with a 20 amp/125 volt Edison male blade connector for wall connection.

## IN USE

The relatively large output wattage of the 8200 would suggest that it would be a perfect subwoofer power amp, so that was our first test.

My company provided full production (sound, lighting, stage and roof) for a 5th of July Beach Boys show at an outdoor venue. I figured this application would also see how well the Crest 8200 handles very hot days, with the Arizona desert offering a modest 117 degrees at soundcheck time. We wired the 8200 to a pair of our Yorkville TX9 subs, offering a 4 ohm load to both sides of the amp, thus producing a power output of

1,450 watts per double 18-inch cabinet, or 725 watts per 18-inch woofer. The 8200 cruised along very smoothly, providing full, well-rounded sub-bass. The power amp did get warm, in fact very warm, but performed without flaw at highly punishing temperatures throughout soundcheck and the actual show.

Further tests of the 8200 were conducted at several fair and festival settings, where we used the power amp in a variety of applications including other bandwidths of the main speaker systems, and as the woofer amplifier in biamped monitors. In each case, the Crest amplifier performed exceedingly well, with smooth signal replication in all frequency groups. It seemed to be right at home though, with the subwoofer application and the double 15-inch woofers of our three-way speakers. Obviously, this amp is a little in the overkill department for mid driver and tweeter applications, and could damage the smaller components if proper attention is not applied.

## SUMMARY

The Crest Pro Series 8200 is a highly reliable power amp that can withstand the harshest of heat conditions, and the seismic activity that takes place when transporting racks of power amps from gig to gig. I found the Crest amp to be very good at processing all frequency groups with clarity and sufficient speed. All in all, I like this power amp, and it lives up to the Crest name.

*Will James, owner and chief engineer of Atlantis Audio and Lighting, is a contributor to Pro Audio Review.*



## Fast Facts

- **Applications:**  
Professional sound companies, installations.
- **Key Features:**  
Two-channel; dual cooling fans; bridgeable
- **Price:**  
\$2,630
- **Contact:**  
Crest Audio at 201-909-8700, [www.crestaudio.com](http://www.crestaudio.com).



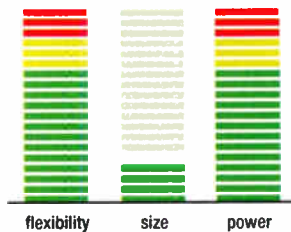


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BY MIKE PRESSON

# Peavey XR 696F Powered Mixer

Only a few months ago Peavey Electronics added three new powered mixers to its existing XR Series product line: the XR 684F (400 watts program into 4 ohms), XR 696F (1,200 watts RMS program into 4 ohms) and XR 800F+ (500 watts RMS per channel into 4 ohms). I recently had the opportunity to review the XR 696F, which was used to support a five-piece band in both a small rehearsal space and a mid-sized (200-person capacity) bar/restaurant.

## FEATURES

As you might expect from Peavey, the XR 696F (\$1,199) offers all of the basics needed in a compact powered mixer plus all the bells and whistles anyone could ever want in a unit this size. I am a firm believer in having more features than one might actually require, just in case of an unanticipated need. The XR 696F meets these criteria, but in the time I had the unit I did not use many of the extra features.

The XR 696F is 10.75 inches high, 11 inches deep and 19 inches wide. The unit weighs just under 42 lb. It is encased in a solid black plastic enclosure with metal plates protecting all corners of the mixer. It is built like a tank to withstand the rigors of live sound reinforcement.

The main features include eight channels outfitted for 1/4-inch and XLR jacks, insert points on Channels 1 and 2, nine-band stereo main graphic EQ and nine-band mono graphic EQ assignable to the monitors or Channel 3. All channels feature monitor sends, with Channels 1 through 8 also containing effects sends. Channels 1 through 6 also feature a low-cut noise filter used to reduce uncontrollable noises such as wind or



stage noise. This feature is handy when playing outdoor venues or clubs with a lot of ambient noise. A 25 dB pad is also featured on Channels 1 through 6; activating this switch can help eliminate distortion, for example, when close miking an amp or drum kit.

One of the most beneficial features of all *continued on page 83* ▶

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Pro Audio Review – October 2003

# NEWS

# NEW PRODUCTS

Following their NAB debuts, **Solid State Logic's** C Series have racked up over a dozen sales. The C100 Digital Broadcast Console has been purchased the Danish Broadcasting Corp. (a pair), Japan's NHK, the Golf Channel, NBA Entertainment and a pair for Korea's SBS. The multi-application C200 Digital Production Console is a new face at Nippon TV and Imagica Akasaka in Japan and Western Carolina University, Underdog Entertainment and Bicoastal Music in the US ([www.solid-state-logic.com](http://www.solid-state-logic.com)).

San Antonio's Global Evangelism Television (GETV) is the latest purchaser of a **Euphonix** System 5 console. The 154-input board will handle broadcast and recording studio duties ([www.euphonix.com](http://www.euphonix.com)). Two Max Air digital consoles were recently installed into the Tribune Studios in Hollywood for use with syndicated TV shows such as "Family Feud." WEDU-TV in the Tampa-St. Pete area also chose the Max Air as its new console.

**Calrec's** Alpha 100 will be the board riding in Trio Video's new HDTV remote truck. The Alpha is the Chicago company's first digital board ([www.calrec.com](http://www.calrec.com)).

**Location Sound Corporation** (LSC) recently launched its newly redesigned Website, [www.locationsound.com](http://www.locationsound.com).

**Harris** scored a hunk o' business with a facility integrator contract with Clear Channel for the new 55-studio facility in Los Angeles. Key to the contract is the VistaMax networking system and BMXdigital consoles.

ABC and Fox will use **Dolby** Digital 5.1 surround sound for their HDTV broadcasts of NFL games this year.

## Sony ECM-88 Subminiature Lavalier Microphone

What's smaller than a miniature microphone?

A subminiature microphone! Squint hard and you can see the new Sony ECM-88 subminiature lavalier. The ECM-88 is an omnidirectional patterned mic with an electret condenser. As with recent strides in the fidelity in the subminiature mic field, sound specifications are 20 Hz – 20 kHz within an acceptable range. Sony

offers different clips along with options on connectors – mini four-pin that is compatible with Sony wireless transmitters or a pigtail. Price: \$440.

Contact: Sony at 800-686-7669, <http://bssc.sel.sony.com>.



## Harris VistaMax Networkable Audio Management System

The heart of the Harris VistaMax Networkable Audio Management System is the VistaMax frame which holds various I/O, routing and processing cards. Using CAT-5 and optical cables the system networks other frames in studios or connects BMXdigital consoles. Input and output to particular rooms is facilitated by I/O cards of numerous flavors in the local frames. Standard signal is 24-bit, 48 kHz. VistaMax is system agnostic so even if you aren't using Harris/PR&E consoles you can still use the system via local frames. Price: starts at \$16,200.

Contact: Harris Broadcast at 513-459-3400, [www.broadcast.harris.com](http://www.broadcast.harris.com).



## Otari DB-16P Digital Audio Console

As pure audio jobs become fewer and multimedia jobs increase audio pros need to look at dealing with audio-for-video. A good start might be the Otari DB-16P digital audio console for video editing. The tabletop DB-16P is fully compatible with such things as 25.97 frame rates and ESAM II protocols. It handles AES/EBU digital I/O along with analog inputs for CDs, MDs, microphones or DAT machines. Also onboard is a three-band channel EQ along with channel memory and overall snapshot memory and several automated fades. Price: Contact: Otari at 818-598-1200, [www.otari.com](http://www.otari.com).



## Audio-Technica 5000 Artist Elite Wireless Microphones

Audio-Technica's 5000 Artist Elite wireless microphones are at home on stage and in the television studio. The 5000 is a UHF true diversity system with IntelliScan frequency agility for locating the best open frequencies. An added bonus is the ability to link receivers (AEW-R5200) to create larger systems. The receivers also offer Ethernet ports for utilizing a PC network for controlling, processing and monitoring mics. Handheld (condenser and dynamic capsules) and bodypack packages are available. Price: starts at \$3,119.

Contact: Audio-Technica at 330-686-2600, [www.audio-technica.com](http://www.audio-technica.com).





# Euphonix Max Air On-Air Digital Broadcast Console



BY MEL LAMBERT

**D**rawing upon the legacy of the much-respected System 5 Digital Audio Console, the new Euphonix Max Air Digital Broadcast Console is an application-specific variant that utilizes components from the central DSP Core, I/O racks and peripherals, but with a totally new control surface designed for live on-air broadcasting and live-to-tape production. No frills, no fuss; Max Air's designers have not cluttered the surface with unnecessary controls and ephemera – such as console automation. It does one job, and it does it extremely well.

While System 5 features a deeper control surface with expansion to over 300 channels, its higher price might be too rich for broadcast stations that do not need all of system's processing power.

With its fixed 96-channel count and more cost-effective pricing, Max Air is designed for local call-letter stations and TV news applications.

*continued on page 46* ▶

## Fast Facts

■ **Applications:**  
Television broadcast

■ **Key Features:**  
96-channel; 24-bit; 48 kHz sample rate; onboard sample rate converters; 5.1, 7.1 surround sound; four-band parametric EQ; high, low, band-pass filters; onboard digital patch bay; mix-minus, talkback functions; Ethernet

■ **Price:**  
starts at \$150,000

■ **Contact:**  
Euphonix at 650-855-0400,  
[www.euphonix.com/broadcast](http://www.euphonix.com/broadcast).

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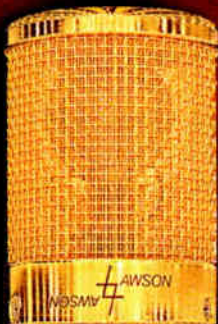
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how others are reliving the magic!

## Broadcast

► *Euphonix from page 45*

### FEATURES

The heart of Max Air is the DF64 DSP Core, a rackmounted unit that performs all audio processing, including channels, dynamics and equalization, plus generation of mix, record, auxiliary and monitor busses. Max Air uses a single, broadcast-friendly mixer model that offers 96 channels, 24 groups/clean feeds, 12 aux sends, 32 mix busses, N-1 mix-minus output per channel, and 28 external inputs. All analog/digital I/O is via MADI format (56 channels on coax at 48 kHz, 24-bit). A standard configuration includes four MADI input and three MADI output ports for 224 x 168 I/O connections; adding an optional SH612 Studio Hub router increases this to a total of eight MADI input and six MADI output ports (448 x 336). In certain applications, such as remote trucks, a further Studio Hub can be

extended up to one mile with the Euphonix FiberLink option. An MC524 Monitor Controller provides analog monitor outputs: main (7.1), Alt 1 (5.1), and Alt 2 (stereo) control room monitoring, SLS (7.1), and cues 1-3 (each stereo) studio monitoring, two talkback preamps, and four listen microphone preamps.

Most Max Air components feature dual power entry connectors and redundant power supplies. All intelligent system components communicate with one another through a EuCon 100 mbps Ethernet switch and are independently addressable via TCP/IP topologies. As I discovered, much of Max Air's software and hardware design focuses on system and power supply redundancy for critical broadcast situations. Distributed industrial processing architecture is said to increase stability and speeds system recovery. For example, in the rare event of a control surface failure and subsequent reboot, Max Air continues



*Max Air*

added with Grass Valley/Thompson software that allows console I/O to be used as the facility router's Audio Level. (An arrangement that might save money and provide all areas with full access to the console's I/O, including mix, group and aux busses that turn up as sources to the video system.)

Analog and digital inputs and outputs are converted to and from MADI via a range of 28-channel converters using XLR for analog and either 100 ohm XLR or 75 ohm BNC connectors for digital. All digital inputs feature built-in sample rate converters. Max Air runs at the conventional DTV sample rate of 48 kHz and 24-bit I/O is standard on all digital ports.

Microphone inputs are accommodated via ML530 Mic/Line Interfaces that contains 24 remote-controlled mic pre-amps; up to seven interfaces can be connected to Max Air and

to pass audio. All channels can be accessed on all functioning faders with no interruption to audio. In the unlikely event that all surface modules fail, full operation is still practical from the central section. Even a failure of a control module, will not permanently impact a studio's mixing capabilities as those channels controlled by the temporarily lost strips can be brought up on remaining strips by recalling a different layout.

The fully assignable mixing surface can control up to 96 channels, mono channels being grouped as stereo or any multichannel format up to 7.1 – in this way one fader commands between one to eight logical input, output or submaster channels. Customers assemble Max Air pretty much like an erector set. Each CM416 Module contains 16 physical faders or strips that can control up to 32 chan-

*continued on page 48 ►*



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► *Euphonix from page 46*

nels (Swap and Main layers per strip). Used in conjunction with the CM404 Center Section Module, the smallest configuration of Max Air can provide on-surface access to a total of 32 logical channels with eight master faders. Additional channel modules simply add more on-surface controls: either 16-channel strip CM416 or eight-channel strip CM416HL (left half blank) or eight -channel strip CM416HR (right half blank) modules. Unlike System 5, Max Air offers four assignable control knobs per module – again, less clutter means a more straightforward console layout, which can be a dramatic advantage when deadlines are tight and the pressure builds.

Channel sources are assigned to strips using a simple-to-understand Layouts function. Forty-eight different Layouts can be easily stored, recalled and remapped across the console surface. Layouts can also be used to place inputs most often used on the top fader layer, or inputs that should be grouped together (studio microphones, for example,

or VTR outputs).

The Center Section features a 17-inch touch-sensitive LCD panel that display all system parameters – including I/O setups, channel assignments and file directories – in addi-

Similar screens are available for Aux and Mix busses. And a dedicated Mix Minus/Clean Feed screen allows individual N-I output levels to be mapped to the assignable control knobs, complete with pre/post-fader selection.

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**Max Air has been ergonomically designed for fast access and clear display of critical functions.**

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tion to high-resolution metering, EQ profiles, dynamics graphs, patch routing and other functions. A useful Channel View shows all channel parameters on a single display. Group View enables a channel's group assignment to be viewed or, rather handy if you need to examine an errant signal path, the channels that are currently assigned to a target group.

Eight master faders situated beneath the LCD panel - directly in front of the operator - can be assigned to control audio subgroups, level control groups or any combination of channels. Their function is saved with console Layouts for easy recall.

Custom Knob Sets allow assignment of specific functions to the four remappable channel knobs. All screens are remarkably intuitive and easy to follow. Touch sensitive routing and channel selection is a snap, dramatically reducing the number of buttons that need to be provided on each channel strip. Now, by recalling the PatchNet Screen, for example, console routing is easily recalled, modified and resaved as necessary.

It is obvious after just a short time at the control surface that Max Air has been ergonomically designed for fast access and clear display of critical functions. Max Air's small physical footprint and central screen displays means that all physical controls are within easy reach of the operator. In terms of automated functions, the touch screen interface enables SnapShot Recall of all console settings; 48 SnapShots for different surface configurations are available. Touch-sensitive faders jump to new positions as soon as each system SnapShot is recalled; LED meters positioned at the side of each fader can be set to show a variety of signal levels. Twin eight-character arrays display sources – serving as "electronic scribble strips" – while routing is clearly shown at the top of each channel strip. Usefully, the in-channel delay, metering, insert point, EQ, filters, dynamics and fader can be arranged in any order to provide a highly flexible signal topology. Full surround-sound panning for LCRS and 5.1-channel layouts is pro-

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vided on all channels, with a comprehensive set of panning controls, plus companion monitor assignments.

Each channel features an A and B input with digital line gain, phase reverse and delay. If remote mic pre-amps are configured, the analog mic gain, phantom and high pass filter can be controlled from the corresponding channel strip. Max Air's four bands of parametric EQ sound extremely musical, and offer a dramatic amount of control per band. Two filters feature high-pass, low-pass, band-pass and notch settings. The dynamics section feature flexible compressor/limiter or expander/gate operation, with frequency-conscious side chain and linked access across multiple channels for stereo input and multi-channel group outputs, for example. And since each channel can be routed to any combination of the 32 available mix busses and 24 clean feed/group matrix busses using the on-screen PatchNet 224 x 224 digital router, setting up complex stems and masters assignment is a breeze. Also, the 12 auxiliary busses, selectable pre/post-fader, can be set for mono or stereo operation. Finally, any channel may be included on the dedicated Mix Minus bus. The mix-minus button phase inverts the signal on the strip, adds it to the buss, and routes the resultant mix minus to the channel's N-1 output. A GPI and Events System enables external control to and from cart machines, for example, and video switchers for audio-follows-video assignment.

Solo buttons on each channel strip can be set to PFL or AFL mode. Separate stereo AFL and PFL busses are featured, along with fader backstop PFL. Both busses can be routed to any loudspeaker, while PFL can be routed for external monitoring. Using dedicated buttons on each channel, output from a built-in talkback mic can be routed to that channel's mix-minus output. Talkback can also be programmed to feed into any combination of output busses. (The internal talkback can also be linked to station's talkback systems and IFB.)

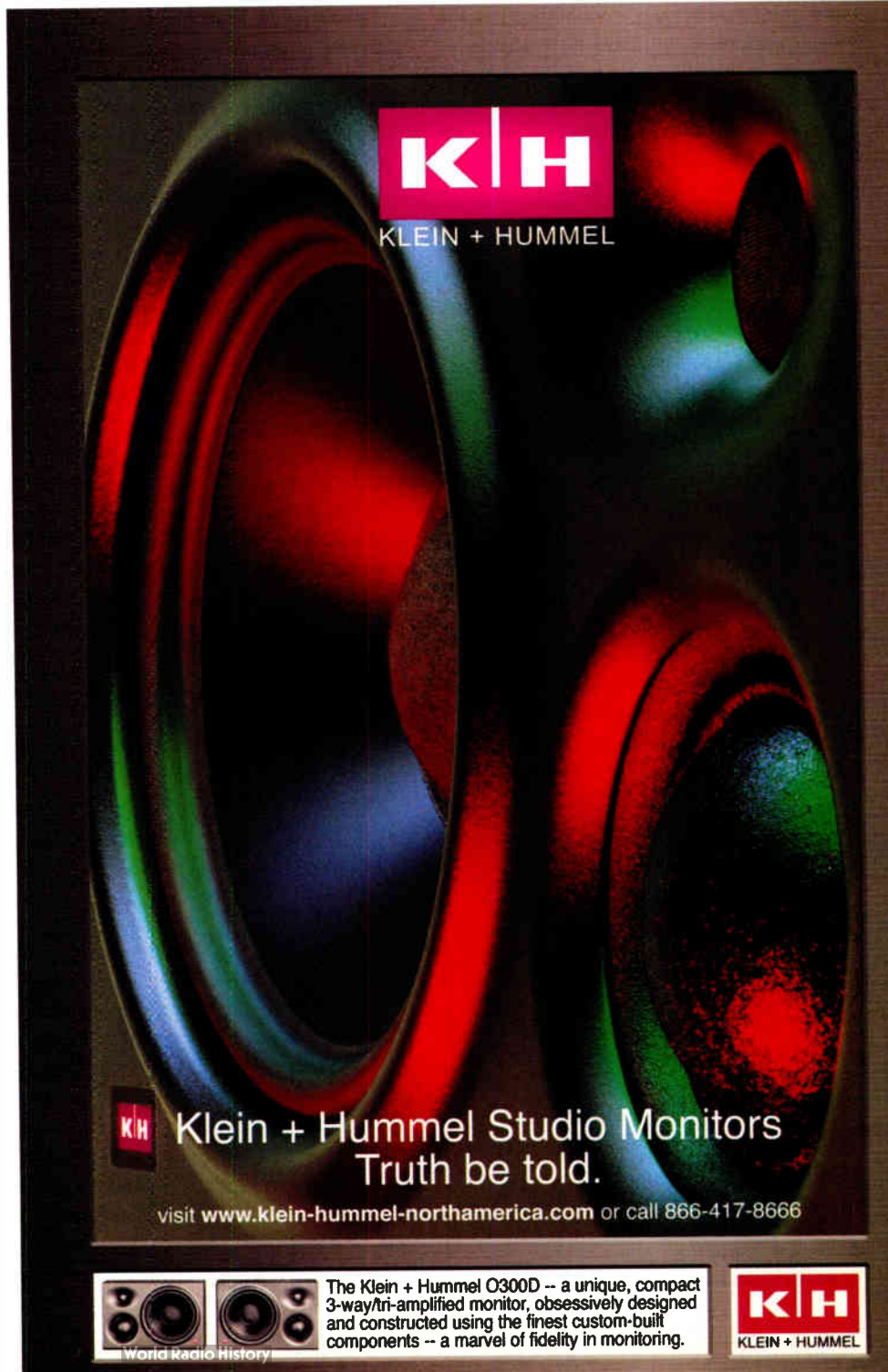
The Stage 1 or "standard" Max Air comprises a Control Surface, DSP Core & System, computer-redundant power and AC mains, plus Level 1 RAID (mirrored) 40 GB drives for data and program storage, and on-board diagnostics. The optional Stage 2 adds a self-healing redundant DSP card that is fully integrated with the onboard diagnostics.

## SUMMARY

All in all, the new Euphonix Max Air Digital Broadcast Console demonstrates that for live on-air applications less can be more. By placing a minimum of controls on the surface - but ensuring that these are well-labeled critical knobs and switches - a great deal of clutter is kept out of the operator's way. But when the time comes to adjust a desired function, it is there, color

coded and easy to find. A remarkable achievement and, not surprisingly, one that is finding early success with a growing number of broadcasters. And with the company's long-term experience with reliability and redundancy, users can expect to remain fully operational.

*Mel Lambert heads up Media & Marketing, a consulting service for pro audio firms and facilities. [www.mel-lambert.com](http://www.mel-lambert.com).*



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World Radio History

BY ALAN R. PETERSON

**R**egular *Pro Audio Review* readers have seen the name Lawson appear quite frequently. This small Nashville company has been creating high quality capsule microphones for many years now, mostly catering to studio recording of vocalists and musical instruments.

The new AIR microphone, priced at well under \$1,000, cannot be considered a departure from the company's established mic line (which includes the 2000 PAR Excellence award-winning L251 tube mic). The AIR microphone is rather a daring exploration into another sphere of audio production: voiceover and radio broadcast.

### FEATURES

Based on the Lawson L47 capsule used for studio recording, the Lawson AIR mic has just hit the market at a list price of \$895, which is incredible for a handcrafted-in-USA, high-quality FET condenser. Our test unit was a preproduction unit with a nickel-plated brass top-cage and a turned-aluminum body.

The AIR is about the same size as the company's L47SH microphone but minus the gold trim and blue finish. (The production version of the AIR is gussied up in the Lawson blue body finish). It is a serious-looking mic, and its stubby body and tall capsule cage gives it a rugged look. As a result, the AIR mic has a definite heft that broadcasters should like.

Good thing too, as day-to-day broadcast use means it would be subject to more abuse than it would receive in a music space. Radio broadcast microphones normally are suspended

# Lawson AIR Voiceover Microphone

ed from cantilevered mic booms and are swung around mercilessly by air talent more pre-occupied with their performance than with how delicate a mic might be.

Opting for FET circuitry rather than a vacuum tube is another broadcast concession that makes perfect sense. High-energy broadcasters don't want to know of blown filaments, microphonic elements or anything else that could knock their mic out of service.

A rugged circuit board with all-discrete components (no SMD) is tuned for peak response for voice, a stout Neutrik transformer couples the mic to the outside world, and a heavy machined brass ring keeps the base closed.

The upper cage that holds the one-inch capsule connects to the circuitry below by a nine-pin D-sub connector, much like the ones found on computer serial ports. Three screws hold the top-cage to the base.

The specs include a one-inch, three-micron gold-sputtered diaphragm, optimized for hypercardioid polar pattern, 20 Hz to 20 kHz frequency response, 138 dB maximum SPL, 20 dBA self-noise and 150 ohms impedance.

The dimensions are 6.5 inches long and 2.37 inches deep. The units comes in a vacuum plastic case with a standard swivel mount. Like other Lawson microphones, other Lawson capsules can be attached to the body.

The mic is quite simple in function with no pad or roll-off switch; the rolloff is always active in the circuit.

### IN USE

Designer Gene Lawson designed the AIR to be worked up close. At first, this seems a contradiction to proper mic technique in general. Everyone knows how bad plosives can be when working a mic up close, and the exaggerated bass caused by proximity effect would guarantee a less-than-perfect recording.

But up close is the way many radio broadcasters work. Maybe at National Public Radio you will find delicate microphones with the pop-stopper hoop in front, dictating the proper working distance for the perform-

ance to be properly captured. But in the commercial world, technique-be-dashed. Announcers tend to eat the mic. Lips are right on the edge of the screen.

In talking to voiceover and broadcast talent, Gene Lawson knew the tendency to "eat" the mic meant he had to make some tweaks to get it to sound good under "normal" use. Thus, the built-in, 6 dB of rolloff at under 100 Hz. There is still a large low-frequency presence in the talent's voice, but it does not overpower everything else.

Although the mic frequency range is listed at 20 Hz to 20 kHz, the mic's frequency response graph is indeed indicative of its voicing for vocal work. Not only is there the built-in -6 dB bass rolloff, but for vocal clarity, there is a gentle response from 2 kHz to 4.5 kHz, which brightens up the voice without being harsh or brittle. The response decreases a few dB from 4.5 kHz to 8 kHz, at which point the response again rises a couple of dB to 10 kHz. The response then gently lowers to about 12 kHz with another small rise the rest the way out to 20 kHz.

Although many microphones come with with pads and rolloff switches, Lawson has kept the AIR simple without control of the rolloff and no pad control at all. A pad might be useful with some preamps, but Lawson fig-



## Fast Facts

### Applications:

Broadcast, voiceover

### Key Features:

Hypercardioid pattern; double mesh pop screen; condenser element; gold-sputtered three-micron diaphragm

### Price:

\$895

### Contact:

Lawson Microphones at 615-259-5542,  
[www.lawsonmicrophones.com](http://www.lawsonmicrophones.com).



ures that any tweaking will likely be done with external processing prior to air or to recording.

Radio broadcast audio differs from music recording in the studio, as microphones are individually (and often grotesquely) processed with heavy compression, noise-gating and corrective EQ prior to even hitting the input channel on the console. The even, peak-free vocal delivery of high-energy radio talent is more the work of the processing than of a talent's particular technique.

My experiences with the AIR mic were at the production facilities of WMET(AM), a Washington DC talk station with new studios

under construction and an increase to 50,000 watts underway.

Production for this station consists primarily of commercial announcements, but I also put the AIR mic through its paces in station imaging and recording announcements for our separate concert web casts ([www.wmet.net](http://www.wmet.net)).

Without the mic processor switched into the line, the AIR mic had a spacious and open sound typical of most condenser units. When

worked the typical distance a capsule mic would be set for, the bass response was indeed lacking. Gene Lawson was right: this mic has to be worked up close and personal to bring out its character.

In its unprocessed form, the AIR mic had a wonderful body that lent itself to "serenity" reads, such as commercials for massage therapy and Cancun beach vacations. When worked

*continued on page 52* ►

## Second Opinion: NPR on Lawson

BY RICH RAREY

In listening to NPR voice talent Renee Montagne and Robert Siegel, we compared the Lawson Air mic with our favorite Neumann U 87.

Using a Benchmark stereo microphone preamp, I compared the two microphones with the U 87 rolled-off via its control switch vs. the Lawson with its built-in rolloff. I also compared the two with the Neumann in the "flat" mode

On both mics, the midrange was very pronounced with male voices. Female voices sounded very good on both mics as well. The U 87's sibilance was slightly more defined. The Lawson was slightly harsher on sibilances than the U 87; a male host's voice that has natural, sawtooth harmonics sounded slightly harsher on the Lawson as well. (Editor's note: According to Gene Lawson the planned addition of an internal polyester mesh screen should reduce that 'harshness'.)

Our only complaint with the Lawson mic was the lack of a pad. It drove the Benchmark mic preamp pretty hard with minimal gain. Overall, comments at NPR were positive for the Lawson AIR.

*Rich Rarey is an engineer and master control supervisor at National Public Radio main headquarters in Washington, D.C. NPR Engineers Brian Jarboe and Arthur Halliday Laurent also contributed to this review.*

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## Broadcast

### ► Lawson from page 51

a little closer (again minus the compression), the mic took on what I call "museum read" quality - an authoritative-sounding thump in the higher bass range that carries a feel reminiscent of the programs one hears in museum headphone tours.

Adding in the mic processing kept the qualities in place, only making them a little more assertive. With compression, my "museum read" evolved into a lawyer commercial read ('Have you been injured in an accident or workman's comp case?').

Up close with compression is when this mic shines. Here is where imaging announcers do the Growl ('The city's bes-s-t r-r-r-ock is r-r-right hee-ere!') The Air mic is up to it, although I felt the mic needed a little more pop immunity.

Blasts and plosives were handled on the prototype by double screening - a large mesh screen atop a tighter screen with smaller spaces - but lots of up-close work is filled with popped Ps and Ts, some juicy enough to get by.

The proper technique of talking across the capsule at 45 degrees goes a long way to resolve

this, but again, not everyone follows the rules.

Indeed, announcers used to front-fire microphones, such as the E-V RE-20 or the classic Sennheiser 421, may be a little disoriented in having to deal with a side-fire unit. The "safety net" of having an instrument pointing directly at your mouth does not exist here, and inexperienced performers may find themselves frequently going off-axis.

According to Lawson production models will include an internal mesh screen and sensitivity settings customized at Lawson's factory.

### SUMMARY

Although it will be a challenge for Lawson to convince broadcasters to switch away from their big \$400 dynamic microphones, those with bigger budgets may be swayed by the classic condenser sound of the AIR. It also could be attractive for voice-over artists who want something in between the \$1,500+ upper-end condensers and the mass-produced \$200 Chinese microphones.

*Alan Peterson is an award-winning radio production director and broadcaster.*

### ► Gefen from page 51

through the switcher, and upstairs where it entered the VGA connector side of my dual-input NEC 1850X LCD monitor. It didn't matter what format the original video signal was in, everything could pass through the Gefen switcher and, eventually, mate back up with my two dissimilar monitors.

Now what about Pyramix, my third DAW? No sweat! I sent its DVI video output directly upstairs to the NEC's second (DVI-style) input, while sending its VGA output up to another little Gefen peripheral located in the control room, this time their "ex-tend-it VGA to ADC Conversion Box" (\$299). Gefen also sent me one of the ex-tend-it 4x1 VGA Switchers (\$499), which is another one rack-space box similar to their 2x2 DVI Switcher. Why? Well, it just so happens that I also own two laptops (a Toshiba Satellite and a new 12-inch G4 Mac PowerBook), as well as an old mongrel Pentium III PC in the basement, which I occasionally use for "PC stuff." With this Gefen box installed upstairs, I succeeded

in running VGA lines from all of them to my NEC monitor, and by switching the Gefen's four front panel switches between 1 to 4, can switch mirror or extended desktop displays from each of them in turn, as well as from the main VGA output from the downstairs 2x2 DVI Switcher and share a single keyboard/mouse and stereo audio channel between them.

### SUMMARY

Are you kidding? Send this stuff back? No way! I'm completely spoiled. Gefen gizmos are great!

*Dr. Fred Bashour is a regular contributor to Pro Audio Review. He holds a Yale Ph.D. in Music Theory, and works as a recording studio engineer.*

### Prices:

2x2 DVI Switcher (\$799), DVI to ADC Conversion Box (\$149), VGA to ADC Conversion Box (\$299), 4x1 VGA Switcher (\$499), ADC Switcher (\$449)

### Contact:

Gefen Inc. at 800-545-6900, [www.gefen.com](http://www.gefen.com).



# What's better than MP3? Broadcasters agree: it's AAC.

Being a technology leader is something we take pretty seriously. When new tech is introduced by a Telos product, you can be confident it's the absolute best – so you shouldn't be surprised to find high-performance MPEG AAC coding in the latest Zephyr products.

Remember the original Zephyr? Its introduction of MP3 coding turned broadcasting upside down, and since then MP3 has become extremely popular for audio distribution, especially on the Internet.

But MP3's compression technology is now over a decade old, and there have been a lot of advances in perceptual audio coding and compression since then. You wouldn't settle for a '386 computer these days – so why be content with compression technology from the same era? What you want is Advanced Audio Coding... MPEG AAC.

MPEG AAC takes advantage of all of the latest advances in compression technology. Compared to MP3, AAC delivers higher quality audio at much lower bit rates, resulting in noticeably better audio even over low-data-rate connections. AAC also cascades better than older codecs – especially important for HD Radio considerations.



## Move Over, MP3

AAC was developed by the Fraunhofer Institute for Integrated Circuits (FhG IIS, the inventors of MP3) and a consortium which included Sony, Dolby Labs, Nokia and AT&T. Their goal: to create a codec that would satisfy the International Telecommunications Union's Recommendation BS.1115, which specified indistinguishable source-to-output quality at 64 kbps per mono channel. They succeeded with AAC, which is a coding algorithm 30% more powerful than MP3.

AAC is, by scientific and subjective analysis, the best-sounding, most efficient pure perceptual codec yet, and has been part of the International MPEG-4 standard (ISO/IEC 14496) since 1999. As a point of reference, the near-CD quality Layer 2 codec needs a data rate of 192 kbps per channel to deliver high-quality stereo; AAC gives the same quality at just 64 kbps!

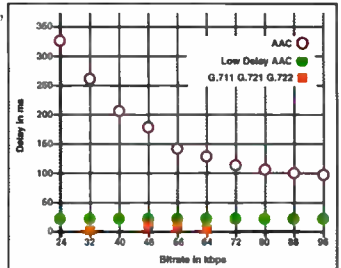
"The AAC codec outperforms the rest of the codecs," stated Canada's Communications Research Centre after performing double-blind subjective tests of 17 codecs (including MP3 and Layer 2) to determine which was best.

"When compared side-by-side, AAC proves itself worthy of replacing MP3 as the new Internet audio standard," says Apple Computer, which has incorporated AAC into its latest software products.

## Better Audio, Less Delay

In addition to "plain" AAC, broadcasters have another tool specifically designed to improve the performance of remote audio transmissions: AAC Low Delay (known as AAC-LD for short).

AAC-LD slashes encoding delay by nearly 70% compared to MP3 – invaluable for real-time two way broadcasts. It also employs new techniques to offer both low delay and high fidelity. Compared to speech coders (such as G.722), AAC-LD handles both speech and music with good quality. Unlike speech coders, however, audio quality scales up with bit rate. With AAC-LD, audio quality is far superior to G.711 or G.722 at the same bit rate, and equal or better to MP3 at the same bit rate.



Comparative delay of AAC, AAC-LD and G.711/G.721/G.722 at different bit rates. AAC-LD delay delivers nearly immediate encoding with fidelity superior to MP3.

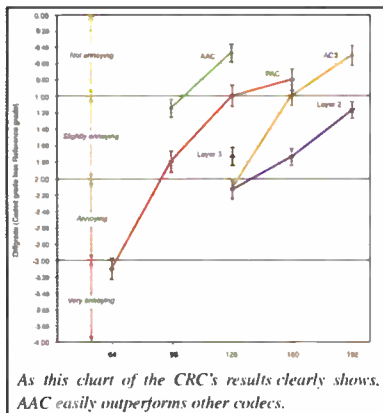


Both AAC and AAC-LD are featured in the Telos Zephyr Xstream rack and portable codecs.

Major personalities such as Rick Dees have come to rely on AAC-LD for better-sounding remotes. Jerry Burnham, KIIS-FM Special Projects Engineer, told us "AAC-LD coding in Zephyr stream is amazing. Low-Delay coding is a tremendous advantage. We get fantastic-sounding remotes, and we can interact with phone callers, traffic reporters and other remote sources without that annoying time lag."

## "The Best Low-Bit rate Codec on Earth"

There's one more exciting part of the AAC story: *aacPlus*<sup>TM</sup>. This extension of AAC melds Spectral Band Replication with MPEG AAC, resulting in truly stunning audio fidelity at bit rates never thought possible before. In tests conducted by the European Broadcasting Union (EBU) which compared a variety of codecs at several bit rates, they declared *aacPlus* as the clear winner, significantly outperforming proprietary competitors and improving over other standards; studies conducted by DRM and MPEG confirmed that *aacPlus* is ideally suited for the low bit rates of AM & FM IBOC. *aacPlus* has been chosen for use by XM Satellite Radio and Digital Radio Mondiale, and will soon be in 2.4G and 3G audio applications deployed by Matsushita and NEC.



Industry experts agree. "AAC Plus is the future... all else is stone knives and bearskins," according to Gary Blau of Jefferson-Pilot Communications. Jeff Johnson of X-Star Radio Network agrees: "It is quite amazing how decent a 32 kbps bitstream can sound."

Telos has chosen *aacPlus* as the algorithm used in the new Zephyr Xport POTS + ISDN codec. Paired with custom modem technology developed by Telos, *aacPlus* enables Xport to send 15 kHz mono audio over ordinary POTS phone lines.

Of course we hope you will purchase Telos equipment. But even if you decide differently, make certain that whatever codec you do purchase – POTS, ISDN, serial or otherwise – takes full advantage of today's advanced audio coding technology. Make certain it has AAC.



telos-systems.com

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World Radio History

Pro Audio Review – October 2003

# NEWS

**Meyer Sound** scored big Downunder with an installation at Melbourne, Australia's Federation Square. The multimedia facility has everything from restaurants and bars to open air public spaces and large video projectors. Handling the installation was Rutledge Engineering. Used throughout the square are M2D compact line arrays, M2D-Sub subwoofers, CQ-1 and UPM-TP speakers. Also used by Rutledge in the Federation Square installation, **BSS** Soundweb DSP and routing network boxes.

Video Equipment Rentals ([www.verrents.com](http://www.verrents.com)) recently made a large purchase of Telex Pro Audio Group equipment to supply VER's multiple rental houses across the nation. Included in the purchase were **Dynacord** Cobra-2 line arrays, **Electro-Voice** XLC compact line arrays, E-V Precision amplifiers, E-V RE-1 wireless mic systems, **RTS** intercoms, Telex TR-825 belt packs, Dynacord PowerMate powered mixers and **Midas** Venice and Legend mixing consoles.

In Rancho Santa Fe, Calif., a **Soundcraft** MH4 mixer was part of Horizon Christian Fellowship's recent upgrade of its sanctuary sound system. The work was performed by All American Audio Visual. Also installed were **BSS** FDS-366 Omnidrive processors and **QSC** PowerLight amplifiers.

**Symetrix** SymNet is running the new City Council chambers in Battle Ground, Washington.

Also in Washington, this time in Marysville, the new Tulalip Casino chose **Turbosound** speakers for its Canoes Cabaret Room stage sound system. Contractor MZW Productions chose TFL-760 Floodlight and TSW-718 subwoofers for the stage configuration. **QSC** amplifiers and a **Yamaha** 02R96 digital console are also part of the package.

# NEW PRODUCTS

## AKG WMS 4000 Wireless Microphone System

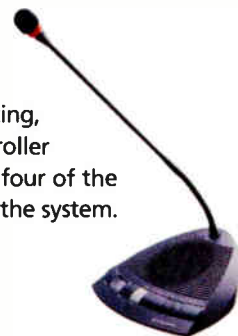
The versatile AKG WMS 4000 Wireless Microphone System has many applications broadcast, touring and most notably, AV-installation. The WMS 4000 is a UHF, true diversity, frequency agile system accessible to 1,200 frequencies. Packages include a bodypack (PT 4000) and handheld (HT 4000) transmitters. The handheld is compatible with several dynamic and condenser modules. The SR 4000 receiver offers the usual collection of modern wireless operation tools such as automated frequency scanning, system data information and memory settings. An optional charging station (CU 4000) is also available. Also available is PC software for driving larger systems along with antennas and antenna couplers.



**Contact: AKG Acoustics at 615-620-3800, [www.akgusa.com](http://www.akgusa.com).**

## Sennheiser SDC 3000 Digital Conference System

Designed for everything small boardrooms to 500+ seat conference venues, Sennheiser's SDC 3000 Digital Conference System aims to serve all. More than just a typical audio router, the SDC 3000 offers translation routing, zone mixing, tally lighting, voting and digital signal processing. The SDC 3000 central controller can handle up to 150 individual stations in multiple rooms and four of the controllers can be linked together. A PC can be used to control the system. Price: starts at \$3,200 for central unit, \$425 per station.



**Contact: Sennheiser USA at 860-434-9190, [www.sennheiserusa.com](http://www.sennheiserusa.com).**

## Community Loudspeakers Cloud Series

The sound will be coming from the Clouds with Community Loudspeakers Cloud Series of ceiling speakers. The Cloud series is a full-range with 90 degree x 90 degree or 60 degree x 60 degree coverage patterns available. Input taps are at 25 watts, 50 watts, 100 watts and 200 watts, 70/100V. Output is via a 12-inch woofer with a coaxial one-inch high-frequency compression driver. The drivers are protected by Community's PowerSense system. A standard baffle mounting is used for placement. Price: \$630.



**Contact: Community Loudspeakers at 610-876-3400, [www.loudspeakers.net](http://www.loudspeakers.net).**

## Ashly Audio Powerflex 70 Volt Amplifiers

Multichannel amplifying grows with Ashly Audio's Powerflex 70 Volt series. Available in the four-zone Powerflex-470 and the six-zone Powerflex-670, the new Powerflexes are 70 Volt systems. Features include two-speed cooling fans (front-to-back), clip and thermal protection. Output from the high speed MOSFET switching amps is 200 watts per zone for the 670 and 250 watts per channel for the 470. Both models are bridgeable for 140 V. Prices: Powerflex-470 - \$1,610; Powerflex-670 - \$2,215.



**Contact: Ashly Audio at 585-872-0010, [www.ashly.com](http://www.ashly.com).**



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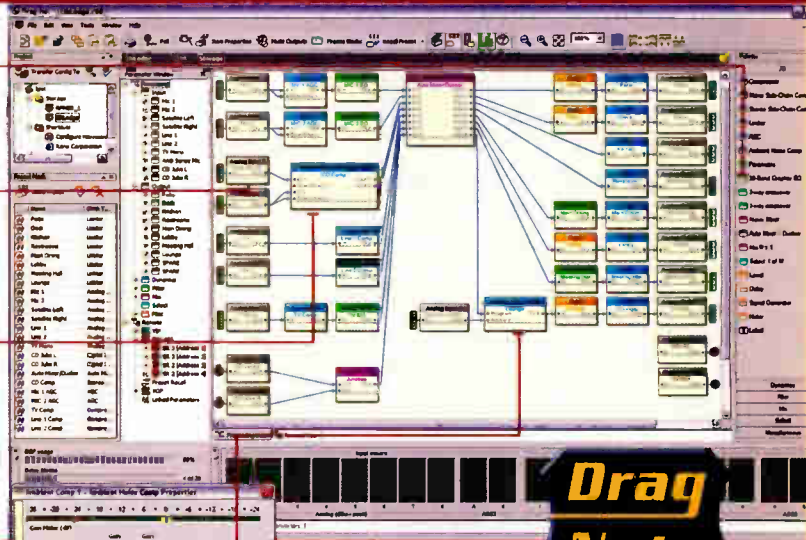
**O**ur Drag Net™ DSP system has won a solid reputation for solving installed sound problems.

Now we've boosted its performance and flexibility so you can satisfy an even wider range of clients who need bulletproof, user-proof multi-zone sound systems.

New Perfect-Q™ equalization in GEQ block (see below).

100% drag-and-drop. Use our templates in your own design.

New stereo or mono Side-chain Compressor with Soft-Knee.



Drag Net 3.0

**NEW!** RPM 2 2 balanced line-level analog inputs, 2 balanced analog outputs, 8 logic inputs, Ethernet 10Base-T, Euro-style connectors

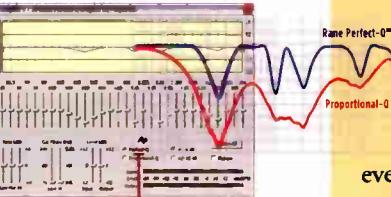
RPM 22 2 bal. studio-grade mic/line analog inputs, 2 bal. analog outputs, AES3 inputs/outputs

RPM 44 4 bal. studio-grade mic/line analog inputs, 4 bal. analog outputs, AES3 inputs/outputs

RPM 88 8 bal. studio-grade mic/line analog inputs, 8 bal. analog outputs, AES3 inputs/outputs

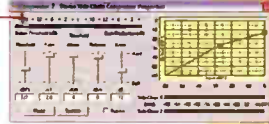
RPM 26z 2 bal., line level analog inputs, 6 bal. analog outputs, AES3 inputs/outputs

New ambient noise compensator boosts program levels over room noise.



Rane's patent-pending Perfect-Q™ technology means Drag Net 3.0 EQs have *no band interaction*, even with drastic adjustments of adjacent bands (blue line). But you can still select traditional Proportional Q if desired (red line).

New stereo/mono side-chain compressor.



RPM/Drag Net-compatible, electrical-box-sized zone controls include the SR 2 Smart Remote, SR 3 Smart Remote with lighted, customizable LCD display, MRS 4 Memory Recall, LRS 4 Level Recall and VR 2 Volume Remotes.

We added new drag-and-drop processing blocks including our remarkable Perfect-Q™ equalization. We made the interface even easier to use.

And we created a new, ultra-affordable 2-in/2-out Programmable Multiprocessor, the RPM 2 for "small" jobs where you might not have considered DSP. Rehabilitate somebody's

criminally-bad sound system. Visit our website or call us for more information about Drag Net 3.0.

- **NEW!** Supports new RPM 2 low-cost Programmable Multiprocessor
- **NEW!** Revolutionary Perfect-Q™ Graphic Equalizer eliminates traditional EQ band interaction
- **NEW!** Ambient Noise Compensator automatically adjusts program level to match changes in background sound level
- **NEW!** Deluxe mono or stereo Side-chain Compressor smooths out variations in program dynamics
- **NEW!** Multi-select cut/copy/paste and block alignment tools
- **NEW!** Revamped Remote Map expands control options
- **NEW!** Tab view of all PEQ block settings

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World Radio History



# A Change of Pace

BY TOM JUNG

Earlier this year I was asked to help with a new sound system for a church in western Minnesota where I grew up and was once an altar boy. Not being as up to date on installed sound systems as I once was, I thought it might be interesting to take on such a project with the idea of using high-quality modern components and design a system with the goal of creating the same kind of transparency that I strive for in my recordings. After all, doing live recording is not unlike what happens on the input side of a live sound system while the same is true for the playback side in the recording reproduction cycle.

St. Anthony's church is fairly good size and quite live, with stonewalls and carpeting on the floor skewing the tonal balance to the bass heavy and boomy side. I decided to go with a single point source speaker system since the existing system was the typical set up of multiple 8-inch drivers sending sound in all directions exciting this highly reverberant field to a point of unintelligibility. The goal here after all is to be able to clearly understand speech, so a self powered two-way system with a compression driver seemed like a good idea since the 90 x 45 degree directivity of the horn matched the coverage area with the speaker flown from the ceiling just forward of the altar. With this approach the sound is coming from only one location and the time delay errors that develop with multiple speakers are eliminated. Together with 500 watts of power and a max peak SPL of 130 dB, the Crest Audio LQ-12P powered speaker should have headroom to burn.

## WIRELESS TO THE RESCUE

All of the microphone lines in the church were old and decomposing, running along the wall surfaces and taped to the floor in the higher traffic areas making for not only an unattractive but poor interface to the church's very old amplifier. Since it was next to impossible to hide all of the microphone cables in a pre-existing stone church I thought would be a good opportunity to make

this an all wireless system.

I have been a big fan of Shure microphones for years but without much experience with their lineup of wireless products. A few minutes at the Shure website and it was obvious that UHF was the way to go. The ULX line of wireless microphones seemed to be a good balance of price/performance with a wide choice of handheld, lavalier and small podium-mounted products all needed in this project.

Not using lavalier microphones in my work I was happy to see how tiny (5.8 mm diameter x 11 mm height) yet great sounding the WL50 omnidirectional lavalier was. It even comes with interchangeable equalization caps that snap on the head of the microphone to tailor response to chest worn or headmounted. The WL50 interfaces nicely to the ULX1 bodypack transmitter,



Shure ULX wireless mic system

which also supplies bias voltage to the condenser microphone.

On the lectern I used small flexible cardioid condenser called a Microflex gooseneck. The MX 418 comes with a nice shock-mount adaptor, which is designed to attenuate typical thumping noise generated at the lectern by 20 dB, and it really works. Typically this type of microphone would be hard wired but with my all-wireless agenda I needed to bust out the soldering iron and fit a miniature 4-pin connector to interface the MX 418 to the ULX1 transmitter.

For handheld or floor stand-mounted microphones I used the ULX2/87C systems which is an SM87 cardioid condenser capsule

mounted on a ULX2 transmitter body and is very well suited for speech or vocals. All of the Shure ULX wireless microphones use a 9 volt battery and have a life of 8 to 9 hours.

Setting up the Shure ULX wireless microphones could not have been easier, with AFS (Automatic Frequency Selection) and over 1,400 possible channels. I should mention that Browns Valley, Minnesota with its sub-1K population does not have what I would call contaminated airwaves consequently any of the 1,400 plus channels could have worked.

All of the receiver outputs were routed to a Shure SM 268 mixer which is about as simple, clean and quiet as you can get and totally conforms to my less is more philosophy. The balanced mixer output fed the Crest powered speaker and also a pair of smaller Crest Audio PA150 amplifiers feeding 70 volt lines for basement and crying room speakers.

When I first powered up the system it became obvious that I had not planned for some sort of feedback control. The church has a big time resonance in the 100 Hz – 200 Hz region that was in need of some EQ and feedback reduction.

Once again Shure to the rescue with the DFR22, which is not only an automatic feedback reducer but also a graphic, parametric or shelving equalizer, a compressor/limiter, AGC expander, ducker, crossover, delay processor and more. The DFR 22 is a two-channel system that can be used in stereo or in a series configuration using any combination of these functions. The coolest part is you can build up the processing you need by downloading a free software program that allows you to simply drag and drop the processor blocks onto a virtual system that can be uploaded to the DFR 22 hardware with a serial connection. This is very cool.

Sometimes I get so enthusiastic over the Shure Brothers Company and its products it might seem like I'm on the take, which is not the case. Many pro audio companies could take a lesson from Shure on building excellent products with great service and learn what being truly professional is all about.

*Tom Jung is Pro Audio Review's technical consultant.*



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# PhonicEar OnWave Direct Digital Synthesis FM Wireless Listening System

BY WAYNE BECKER

**W**ith the increasing public awareness of the ADA (Americans with Disabilities Act) and its mandates, the need to provide hearing assistance systems in public venues has become a hot and profitable topic. A minimum of four percent of a public venue's occupancy must be provided with access to hearing assistance devices, and as one might imagine, portability is key. And although it does not fall under the mandates of the ADA, hearing assistance for sound and AV systems in houses of worship has become the norm rather than the exception. Not only portability, but hi fidelity

and agility are key features required to meet the needs of multisystem venues such as movie theatres, schools, museums, courtrooms and the like. Phonic Ear's OnWave Direct Digital Synthesis FM wireless listening system is a candidate for fulfilling this need.

## FEATURES

The OnWave system ships in a configuration consisting of a transmitter, four receivers with earbuds, batteries, a small-format whip antenna, a line level interconnection cable, a tuning tool, a hearing assis-

tance sign and a wallwart power supply. The half rack unit is compact and pretty straightforward. The front panel sports a large blue function display, soft touch level up and down buttons, a function button, a speech/music button, line/mic select, bass



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cut and power buttons. There's an RF fault LED that indicates the disconnection of the antenna or a bad cable as well as an audio overload LED. The back panel provides connections for the antenna via an RF LH-TNC type connector, speaker level input on a terminal strip, a mic/line input using a universal XLR with concentric 1/4-inch TRS jack and a power input jack for the wallwart.

The minimally technical manual supplied with the unit is lean and very well organized, and speaks to a wide audience from the technician to the end user. It includes diagrams for those who like pictorial guidance and makes it easy for anyone to install, program or use the system.

Getting sound into the unit is pretty simple. Choosing between microphone, line and constant voltage sources, one can connect a dynamic or phantom powered microphone, a line level output source, or a 2, 10, 25 or 70V speaker line source. To have the unit recognize which input is being used, you must select the appropriate setting using the function buttons on the front panel, toggling through functions on the display and adjusting the input level with the level "+" and "-" keys.

Accompanying the system is a programming decal that affixes to the top of the transmitter or the sound cabinet. Also included is a marketing tool kit that I found quite interesting. The kit contains sales and marketing information for the contractor unfamiliar with the opportunities in the wireless listening marketplace. I always appreciate getting good marketing infor-

mation from manufacturers that will make selling units an easier proposition.

## IN USE

When powering up the system, it loads an internal program from flash ROM. This takes about a second or so and then the bright blue screen displays the bass shelving frequency (40 Hz, 80 Hz, 160 Hz or 320 Hz), the selected input source and the operating frequency channel (A through J). Pressing the channel button toggles through the available channels. Setting the channel is a sequenced step, there is no way to go backward, so if you go past the desired frequency, you just have to keep going until you get to the one you want.

Selecting between music and speech is done with a single button. For setting up the receivers Phonic Ear has included a test tone. By pressing the function button and the "speech/music" button, the unit sends a tone out on the selected frequency, allowing the user to use the provided "tuning tool" to dial in the proper reception. Be careful to make sure all receivers are turned down all the way before attempting this. Once all the functions of the transmitter are set and the receivers are tuned, you can lock out the user from tampering with the settings by simply pressing the function key and the "level -" button to lock in the settings. The screen will then display an "L" next to the source type icon.

The receivers are made of molded plastic and operate with two provided AA batteries. Also provided are the newer-style mini dual earphones in their own small case. The case is useful for storing such delicate units and the nifty wind-up style case makes it a snap.

The fidelity is good, and for most speech applications the sound quality is adequate. I noticed some noise when the source audio was down, but the ratio of signal to noise is such that the speech is intelligible and music is represented faithfully.

## SUMMARY

The OnWave system is a good choice for many wireless listening situations, although not suited for critical monitoring, it certainly covers all the bases for its intended use.

*Wayne Becker is Vice President of Sales*

## Product Points:

*Phonic Ear On Wave System*

### Plus

- + Frequency Agile
- + Easy to use and set up
- + Front panel lock-out
- + Compact and rugged design

### Minus

- Manual tuning on receivers

### The Score

*The On Wave system is a compact, good fidelity system offering agile frequency selection at a competitive price.*

*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](mailto:wbecker@systemsbycsi.com).*

## Fast Facts

### Applications:

*Churches, auditoriums, courtrooms or any location requiring wireless monitoring for the hearing impaired.*

### Key Features:

*Agile frequency selection; multiple input source accommodations; internal tuning tone; user programming lockout feature*

### Price:

*\$1,186*

### Contact:

*Phonic Ear at 800-227-0735, [www.phonicear.com](http://www.phonicear.com).*

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BY WAYNE BECKER

**T**OA has always had a good reputation for making cost-effective, reliable and innovative audio products for the sound contracting market. Their foray into the digital realm goes back longer than most us acknowledge, developing some of the first DSPs for contracting and live performance. One of the latest is the DP-0206, a two-in by six-out digital signal processor with an optional upgrade path to 12 channels of I/O (however the unit I tested did not have the optional cards installed). Like many of the DSP boxes on the market today, the DP-0206 is a software-controlled and configured piece of hardware using a Windows-based graphic user interface (GUI), via the DACSys 2000 version 2.0 software, to program and manipulate the processing control of parameters.

**FEATURES**

In addition to accessing and controlling the unit from a PC application, the unit has  
*continued on page 62* ▶

# TOA DP-0206 Digital Processor



# Dual Nature.

**Single Solution.**

Now you can have the best of both worlds. For a limited time, you can save a bundle on two of the hottest pro audio components on the market: Focusrite's innovative new *Twin Trak Pro* and Blue's multi-award-winning *Dragonfly* mic.

Featuring two Platinum Class A mic pre's — the classic Focusrite sound — the TT Pro offers dual/mono stereo compression, comprehensive stereo latency-free monitoring, and unmatched digital connectivity (we've even added the optional 24-bit/96kHz A-D card to the bundle), bringing to your DAW all you need to track, monitor and mix.

The Blue Dragonfly, a 2001 TEC & EM Editor's Choice award-winner, is a Class A cardioid condenser mic sporting a rotating capsule grill for hard-to-mic areas. The Dragonfly's sonic character gives flight to everything from vocals to percussion. Plus, we've added Blue's hi-definition *Cranberry* mic cable for the ultimate in connectivity.

The total value of this package is \$2,089.95, but is now available for only \$1,395.00 — a real "twin-win" proposition. So zip down to your local pro audio dealer today, because at this price, these bundles will be flying off the shelves!

**Double Up!**  
Ask your dealer about the special rebate offer available on a second Dragonfly mic purchase!

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**With the Best**  
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Digital Controls since 1973

## ► TOA from page 60

sixteen internal memories to store presets that can be recalled without connecting the PC. A locking scheme protects the unit against tampering. Up to 30 units can be daisy-chained and controlled via the RS485 port along with an optional remote control card that provides external control of memory recall and output volume and muting. The unit comes housed in a 2RU rackmount-ready enclosure with controls on the front panel and interface connections in the rear. The front panel contains input and output level and status LEDs, a memory/unit ID number display, memory/unit ID number selector keys, a memory recall key, a master indicator ID and a power indicator LED. The security panels, accessed by removing a Philips-head screw, hides access to the RS232 connection and the main power fuse, a reset button and a system lock switch which disables specific front panel access functions. The rear panel provides connectivity for the power cord, the control and optional I/O ports, RS485 I/O connections and the input and output connections; all on Phoenix type connectors.

Up to 30 units can be arranged in a serial network, providing centralized control of a large system or multiple rooms with systems. Addressing of the units is straightforward and explained in detail in the manual. The front panel preset display doubles as a indicator for unit address and status.

Unlike some of the other DSP products on the market today, TOA takes a "fixed" approach to determining the DSP processing you will have available. The fixed processors can be bypassed if not required in a cer-

tain stage. I like this, because even though we like to think we have everything figured out, it's always nice to be able to go back in at moments notice to tweak a certain part of the system we didn't think we'd have to. The processing chain is straightforward; each input goes through an A/D converter, a gain stage, a compressor and a 12-band filter section before it gets to the mixer matrix. From there the outputs go through a second 12-band filter section, a compressor, a delay, the D/A converter and then output attenuators. Each filter can be individually configured as parametric, high/low pass, high/low shelving, all-pass, notch or CD horn EQ.

## IN USE

First off, there was no contact information in either the hardware or software manuals. So make sure your tech has the phone number for TOA before they leave the shop in the event tech support is required. As far as I'm concerned, any product that ships today that requires the connection of a PC running a control or programming application should have tech support contact information readily accessible to the installer. The manuals do provide very good information on the connection of the hardware and the installation of the software application, but there were a few hitches in getting the box to talk to the PC, so having this information available could save time. Additionally, the "help" menu only contained information about the software version. There is no typical on-line help or manual. Also, the laptop or computer that you will use to control and configure the unit will have to be equipped with a floppy drive or preloaded at the shop as the application software is provided on two 3.5-inch floppy disks rather than CD-ROM. You can also download the software from the company's web site, [www.toaelectronics.com](http://www.toaelectronics.com).

The software provided with the unit is the DACSys 2000 version 1.3 (version 2.0 is now available) as well as a utility for uploading the latest firmware revisions. Loading the software on the computer is straight-forward, and a simple DB9 serial cable is required to make the connections from the computer to the unit. Be sure to use a quality cable and mind the RS232 protocol distance rules or communication could be a problem. After getting the computer and box to communicate, creating a new config-

uration and entering the main configuration control screen was very straightforward and intuitive. Kudos to TOA for providing a full size screen with different windows that keeps the current state of each process in front of you throughout the programming process. I think this is a significant advantage over selecting tabs or reopening windows to remember what the setting of a particular process are. The software provides an autoconnect function which scans the computers serial ports for units and connects it automatically.

Setting up a new project is as easy as selecting "New," naming the project and selecting the DSP input/output preference. The unit offers configurations of 2 x 6, 2 x 8, 2 x 10 and 4 x 6, 4 x 8 and 6 x 6. After a few short clicks of selecting and naming the unit and configuration, you are into the main screen. To adjust a parameter simply put your pointer on the box representing the process, click and all the adjustable parameters are instantly available in the window just below the configuration window. There, you simply click on the parameter, adjust the slider, move the EQ point, etc. There are helpful and subtle graphic icons that keep you focused on the changes you are making during process like turning off channels, changing volumes to null, etc. It is truly a point and click scenario. The main screen has a memory compare function that allows you to virtually flip between presets and settings for different configurations. So configuring a system with multiple boxes (chained units) is a breeze. Connecting inputs and outputs is fast and easy. The sound quality of the unit is good with smooth transitions between presets.

## SUMMARY

The DP-0206 is a well-thought-out processor with an intuitive user interface and excellent sound quality. Its setup is relatively easy and can be controlled via presets or a computer GUI. Its "nailed up" approach to processing can be a time saver without sacrificing quality. In installations where you don't anticipate the need to design tailored DSP functions but still need the flexibility to tweak the system with changes, this is a great box. The fact that you can chain units together with centralized control increases the flexibility of this system and its usefulness.

## Fast Facts

### ■ Applications:

Sound reinforcement, installation, multizone distributed sound systems

### ■ Key Features:

User presets; intuitive GUI interface; multiple unit operation

### ■ Price:

\$3,294; two channel I/O expander modules - \$514 each

### ■ Contact:

TOA Electronics at 800-733-7088, [www.toaelectronics.com](http://www.toaelectronics.com).



\*New for NYC AES, The GT Brick @ booth 954

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## WHAT MICROPHONES DREAM ABOUT.

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**Walter Becker,**  
Steely Dan

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**Frank Fillipetti,**  
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**Al Schmitt,**  
Legendary multi-Grammy winning engineer/producer

"I must tell you how wonderful the VIPRE's are...they hear everything! We mixed on Saturday and the music sounds clear and extremely musical. I think that I am in love."

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World Radio History

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Pro Audio Review – October 2003

# NEWS

For those wondering why they haven't seen any new **Joemeek** boxes as of late, Ted Fletcher, owner and designer of the Meek legacy products, has had some financial problems lately. But fear not, Meekmen! Alan Hyatt's **PMI**, US distributor for the Meek line, has come to the rescue by purchasing all the rights to Fletcher ElectroAcoustics (JoeMeek). Promised are a whole mess o' new meek products.

Richard Marx has the project studio most would dream about – a 5,000 sq. ft. facility at his home (outfitted with **Mackie** HUI and a **Digidesign** Pro Tools/HD system). He used Daking mic preamps on his recent work with the band, Emerson Drive (Country Music Award New Band of the Year).

Maybe composer Don Davis wouldn't be too impressed. His "Hacienda Studio" in Calabasas, Calif. has four **Yamaha** O2R96 digital consoles and a Pro Tools/HD rig along with a Yamaha Disklavier piano and EX5 synth. In the rack he has boxes by TC Electronic, Lexicon, Drawmer and Eventide. He put the gear to use in his recent film work, *The Matrix: Reloaded*.



On the **PreSonus** Web site you can find new drivers for Windows XP and Mac OS X for the FIREstation FireWire interface ([www.presonus.com](http://www.presonus.com)).

**Elemental Audio** ([www.elementalaudio.com](http://www.elementalaudio.com)) has announced Windows VST availability for its Firium, Eqium and Inspector plug-ins.

**Native Instruments** ([www.native-instruments.com](http://www.native-instruments.com)) has announced RTAS compatibility for its future products. Also, the KOMPACT sampler (\$199) is shipping ([www.ni-kompakt.com](http://www.ni-kompakt.com)). And the FM7 synthesizer is now available in 1.1.1 ([www.ni-fm7.com](http://www.ni-fm7.com)) along with the 2.0 version of the Absynth soft synth ([www.ni-absynth.com](http://www.ni-absynth.com)).

# NEW PRODUCTS

## Steven Klein SCR Spatial One Near-Field Monitor

No, your eyes do not deceive you. That unique look is the old Hayes Spatial One, now distributed by Steven Klein SCR (but still made in Australia). The woofer is a 6.5-inch with a 1-inch fabric tweeter. What makes the Spatial One so unusual is its venting scheme and overhanging diffuser. The multiple vents and diffuser are designed improve room acoustics and quicken the bass performance. Price: \$1,099 per pair.  
**Contact:** Steven Klein SCR at 818-788-1238, [www.soundcontrolroom.com](http://www.soundcontrolroom.com).



## M-Audio Luna Microphone

Looking very snazzy, M-Audio steps into the microphone business with a splash. The Luna is an affordable Class A FET mic with a 1.1-inch gold-evaporated diaphragm. Price: \$249.  
**Contact:** M-Audio at 800-969-6434, [www.m-audio.com](http://www.m-audio.com).



## TC Electronic PowerCore FireWire

Expanding the PowerCore franchise, TC Electronic now offers the PowerCore FireWire, a rackmounted version with an added bonus – FireWire I/O. According to TC the four Motorola DSPs have twice the power of the older PowerCore PCI card. Still onboard are the DSP and mastering software but now added are synths and AudioUnit-compatibility. And PowerCore FireWire is Mac and Windows-compatible. Price: \$1,795.  
**Contact:** TC Electronic at 805-373-1828, [www.tcelectronic.com](http://www.tcelectronic.com).



## Yamaha SPX2000 Reverb

Perhaps a bit pricey for the skinflints but the Yamaha SPX2000 digital reverb will definitely be a prospect for any nicely-outfitted project studio. The 2000 is the latest in the SPX reverb family. Upgrades include the REV-X reverberation algorithm, 24-bit, 96 kHz power along with the usual parameter controls and bunches of cool presets.



An added goodie is a security setting for keeping out pesky knob twiddlers. And for the ambitious there is an editor for interfacing with a computer. Price: \$1,249.  
**Contact:** Yamaha at 714-522-9011, [www.yamaha.com/proaudio](http://www.yamaha.com/proaudio).



# THE HEMI-HEADS ARE HERE!



"ADK Commemorative Tube Mics are a Gas! We used them with the Cincinnati Pops Orchestra and our Vocals Really Soared!!"

**-Tim Hauser, Vocalist, Manhattan Transfer**

"I use ADK LE Matched Pairs for recording my toms, and two ADK Transformerless for overheads. Warm and accurate, the perfect complement to my sound!"

**-Joel Rosenblatt, Spyro Gyra Drummer**

"The sound is huge and wide open when tracking vocals. The accurate and transparent sound reproduction, especially on the acoustic grand piano, is nothing short of amazing!"

**-Dale Sticha  
Piano Tech for Sir Elton John**

"I've now used the ADK Microphones on almost everything including vocals, guitars, and drums. They remind me of very expensive German mics I have tracked with before."

**-Adam Kasper, Producer/Engineer, Cat Power, REM, Pearl Jam, Soundgarden, Foo Fighters**

"We took ADK Microphones on our Christmas tour last year with Jaci Velasquez. The entire band was totally impressed by the sound! From the violins to percussion, ADK covered it all. We will be using these mics again in future tours."

**-Jay Lipschutz, FOH Engineer, Jaci Velasquez**

## THE NEW GENERATION OF ADK MICS HAVE ARRIVED.

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BY GEOFF TURNER

# Reason 2.5 Software

**R**eason 2.5 (\$399) is an innovative software studio device from the Swedish developer Propellerhead Software (distributed in the U.S. by M Audio). Onboard this graphics-intensive program are a wealth of studio tools, virtual instruments and sequencers that form a powerful environment for sound design, composing and remixing.

In the burgeoning world of soft studio gear, the appearance of Reason 1.0 in 2000 was conspicuous to say the least. Its comfortably retro-styled virtual rack featured a customizable recording studio with mixing consoles, a polyphonic synthesizer, a pattern/step style drum machine, a sampler, a loop player and a large library of dance music inspired samples. Its ReWire function could send up to 64 audio channels directly from Reason's modules into a compatible DAW application with sample-accurate synchronization. Now with its first upgrade Reason 2.5 takes the program's stability, interface ingenuity and fun factor even a few steps further.

Propellerhead offers Reason 2.5 at the same

original price as its predecessor (\$399, \$89 upgrade with registration number), while introducing two new sound modules, support for 24-bit samples, sequencer improvements, a larger library of sounds, MIDI ReWire capability, and Windows XP and Mac OS X compatibility.

## FEATURES

Reason installs easily from a three CD-ROM set. The first disc contains the Reason program and a well-written electronic manual in Adobe Acrobat PDF format. The second disc contains the Reason Factory Sound Bank, which delivers the sample, patch and REX format loop files for use in the various Reason devices. The third is the "Orkester" CD that includes a set of orchestral instrument samples and patches. There is a printed manual included to get you started, though its summary often refers to the electronic documentation for more in-depth information.

Upon opening, Reason presents an empty



virtual studio rack with a 64-channel audio interface and a MIDI management device pre-installed. You "assemble" your studio by choosing modules from the device menu list. All modules are MIDI controllable and can be fully automated (including all front panel parameter knobs) via the sequencer section. Audio and emulated CV/Gate connections can be routed automatically by the program or user patched "by hand" by flipping the rack around

*continued on page 68* ▶

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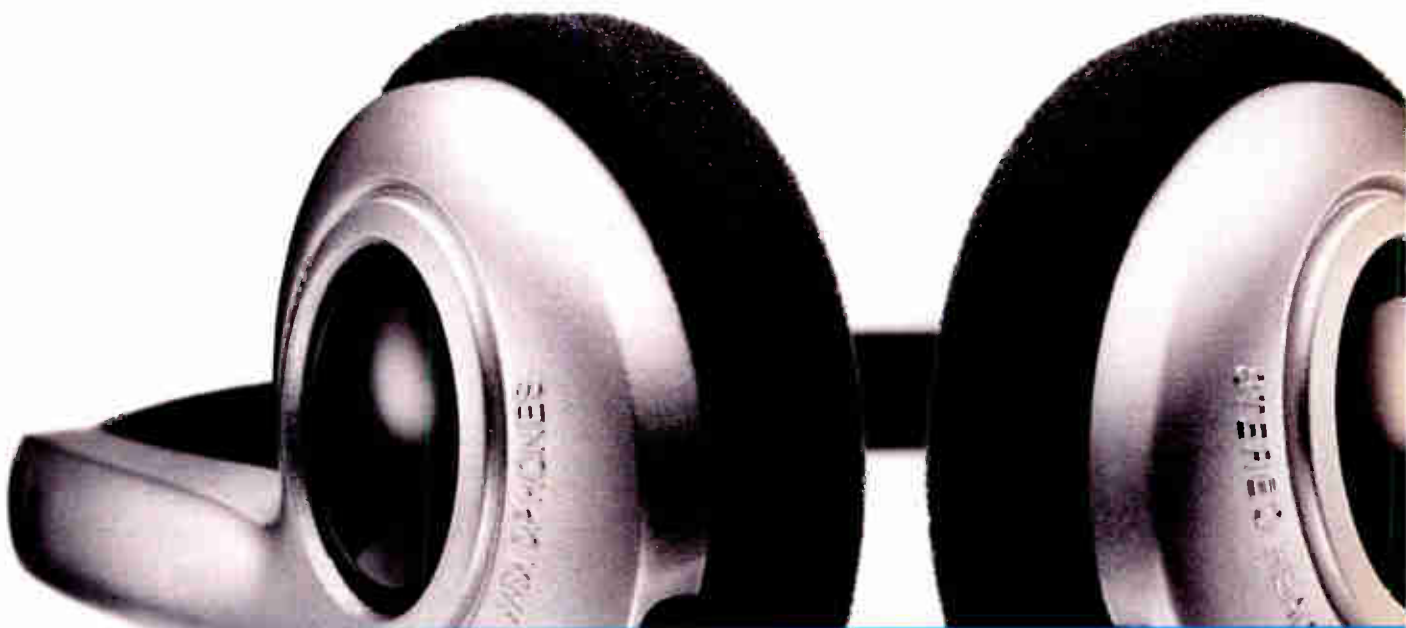


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# Ross says



"I've used my Royer's on every recording I've done since 1998. These mics have made a huge difference to me in my quest for real sounding records. From blues to heavy metal, I keep finding new and effective ways to use the mics and by far they have become my main electric guitar mic. I just finished producing and engineering Ziggy Marley's new record and single and the Royers are everywhere. I used them on the drums, organ, percussion, the four piece horn section and of course the guitars. I brought in my old friend David Lindley to play his arsenal of stringed instruments and he was very impressed with the size and detail translated from the mics. 'Irie! I don't look back now, only forward and the bottom line is, I won't ever make a record again without these mics.'"

**Ross Hogarth** (Grammy winning Producer/Engineer - Ziggy Marley, Gov't Mule, Keb Mo, Coal Chamber, Jewel, Roger Waters, Black Crowes)



Visit [royerlabs.com](http://royerlabs.com) to look in on Ross in the studio and see some of his electric guitar setups.

[www.royerlabs.com](http://www.royerlabs.com)  
818.760.8472

#2 in a series

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## Project Studio

### ► Reason from page 66

to the modules' back panel connections. It is also possible to open multiple versions of each device, making towering racks of components a reality limited only by your computer's CPU.

Reason 2.5 retains all the modules from earlier versions (including a 14 x 2 mixer, the Subtractor Analog Synth, Maelstrom Synthesizer, NN-19 and NN-XT digital samplers, the DR Rex Loop Player, the Redrum Drum Computer and numerous studio effects such as reverb, digital delay, foldback distortion, phaser, chorus/flanger, compressor, envelope-controlled filter and two-band parametric EQ). And it adds the RV7000 Advanced Reverb, Scream 4 Sound Destruction Unit and BV512 512-band vocoder.

The NN-XT sampler is a powerful companion to the original NN-19 sampler. The sampler supports WAV, AIFF, REX/REX2 and SoundFont 2 files. It provides eight stereo channel outs for better mixing and processing value through the 14 x 2 mixer, or for routing audio outside of the program via ReWire. It also allows for sound layering, velocity switching, crossfading and random zone switching (which automatically avoids repetitive playback of the same samples).

The NN-XT has two control panels. The first is for global controls and sample patch loading. A second, folded in panel gives access to the individual sample loader, sample parameter controls and a graphic Key Mapping Display. Synth-type control sections for modulation, velocity, portamento, LFO, modulation and amplitude envelopes, filter and pitch control extend the sound bending potential and greatly enhance this unit.

The Malstrom Synthesizer sound is based on a combination of wavetable and granular synthesis, dubbed "graintable." The control surface is straightforward, showing dual oscillators with ADSR envelopes, two modulators (LFOs) with 32 preset waveforms and "one shot" and tempo sync modes, and two filter sections with five filter modes and a common ADSR envelope. Tone wheel and velocity control sections, as well as 16-note polyphony and portamento settings round out the list of familiar features.

The oscillators play back graintable sounds, which are looped samples that have been chopped up into short contiguous segments. These "grains" can be dramatically animated by use of the Index, Motion and Shift controls. Index determines at which point in the sample

the oscillator will start cycling the sound.

Further manipulation and crunching is possible via the "Shaper" wave-shaping device. It has five modes: sine, saturate, clip, quant and noise that can introduce saturation characteristics to the sound through wave modulation, bit reduction and distortion. Additionally, insert points on the rear panel allow you to route audio from any Reason device (including the hardware interface).

### IN USE

I decided to road test Reason 2.5 as the main audio source for a marketing video based on an upcoming massively multiplayer video game. Creating this two-minute, movie trailer-styled video, I knew I needed to compose and synchronize music, multiple sound effects and several voiceover narration segments into the audio track. The video arrived in AVI format, which I inserted into the video track of my

## Fast Facts

### ■ Key Features:

Windows 98/ME/XP/2000, Mac OS X, OS 9x; powerful sequencer; MIDI automation; standalone functionality or in tandem with programs that support ReWire; studio effects, large sample library; virtual synths and samplers with filter/LFO tempo sync

### ■ Price: \$399

### ■ Contact:

Propellerhead Software/M-Audio at 800-969-6434, [www.propellerheads.se](http://www.propellerheads.se), [www.m-audio.com](http://www.m-audio.com).

main DAW, Steinberg Nuendo. After launching Nuendo I opened up Reason and created a 14 x 2 mixer. The two programs interfaced easily via Propellerhead's ReWire function, which placed Reason's audio outputs directly into Nuendo's mix channels. With this configuration I took advantage of sample-accurate placement of Reason's audio to Nuendo's picture, including the tracking of tempo variations generated from Nuendo.

For the narration track I created an NN-XT sampler module into the Reason rack. I imported 10 voiceover WAV files into the Remote Editor Panel through the Sample Browser, laying them across several graphical zones in the Key Map. Via a MIDI controller I played the samples near the video's cue points

*continued on page 70 ►*



# "Brilliant!"

*Tony Romano, Front of House, Diana Krall*

*"With more microphones emerging than ever before, the cream always rises to the top. Enter the SCX-25. The warmest mic off axis I've ever heard, no proximity effect here! I have recorded acoustic bass, tuba, violin, clarinet, guitar, piano, and vocals—all with unsurpassed clarity."*

*Larry Camidge,  
Grammy Award Winning Engineer,  
David Grieman Quintet*

*"The SCX-25 is my go-to mic for acoustic guitar. It adds a gentle presence boost that makes any acoustic sound better, and its lack of proximity effect makes the bass more natural than other mics I have used."*

*John Getzki, PRO AUDIO REVIEW*

*"Two SCX-25s in a Baby Grand and my work is done! There's just nothing else like it."*

*Pat Lucatorto, Audio Engineer,  
The Tonight Show*

*"My first choice on Grand Piano. Easily one of the finest acoustic guitar mics ever! The size and unique design make them very camera-friendly. I love them for the sound... television directors love them for their looks."*

*Vaughn Stow, Audio Producer,  
Live from the Bluebird Café*

*"What you hear is what you get. Not only is it the best sounding piano mic available, the shape, size and mount allow you to get right on top of the soundboard."*

*Paul Mitchell, Front of House,  
Joe Sample and The Crusaders*

*"I have miked dozens of bands at recent bluegrass festivals with just one mic—the SCX-25. The band's response is always the same—they can't believe the tremendous sound that comes out of a microphone with such a small footprint."*

*Paul Knight,  
Knight Sound Systems*

*"I honestly think the SCX-25 is one of the best mics available, and destined to become a classic."*

*Dennis Leonard, Supervising  
Sound Editor, Skywalker Sound*



**"IN A WORLD SUDDENLY CROWDED WITH CHEAPLY MADE STUDIO CONDENSER MICROPHONES DESPERATELY TRYING TO OUTWARM AND OUTSHEEN EACH OTHER, AUDIX HAS MANAGED TO PUSH FORWARD WITH THE SCX-25. A COOL-LOOKING AND INNOVATIVE MICROPHONE THAT CAPTURES DETAIL VERY ACCURATELY WITHOUT SOUNDING ABRASIVE OR HARSH, THE SCX-25 HAS A GREAT FUTURE IN THE DAY TO DAY WORKINGS OF ANY STUDIO."**

**ANDREW GILCHRIST, ENGINEER, ANI DIFRANCO**

*"I put a pair of SCX-25 mics in Diana's piano in July 2001 and they haven't come out since. These are the best piano mics I have ever heard—Brilliant!"*

*Tony Romano,  
Front of House, Diana Krall*

*"I license piano samples to major keyboard companies like Emu and Ensonic. In what I do, every note is like a mastered CD. It is painstakingly hand crafted and has to be perfect. I have chosen the SCX-25 mics simply because they produce better source material."*

*William Coakley, Sound Designer,  
PERFECT PIANO SERIES*

*"Those in need of an excellent piano mic need look no further. As an overhead drum mic, it provides a transparent and full-sounding presentation that is up there with the best. It's also a great choice for a sizable range of vocal recording duties."*

*Richard Salz,  
ELECTRONIC MUSICIAN*

*"On Merle's current CD we recorded Willie and Hag with a pair of SCX-25s in the middle of the band to get a "live" feel—and the vocals sounded great."*

*Lou Bradley, Engineer/Producer,  
Merle Haggard*

*"I essentially just set the mics up, bring up the fader... and just sit back and enjoy the mix!"*

*Pete Horne, Horne Audio*

*"It behaves like a mic twice its size, a condenser with solid highs but no excessive top, and with a robust midrange and upper bass range that belie its visual appearance."*

*Marty Peters,  
RECORDING MAGAZINE*

*"Having played the roles of artist, engineer, and producer, there is a fine balance between the technical and the artistic side of music. I find that the SCX-25 has really helped to bridge that gap as it faithfully reproduces vocals and acoustic guitar regardless of the style or content of the music."*

*Phil Keaggy, legendary guitarist*

## "...destined to become a classic."

*Dennis Leonard, Supervising Sound Editor, Skywalker Sound*

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### ► Reason from page 68

by triggering into the module's sequencer track. Final placement was fine-tuned in the sequencer's Key Lane/piano roll view. I also took advantage of the synth-type controls by adding various filter and LFO-based effects to the individual samples to enhance the sci-fi mood of the video.

With the voiceover work finished I moved on to the musical tasks. The opening sequence called for an aggressive electronic score. I

opened up three DR Rex Loop Players and loaded in some kick/snare, syncopated high hats and off-kilter back beat loops into the players. By transferring the Rex Slice information for each loop into their own sequencer tracks I was then able to resequence the slices to create original new beats.

Next I opened up a Maelstrom synth to create the bass line. I selected some grainable samples and connected the oscillators' Index and Motion controls directly to the

Modulator's output section to apply tempo-locked manipulations to those sounds. In addition I routed one of the oscillators through the Shaper section, dialing in some edgy distortion. The result was a pulsing bass line that rolled rhythmically along with the drums. By the final mix I had set up 14 Maelstrom synths in various sections, each adding different melodic and ambient elements into the track.

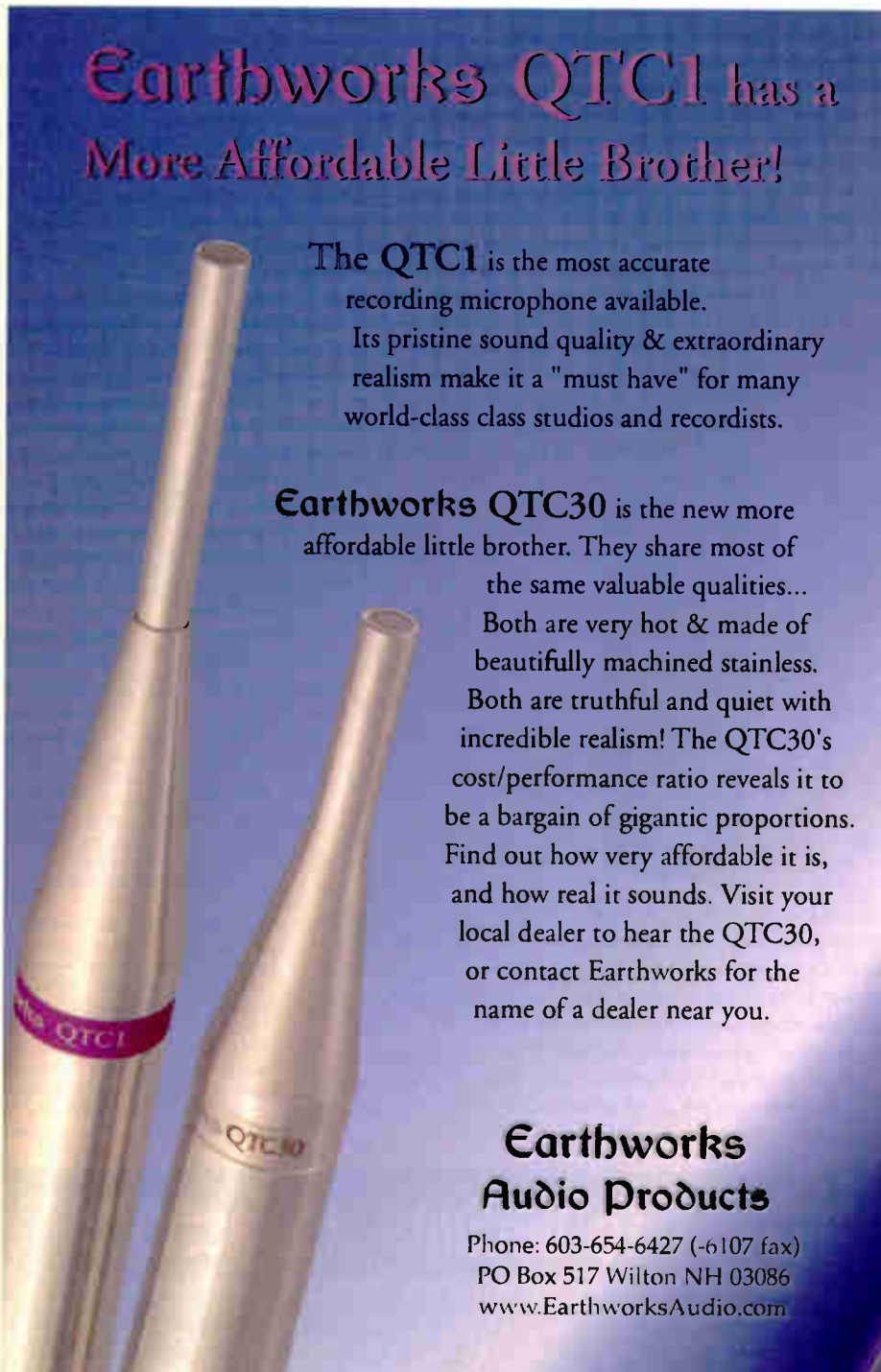
Throughout the project I made good use of the samples contained in the Reason Factory and Orkester collections. There is an enormous selection of instrument and drum set banks included with this program, and while I was underwhelmed by some of them, the pianos, vibraphone, vintage keys and drum kits were quite useful. I even discovered a few decent Mellotron patches hidden among the library menus. At this program's price tag, I was happy to see such a large assortment of sounds to grab.

Percussion samples, for example, were a fine basis for some sound effects work. Combining some repitched and reprocessed drum samples, I was able to produce explosions and sweeps that worked well within the video's battle sequences.

### SUMMARY

By the end of the job I stacked up a mix of 82 various Reason Modules, all working smoothly to picture in Nuendo with no complaints from my CPU. I experienced no performance glitches throughout the entire project, confirming the program's efficiency and stability. The range of library samples had provided more or less what I needed for raw sample material, making trips outside of the program rarely a necessity. Though I took full advantage of my favorite VST and DirectX plug-ins by routing audio out to my DAW mixer via ReWire. This ability to seamlessly integrate Reason into my existing system (with no hiccups) was a significant plus. Also I found very low latency performance operating with ASIO drivers. Although there is a growing selection of software-based synthesizers, samplers and sequencers on the market, this program delivers a unified package at a very attractive price. Above all, Reason 2.5 is flexible and enjoyable to work with. For a sound designer on a deadline, or a musician trying to extend the power of the PC, that is really the main selling point.

*Geoff Turner is a Los Angeles-based independent producer/engineer specializing in A/V and video game audio.*



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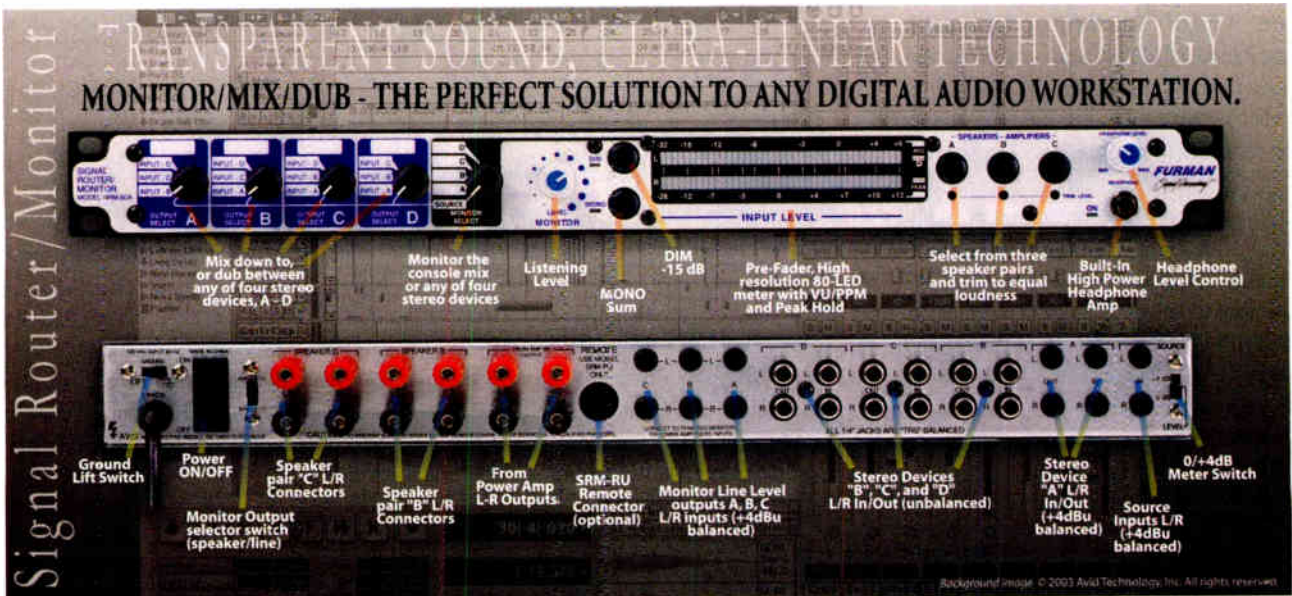
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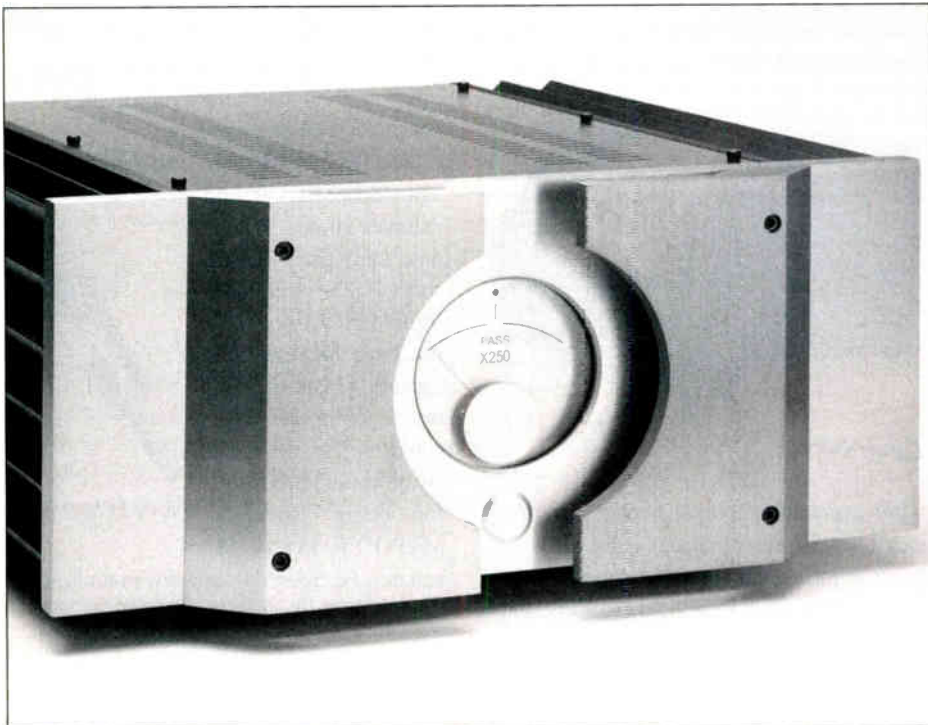
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BY FRANK BEACHAM

**Shure FP410 IntelliMix Automatic Portable Mixer (\$1,750).** Some classic audio products remain on the market for years, only to be “discovered” by users when it comes from the shadows to save the day. That’s often the story with Shure’s FP410, a venerable product that has saved the reputation of many a field recordist. Essentially, it’s a lightweight, highly portable field audio mixer that can automatically mix a conversation between at least four people. The key word here is “automatically,” since it can be operated by a person with no engineering skills.

That’s a big deal in the era of the one-man-band “multimedia” production crew. Say you’re interviewing three people. How do you ride gain on four microphones while at the



Shure FP410

same time keeping your mind on the content? Some might preset levels and just leave all four mics open. But that’s when the gremlins pop in. Things like comb filtering, that hollow off-mic effect one gets when a voice is picked up by open microphones at different distances. And then there’s the build-up of ambient noise and reverberation that occurs when several mics are open at the same time.

The FP410 with Shure’s IntelliMix circuitry solves these problems cold. Once initial levels are set on the four channels, the mixer is switched from manual to auto. Now the magic begins. The Noise Adaptive Threshold distinguishes between constant background sound (e.g. air conditioning) and rapidly changing sounds like human speech. This function continuously adjusts the activation threshold so that only signal levels louder than the background sound will activate a channel on the mixer.

The MaxBus feature solves the comb filtering problem. With this circuit, one talker will activate only one channel even if multiple microphones are “hearing” the talker. The number of open channels will always equal the number of talkers.

Finally, Last Mic Lock-On assures seamless background ambience by keeping the most recently activated mic open until a newly

# Shure Mixer, Crown and Sony Microphones

activated mic takes its place. Without this feature, a long pause in conversation might allow all mics to turn off, creating the perception that the audio signal has been lost.

The FP410 can dramatically improve audio quality by providing greater gain-before-feedback, reducing the pickup of ambient noise and reverberation, and virtually eliminating comb filtering effects. Great for video production, broadcast interviews, conference recording, and field production. (Hint: Don’t be scared off by the list price. Street prices are much, much lower.)

**Crown SASS-P MKII Stereo PZM Microphone (\$995).** Another ideal product for one-man-band stereo recording is the Crown SASS-P Stereo PZM Microphone, a vintage design from 1983 whose flexibility and simplicity has proven its value over the years. SASS is the acronym for Stereo Ambient Sampling System. It’s actually a shoebox-sized stereo microphone that —



Crown SASS-P

while maintaining mono compatibility — creates most of the simulated cues needed for accurate localization of stereo sound.

Crown’s SASS can be used by one person in stereo documentary production, news and sports ambience, sound effects, sampling for keyboards, and film effects. It’s also ideal for one-mic recording of live acoustical music, classical ensembles and choirs. Many a commercial recording has been made with a SASS mic.

The SASS uses two omnidirectional condenser pressure zone microphones that are separated by an ear-spaced distance. Each has considerable protection from handling and wind noise, as well as freedom from proximity effect. The polar patterns and human head-sized spacing between capsules create well-focused stereo images with no hole in the middle.

Outside of simple stereo field recording, the SASS is very useful on video shoots. Just allow the SASS to follow the camera’s point of view when establishing a sequence of video images. The stereo results are eerily accurate, while the mono is always solid.

**Sony ECM-DM5P Electret Condenser Microphone (\$69.95).** Have a portable recorder with a mic input jack but no built-in microphone? Sony recently introduced this tiny unidirectional mono mic that powers itself from any plug-in power mic jack, making the recorder a self-contained recording device. This minuscule mic has adjustable angles, and offers specs to match most high quality digital consumer recording devices.

The ECM-DM5P is designed to reduce extraneous background noise such as the recorder motor. But a nice third party accessory is the micPOD from MiniDisc-Canada. It allows the Sony mic capsule to be positioned on a compact desk stand up to six feet away from the recorder for better isolation. MicPOD is \$35.54 US and may be ordered from [www.minidisc-canada.com/micpod.asp](http://www.minidisc-canada.com/micpod.asp).



Sony ECM-DM5P

For more information contact:  
Shure at 800-257-4873, [www.shure.com](http://www.shure.com)  
Crown Audio at 800-342-6939,  
[www.crownaudio.com](http://www.crownaudio.com)  
Sony at 800-472-7669, [www.sony.com](http://www.sony.com).





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"It was detailed throughout the frequency spectrum, and from a near-whisper to a wail, the V69 caught every nuance. The Marshall MXL V69 Mogami edition is an excellent microphone, and when you factor in the low, low price, the price performance becomes downright amazing."

**Scott Burgess, Pro Audio Review**

"So, we tested the V69 against—count 'em—11 other popular condensers, ranging in price from \$169 to \$5,000 list.... both the engineer/producer and the singer picked the V69 over the other 11 mics. None of them had the same combination of classic tube warmth and top-end air of the V69."

**Fett, Songwriter Magazine**

"If you're looking for a mic that performs like it costs a bunch more, give the V69 a very close look. You'll be thrilled at how little money you have to shell out, and you'll be even happier at how well it does its job."

**Mitch Gallagher, Editor EQ Magazine**

"Soundwise, I was very impressed that the V69 could hold its own against an industry standard like the U47. It struck me as very versatile and of higher quality than other budget tube condensers."

**Pete Weiss, Tape Op Magazine**



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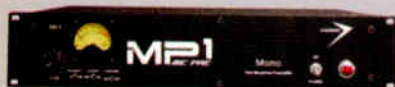
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# Echo Digital Audio Indigo

BY RUSS LONG

I have headphones plugged into my laptop all the time. If they aren't being used for editing or rough mixing, I'm listening to a CD or watching a movie.

While my computer's headphone amp sounds decent, it just cannot match the quality of my Sennheiser HD 280 Pro or my Grado SR-80 headphones. Not only is the quality less than what I would expect, but sometimes the volume is an issue as well. Even with the volume cranked, quiet movie dialog is often difficult to comprehend in a noisy plane or crowded coffee shop.

Enter the \$159 Echo Indigo, a compact PCMCIA Type II card that solves problems galore. The Indigo is a high-quality, two-output PC card headphone amplifier with tons of gain and exceptional sound quality.

## FEATURES

To run on a Windows-based computer, the Indigo requires a laptop computer running Windows Me, 2000 or XP with a Type II Card Bus slot and one or two sets of headphones. To run on a Macintosh computer, the Indigo requires a G3 or G4 PowerBook running OS X 10.2 with a Type II Card Bus slot. Unfortunately there is no OS 9 support. With both Windows and Macintosh systems, the computer requires a minimum of 128 MB of RAM with 256 MB highly recommended.

## Fast Facts

- **Applications:**  
*Portable digital audio workstations*
- **Key Features:**  
*PCMCIA Type II CardBus card;  
Windows Me/2000/XP, Mac OS X*
- **Price:**  
*\$159*
- **Contact:**  
*Echo Digital Audio at 805-684-4593, www.echoaudio.com.*



The layout of the Indigo is simple: it has two 1/8-inch mini stereo jacks, a volume control and a bright blue LED. If two sets of headphones are being used simultaneously, the volume control determines the volume for both sets. The LED illuminates to signify that Indigo is working.

The Indigo provides the same broad range of compatibility with professional audio software as the rest of Echo Digital Audio's products. In addition to the standard Windows audio APIs, Indigo fully supports direct kernel streaming, ASIO and GSIF. The card offers respectable low-latency performance.

The easy-to-use Indigo configuration panel allows the card to be quickly and efficiently configured for any situation. The panel even provides the option to "enable dummy input" since some professional audio software, such as Cakewalk's SONAR, will not work with audio hardware that only has outputs.

## IN USE

The Indigo drivers installed in a breeze and the card provided flawless performance from the start. I found that the Echo Web site had more recent drivers than the CD included with the card, so I went



straight to the Web for my drivers.

Several hours of listening to CDs through the Indigo revealed that the clarity and definition of the headphone amplifier in this card is far better than any I have ever heard in a computer. I was surprised at the low-end definition and clarity.

My next step was to take my computer into the studio to see how the converters stand up to critical listening through monitors in a controlled environment. Once again I was impressed. The card's converters sound very good, with tremendous depth.

The default setting for the Indigo's ASIO driver is 512 samples. This setting results in a latency of about 12 ms. Since I was only using the card for playback, this was always sufficient for me. For applications or users that require minimal latency, the Indigo driver provides a 128-sample buffer that results in a latency of only 3 ms. This setting is far more processor-reliant and is not practical on my system.

My one and only complaint with the Indigo is that a single volume control adjusts the volume for both headphone jacks. If two listeners are using different kinds of headphones or if they simply want to listen at different volume levels, someone has to compromise.

There are two new versions of the Indigo that are soon to be released (and possibly will already be on the shelves by the time you are reading this). The \$229 Indigo I/O offers a single output but adds a high-quality, 24-bit, 96 kHz stereo input. This gives the user the ability to record without any additional hardware or power source. The Indigo DJ card has been designed specifically for DJ applications, giving the user two independent outputs, a headphone output and a line output. This allows the user to cue a mix with headphones while simultaneously playing the house mix through the card's line output.

#### SUMMARY

The Echo Indigo combines high-quality

audio playback with low-latency ASIO drivers, resulting in a compact and affordable card with plenty of gain and fantastic sound.

*Russ Long, a Nashville-based producer/engineer, owns The Carport recording studio. He is a regular contributor to Pro Audio Review.*

## Product Points

### Echo Indigo

#### Plus

- + Great sound
- + Plenty of power
- + Extremely small
- + Reasonable price
- + 24-bit/96 kHz audio resolution

#### Minus

- Outputs share a single volume control
- No Mac OS 9 support

#### The Score

*The Echo Indigo card is the perfect way to add professional quality playback to a notebook computer.*

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VTB1 Variable Tube Mic-Pre



PreSonus MaxRack

**T**he last time the AES show was scheduled to be in New York, September of 2001, the world was turned upside down. To the show organizers' credit they managed to cobble together a show several months later in December. But it was a most somber show with many exhibitors, notably from the West Coast, choosing not to attend.

As of press time, things look to be much different and more optimistic for the 2003 show, October 10–13, Jacob Javits Convention Center in Manhattan.

## BIG STUFF

Who says there is a downturn in the audio industry? Things must be looking up if the large number of new consoles is any indication.

Out of the Yamaha stable is the latest in the venerable PM family of FOH and monitor mixing consoles, the PM5000. The idea is to marry to industry-standard PM4000 with the digital performance of the PM1D.

And speaking of digital consoles, Innova SON's Sy80 is new for the show. The Sy80 is the larger and upgraded version of the Sy40 live console. Less digital is Cadac's R-Type Touring Live Production Console. But Cadac isn't sitting on its analog laurels – debuting at the show is the D20 Digital Input Mix Matrix. The D20 is to be the head end for a modular, digital routing, mixing, processing system under the command of Cadac's SAM software. More modules will follow.

Also new for the live market are new

# AES 2003 Preview

Xone series and PA series mixers. The Xone mixers are DJ-style performance mixers while the PAs are small live band mixers.

In the studio console market look for a new, dedicated surround sound mixing board from API. The Vision Surround Mixing Console is a 5.1 format with preamps, processing and other whatnot courtesy of API's 500 series modules. API is also bringing out the 8200, a mixer aimed at DAW users needing quality eight-channel input (courtesy of API 7800 master modules and 7600 channel strips).

For broadcaster Calrec is demonstrating its new Hydra networking system. The system includes a mic preamp input module and is supposed to be compatible with all of Calrec's consoles.

And in the spirit of treating the dear departed kindly, Fairlight is back and with new products. Besides upgrading its QDC operating system it will show a new, smaller workstation for the DREAM series, the Station PLUS.

## IN THE BOX

If there is a "box" show it is AES. As usual look for numerous new processors and mic preamps from established companies, boutiques and little guys just starting out.

Kind of hitting all three is Toft Audio Designs. Malcolm will be showing sever-

al of those pretty silver boxes (dual-channel strips) he's been teasing us with lately. Hopefully they are ready to ship.

Another well-known personality, Fletcher, is exercising his influence over Greg Gualtieri at Pendulum Audio. His, Greg's, excellent Quartet preamp/proc-

essor (PAR Excellence 2001) will be receiving the Fletcher "Mercenary Edition" treatment. Not to be left behind George Massenburg has a new mic preamp and parametric EQ, the 2032, available for the show.

Millennia Media has a new "Twin Topology" (tube and solid state input paths) mic preamp/DI/parametric EQ all crammed into a very small, very busy box. It's called the TD-1 Twin Direct Recording System.



Millennia Media TD-1

New from A Designs is an upgraded MP-2 preamp, the MP-2r (with more gain). Also from A Designs is an in-line level controller aimed at controlling levels to desktop powered speakers.

Moving from A to Z, Z-Systems has a new product, the z-Qualizer, a six-band digital parametric EQ. The z-Qualizer handles sample rates up to 192 kHz and has POW-r wordlength reduction.

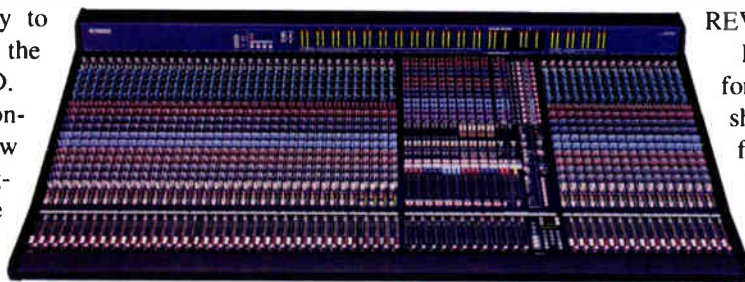
Yamaha will bring to New York a new reverb, the SPX2000. This 24-bit, 96 kHz addition to the SPX offers a new REV-X reverb algorithm.

Rane might win the award for most new products at the show. The PEQ55 is a dual five-band analog parametric EQ with Rane's Accelerated Slope. The G4 is a digital quad gate with features aimed at the live sound, installation, studio and broadcast markets. The

MM42 is processor for working with monitor mixes.

## Mic Rounds

Besides offering the latest and coolest in new rackmounted toys, AES usually offers a *continued on page 78* ▶



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Shure PA821



Pendulum Audio Quartet II

► AES from page 76

nice selection of microphones – at all ends of the market.

Anytime there is something new from Neumann it is worth a mention. The TLM 127 is a mid-priced multipattern condenser with a high-pass filter. Another new Germanic studio mic is to be had from Dirk Brauner. The VMA Variable Pattern Tube Mic is just what it says it is along with the addition of a vocal emphasis switch. Still in Central Europe, Sennheiser offers new members of the Evolution family. The 900 series has three new mics: the E935 and E 945 are vocal mics and the E 903 is a snare/instrument mic.

Soundelux has chosen to continue the trend of resurrecting the golden oldies. The e49 is another variable pattern tube mic using the “kk47-style” large diaphragm. Hint, hint.

Striking off on its own is Earthworks with the QTC30, a more affordable version of the company’s highly-rated QTC1.

For your listening pleasure, ADAM Audio is offering a new ribbon powered speaker. The S5V-A is a three-way model with a ribbon tweeter utilizing ADAM’s Accelerated Ribbon Technology. The low end is pumped out with a 12.5-inch Hexacone woofer.



Rane MM42

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Another nice (and expensive) powered speaker to debut at the show is the ATC SCM 12. The SCM 12 uses a 12-inch woofer in a two-way system.

For processing system bass signals Bag End is showing a new family of bass processors, INFRA. The INFRA family promises some rather interesting technology.

If you don’t have powered speakers and are in need of a new amp, Hot House Pro Audio has the Models 400, 600 and 1000 available. Hot House’s irrepressible Richard Rose promises big things from these hunks of iron.

ONCE UPON A TIME...

... AES was pretty much a studio/broadcast show. But things have changed. This year expect to see new and improved system processors from facilities and live sound venues from Allen & Heath, Sennheiser, Shure, Symetrix, Lake Technology and Belgium’s Apex. There seems to be no end to the processing and routing powers that can be crammed into a digitally-powered box. Also relatively new for the AES crowd is the growing number of wall and podium controllers for these boxes.



Neutrik RCA connector

There was a time when “new” digital audio workstation software upgrades were eagerly anticipated by the AES crowd but those days are gone. Expect major platform upgrades across the board with new plug-ins from seemingly everybody. An example of how everyone is into software? Mic processor Soundfield has a surround sound plug-in for the SADiE Series 5 platform. On the same measure there will be many new peripheral introductions including input devices (some mentioned above). PreSonus is even debuting a desktop rack for preamps and processors called the MaxRack.



Earthworks QTC30

And lastly, from the miscellaneous category... Genex has a new remote (GXR948) and PC waveform audio editor (GXPC Edit) for its GX9000 and GX9048 high-end hard disk recorders. Besides picking up some Countryman mics for distribution, Shure has a new active antenna combiner for wireless microphone systems, PA821. And Neutrik has a new family of heavy-duty RCA connectors.



ADAM S5V-A



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**Features:** 16-track; 16-bit; twin 32-bit DSP effects banks; four-band parametric EQ; onboard sampler; 20 GB hard drive; MIDI-compatible; CD-RW drive; jog/shuttle wheel; LCD screen; tape-style transport controls. Price: \$1,299.  
**Contact:** Yamaha at 714-522-9011, [www.yamaha.com/proaudio](http://www.yamaha.com/proaudio)



## TASCAM FW-1884

**Applications:** Control surface.  
**Features:** 18-channel; 100mm motorized faders; four-band EQ; 24-bit, 96 kHz; onboard mic preamps; surround sound; optional fader expander (FE-8, \$1,249). Price: \$1,599.  
**Contact:** TASCAM at 323-726-0303, [www.tascam.com](http://www.tascam.com).



## Merging Technologies Pyramix Virtual Studio

**Applications:** Standalone turnkey digital audio workstation.  
**Features:** Windows-based system; Mykerinos processor PCI card; waveform editing; onboard DSP; up to 96 tracks; 24-bit; up to 192 kHz; 5.1, 7.1 surround sound; VTC, LTC, NTSC, PAL, HDTV; mastering software; DirectX, ASIO, OMF, VST; SDII, WAV, AIFF, MP3, AC3. Price: starts at \$3,495.  
**Contact:** Merging Technologies at 847-272-0500, [www.merging.com](http://www.merging.com).



## TC Electronic PowerCore FireWire

**Applications:** Digital audio workstation interface.  
**Features:** Rackmounted FireWire interface; Windows XP, Mac OS X.2; VST, AudioUnit; four Motorola DSP chips; DSP, synth and mastering software. Price: \$1,795.  
**Contact:** TC Works at 805-373-1828, [www.tcelectronic.com](http://www.tcelectronic.com).



## JL Cooper MCS-3800

**Applications:** Control surface.  
**Features:** Programmable function keys; 100mm motorized faders; jog/shuttle wheel; onboard timecode reader; optional machine control interface cards; compatible with most major digital audio and video workstation programs. Price: \$2,900.  
**Contact:** JL Cooper at 310-322-9990, [www.jlcooper.com](http://www.jlcooper.com).



## Fostex VF160

**Applications:** Standalone digital audio workstation/mixer/multitrack recorder.  
**Features:** 16-track; internal 20 GB hard drive; 16, 20, 24-bit; 44.1 sample rate; onboard DSP; onboard CD-RW drive; 60mm faders; jog wheel. Price: \$999.  
**Contact:** Fostex at 562-921-1112, [www.fostex.com](http://www.fostex.com).



## Digigram VXpocket 440

**Applications:** Laptop computer audio card.  
**Features:** Windows, Mac, Linux drivers; PCMCIA Type II card; 16, 24-bit; LTC, SMPTE; breakout cable. Price: \$649.  
**Contact:** Digigram at 703-875-9100, [www.digigram.com](http://www.digigram.com).



## Cube-Tec AudioCube 5

**Applications:** Standalone digital audio workstation.  
**Features:** Standalone turnkey system; 8 - 24-channel; 24-bit; 96 kHz; dual processors; onboard noise reduction; onboard DSP effects; surround sound; LFE management tool; WAV, AIFF formats; MLP encoding; Dolby AC3, DVD-A, DSD/SACD. Price: starts at \$20,750.  
**Contact:** Cube Technologies/Sascom at 905-469-8080, [www.cube-tec.com](http://www.cube-tec.com), [www.sascom.com](http://www.sascom.com)



## CreamWare SCOPE/SP

**Applications:** Digital audio workstation hardware and software.  
**Features:** Mac- and PC-based DAW hardware and software system; PCI slot board; 15 SHARC processors; onboard mixer; onboard DSP; onboard multiformat synthesizers; onboard



sampler; MIDI support; ASIO-compatible; optional expansion boards; proprietary plug-ins available; third party plug-ins available. Price: app \$3,000.  
**Contact:** CreamWare at 800-899-1939, [www.creamware.com](http://www.creamware.com).

## BIAS Peak 4

**Applications:** Digital audio workstation software.  
**Features:** Mac-based DAW software system; OS X; waveform editing; VST, Audio Unit, CoreAudio; numerous DSP plug-ins; Red Book CD burning. Price: \$499.  
**Contact:** BIAS at 800-775-2427, [www.bias-inc.com](http://www.bias-inc.com).



## Mackie Control Universal

**Applications:** DAW control surface.  
**Features:** Eight-track; 100mm motorized Penny & Giles faders; jog wheel; tape-style transport



controls; dedicated function buttons; compatible with all substantial DAW systems. Price: \$1,299.  
**Contact:** Mackie Designs at 800-258-6883, [www.mackie.com](http://www.mackie.com).

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## Edirol UA-1000

**Applications:** DAW interface.

**Features:** USB 2.0 port; 24-bit/96 kHz; 48V phantom power; onboard DSP; word clock; 1/4-



inch DI; MIDI, ADAT, P/PDIF I/O; ASIO, MME, WDM, Windows XP. Price: \$945.

**Contact:** Edirol at 360-594-4273, [www.edirol.com](http://www.edirol.com).

## Cakewalk SONAR 3 Producer Edition

**Applications:** Digital audio workstation software.

**Features:** Windows XP; 24-bit/96 kHz; waveform editing; DSP effects; VST, DirectX, DXi; MTC; SMPTE timecode; ships with numerous MIDI, synth plug-ins, sound libraries.

**Price:** \$719.

**Contact:** Cakewalk at 888-225-3925, [www.cakewalk.com](http://www.cakewalk.com).



## Sonic Studio HD

**Applications:** Standalone turnkey digital audio workstation.

**Features:** Mac-based system; up to 192 kHz; waveform editor; DSP; four Motorola

56301 dedicated DSP chips on accelerator card; rackmountable breakout box; Red Book CD burning. Price: starts at \$6,000.

**Contact:** Sonic Studio at 763-577-1535, [www.sonicstudio.com](http://www.sonicstudio.com).



## PreSonus FIREstation

**Applications:** Digital audio workstation interface.

**Features:** FireWire I/O; Windows XP, Mac OS 9x and 10.2.5; 48V phantom power; tube and solid



state preamp paths; word clock; ADAT, S/PDIF I/O; compatible with many major DAW and sequencing software. Price: \$999.

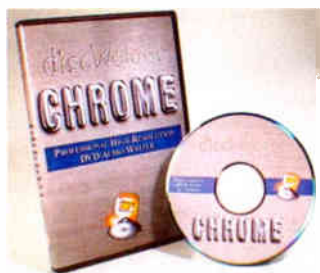
**Contact:** PreSonus at 225-216-7887, [www.presonus.com](http://www.presonus.com).

## Minnetonka Audio discWelder Chrome

**Applications:** DVD-A authoring software.

**Features:** Windows 98/NT/2000/XP; 16, 20, 24-bit; 44.1, 48, 88.2, 96 kHz; DVD-A/PCM; MLP; 5.1 surround sound; WAV, AIFF, NTSC, PAL video; DLT-compatible. Price: \$2,495.

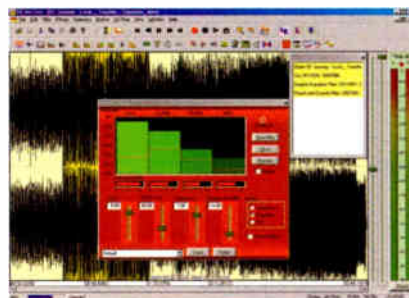
**Contact:** Minnetonka Audio Software at 952-449-6481, [www.discwelder.com](http://www.discwelder.com).



## Enhanced Audio DC FIVE

**Applications:** Audio restoration software.

**Features:** Basic editing functions; declicker, de-crackler, declipper, de-esser, denoiser; time



compression/expansion; WAV, MP3; up to 192 kHz; sample rate converter. Price: \$199.

**Contact:** Enhanced Audio at 717-764-9240, [www.enhancedaudio.com](http://www.enhancedaudio.com).

## Waves Transform Native/TDM Bundle 4.x

**Applications:** Plug-in bundle.

**Features:** Mac, Windows; Pro Tools (TDM) and native versions; 24-bit; SoundShifter pitch/time



shifter; Doubler vocal doubler/enhancer; Morphoder vocoder; TransX transient shaper. Price: \$1,200 (native), \$2,400 (TDM).

**Contact:** Waves at 865-546-6115, [www.waves.com](http://www.waves.com).

## Wave Arts Power Couple

**Applications:** Plug-ins.

**Features:** Mac OS 9x, X, Windows; VST, DirectX, MAS, RTAS, AudioUnit; MasterVerb reverb; TrackPlug compressor, expander, gate; 10-band EQ. Price: \$199.

**Contact:** Wave Arts at 781-646-3794, [www.wavearts.com](http://www.wavearts.com).



## Event Electronics EZbus

**Applications:** Digital audio workstation interface.

**Features:** Windows, Mac; USB port; mic preamp/DI; 48V phantom power; 24-bit, 96 kHz; onboard DSP; word clock; control surface function compatible with many DAW programs. Price: \$749.

**Contact:** Event Electronics at 805-566-7777, [www.eventelectronics.com](http://www.eventelectronics.com).



## Line 6 PODxt Pro

**Applications:** Digital audio workstation interface.

**Features:** Windows, Mac OS 9x, X; ASIO, Sound Manager; onboard DSP, amp, cabinet, mic,



speaker, stomp box modeling/emulation; onboard chromatic tuner; MIDI, AES/EBU, S/PDIF I/O. Price: \$979.

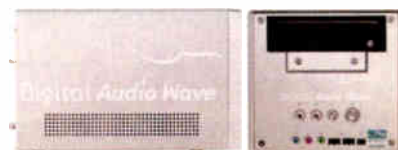
**Contact:** Line 6 at 818-575-3600, [www.line6.com](http://www.line6.com).

## Digital Audio Wave Sonica Mini Studio

**Applications:** Standalone turnkey digital audio workstation.

**Features:** Pentium 4-based system; HyperThreading; USB 2.0, FireWire ports; Windows XP; CD-RW drive; dual 120GB drives; ships with Cakewalk Pyro 2003. Price: starts at \$1,599.

**Contact:** Digital Audio Wave at 713-977-2746, [www.digitalaudiowave.com](http://www.digitalaudiowave.com).





► Peavey from page 42

three new XR powered mixers is Peavey's built-in Feedback Ferret feedback eliminator. When activated, it uses 16 filters to automatically scan and filter feedback, eliminating the always-annoying (to both musicians and the audience) screeching feedback sound causing crowds to wince in pain and usually run for the exit door.

Another valuable feature on the XR 696F is the 48-bit digital effects processor featuring a multitude of preprogrammed effects and four user preset locations for storage of the user's personal favorite effects. Effects include reverb, delay and chorus and can be adjusted with time/size and color/tone knobs. In addition, the effects can be independently adjusted for the mains and monitors and also again within each channel. This is an invaluable feature, especially when the mixer is supporting several singers (as was the case when I used it), all of whom have different singing capabilities and might need different levels of effects to make their voices blend together in the best possible way.

Finally, the XR 696F features Peavey's Distortion Detection Technique (DDT), which helps eliminate power amp distortion to produce a much clearer sound than ordinary powered mixers.

IN USE

As previously mentioned, the XR 696F was used for both in-studio rehearsals and at a mid-sized club gig. The main purpose for the mixer in both settings was to amplify three to four vocals and one acoustic/electric guitar. Because our rehearsal space was not very large, we only used one speaker (a vintage tower cabinet with three 12-inch speakers) and never had to raise the master gain above -3 dB, which provided more than enough juice to hear the vocals above the rest of the band (two guitars, bass and drums). Interestingly enough, even when we used two tower speakers during the live performance, the master gain was not turned past 0 dB.

Since our setup did not include the use of monitors, the most valuable feature for us was the ability to patch the switchable mono EQ to Channel 3 for use with the acoustic/electric guitar. This enabled us to get a killer sound from a guitar that normally sounds very thin and weak.

One of the reasons we were able to get such a great sound was the combination of the XR 696F with the use of Planet Waves microphone cables on all of the Shure SM58 microphones and Planet Waves speaker cables for connecting the mains to the mixer.

On the handling side: all of the knobs and

EQ slides on the unit turned/moved smoothly without any jerky movements, allowing for easy, fine-tuning adjustment of all levels. In addition, all of the connectors and inputs are built extremely solid and firm, allowing for quick connecting and disconnecting of cables.

SUMMARY

Overall, I was more than pleased with the performance and ease-of-use of Peavey's XR 696F powered mixer. This unit provides virtually everything that anyone in the market for a compact powered mixer could want. The mixer is laid out in a very logical manner and with the use of the manual even beginners will not have a problem quickly learning the ins and outs of all the key features. Listed at \$1,199, the XR 696F is a steal for the amount of features and power it provides.

*Mike Presson is the drummer for the Long Island-based band, The Cinners.*

**Key Features:** Eight-channel; built-in Ferret Feedback; nine-band stereo main graphic EQ; nine-band assignable mono graphic EQ

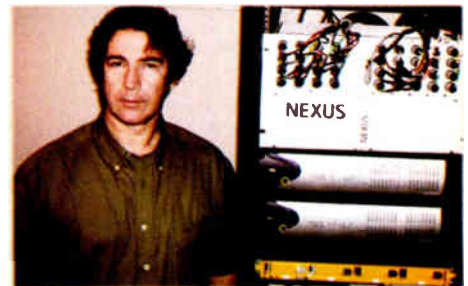
**Price - \$1,199**

**Contact:** Peavey at 601-483-5365, [www.peavey.com](http://www.peavey.com).

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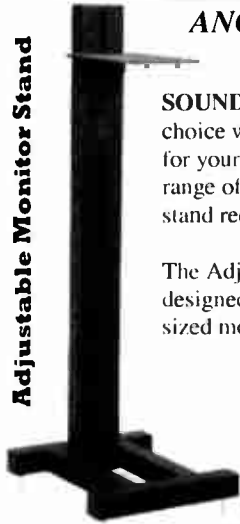
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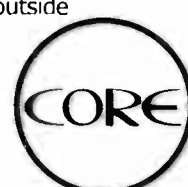


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# Kelly Clarkson

## “Low”



Single  
Slice

BY CHUCK TAYLOR

**SINGLE:** “Low”

**ALBUM:** *Thankful*, (RCA)

**DATE RECORDED:** March 2003

**ENGINEER:** Clif Magness

**OTHER PROJECTS:** Clay Aiken, Avril Lavigne, Celine Dion, Lisa Marie Presley, O-Town, Wilson Phillips, Quincy Jones

**SINGLE SONGWRITER:** Jimmy Harry

**SINGLE PRODUCER:** Clif Magness

**RECORDING STUDIO:** Blue Iron Gate Studios (Magness' home studio), Santa Monica, Calif.; drums recorded at Westlake Audio, Los Angeles

**MASTERING STUDIO:** Marcussen Mastering, Hollywood, Calif.

**MASTERING ENGINEER:** Stephen Marcussen

**CONSOLE:** TASCAM DM-24

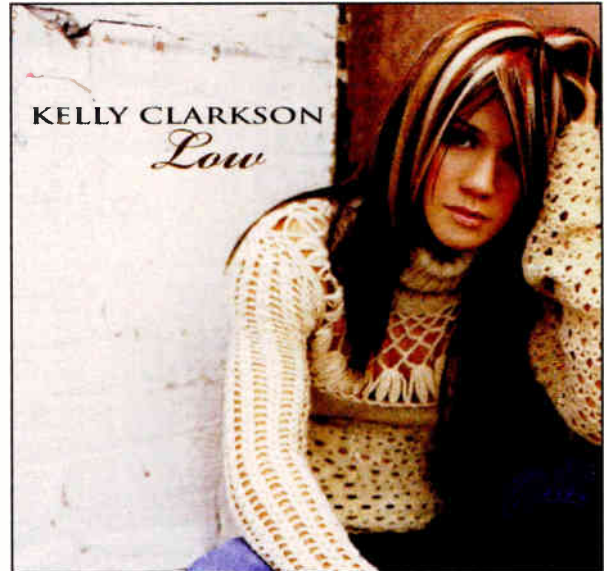
**RECORDER:** Pro Tools

**MONITORS:** Event 20/20

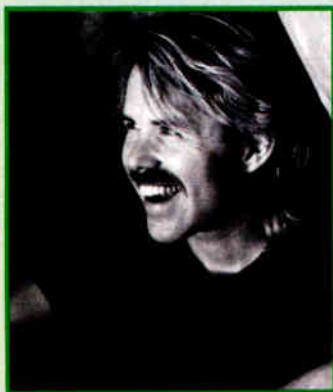
**MICROPHONES:** AKG D112 (kick drum); AKG 414s (toms); AKG C12 (overhead); Neumann KM-184 (high hat); Shure 57 (toms, snare, guitar); Shure 87, Shure 67 (room); Rode Classic (vocals, acoustic guitar)

**MICROPHONE PREAMPS:** Apogee Trak2

**PROCESSOR:** Pro Tools



## Engineer's Diary



Clif Magness

was really happy with the way it turned out," he says. "She kept saying, 'This is what I really want to be doing, with the rock feeling.'"

The fact that producer/engineer Clif Magness and “American Idol” Kelly Clarkson are both Texans gave the two an instant bond as they convened to record her third single, “Low.” But it didn’t hurt that the relatively new studio singer is a natural talent. “Kelly is very at ease with herself and she’s an ass-kicking singer,” says the Grammy-winning Magness. “Because of the TV show, she could pull off many genres - and she rocked on this song.”

“Low,” the grittiest among her hits, was tracked entirely by Magness before the vocal session, except for real drums, which were added by a colleague at a crosstown studio. “Kelly was in the middle of making her movie and she’d sat in a chair for eight hours getting hair extensions,” Magness says. “She was wiped, but she pulled it off. She can really sing anything.”

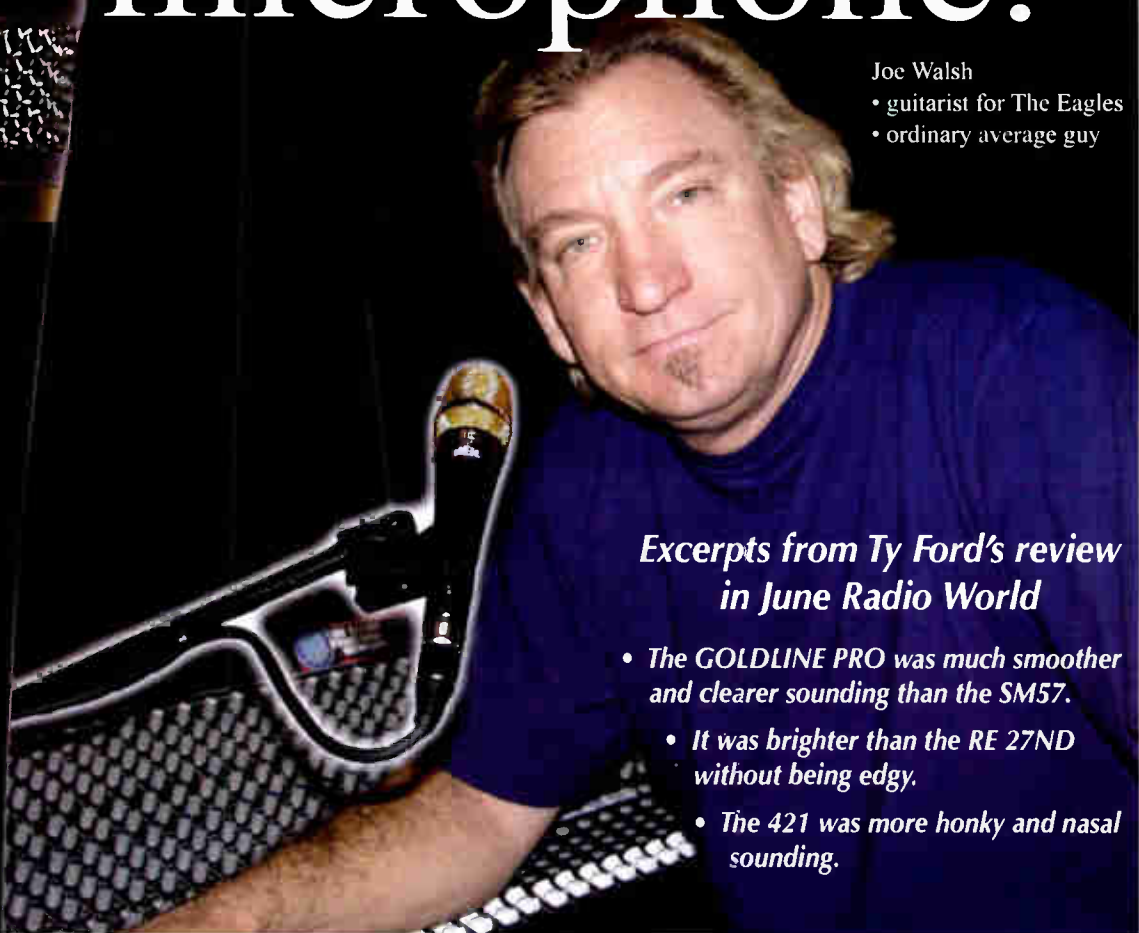
The producer/engineer used a Rode microphone for Clarkson’s vocals, as well as for his acoustic guitar line. And while Pro Tools commandeered a large part of the recording, Magness said he utilized a TASCAM DM-24 digital console for the session, but it all worked out well enough, as the single scored at Top 40 radio late this summer. “I think she

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



“This is not your  
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Joe Walsh  
• guitarist for The Eagles  
• ordinary average guy



*Excerpts from Ty Ford's review  
in June Radio World*

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