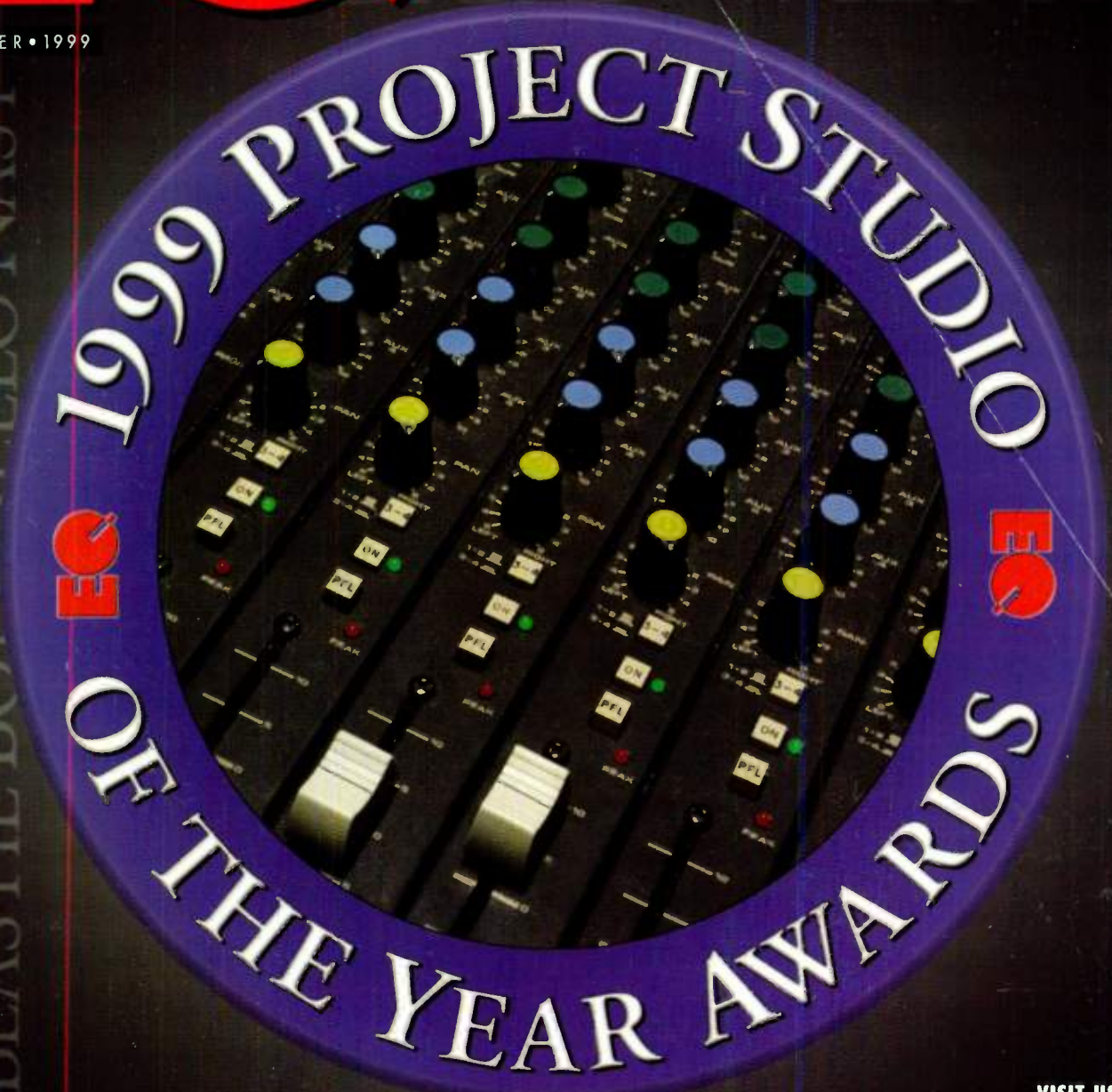


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CIRCLE 13 ON FREE INFO CARD



# EQ

PROJECT RECORDING  
& SOUND TECHNIQUES  
VOLUME 10, ISSUE 11  
NOVEMBER 1999



**ON THE COVER:**  
*The Project Studio of the Year Award. Logo by Greg Gennaro.*

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*Finally the project studio gets its due. We nominated, you voted — and here are the results. Take a look at some of the most influential project studios in use today (and a look at a project studio that helped get the ball rolling).*
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# No Fear

What can we do about fear, if anything? Well, let me tell you about a powerful act of self-confidence that I witnessed a few months ago.

I was doing the FOH sound for a religious revival inside the Beltway. (Yes, that does seem like a contradiction, but Washington, DC is a hot spot for that sort of thing; go figure.) After an uneventful line check, we started the rehearsal for the evening program. This was a big show — the finale included two electric guitars, bass, trumpet, a full drum kit plus percussionist, three lead singers, eight backup singers, and three keyboard players. I had the Yamaha PM4000 loaded to the hilt. In addition, there were dancers, a color guard, and plenty of lighting effects.

I had my hands full, and was rapidly running out of patience since, while the main talent was professional, many of the performers were amateurs who had never before been on a professional stage. So it was one complaint after another, from why do the mics have to be so close to why doesn't their cheap keyboard sound like a 9-ft Steinway. Then, I had my run-in with the "dancer." After that encounter, I'll never look at fear in quite the same way.

The dancer was part of a hired dance troupe doing a high-energy MTV-style dance. This one dancer in particular stood out. She jumped higher, spun faster, and had more energy than anyone I'd ever seen on stage. At first, I thought everything was going great with the soundcheck, but, of course, life isn't so simple.

The stage crew had put a wide, black runner across the stage, and it went right by two floor monitors. It seems this one dancer was complaining about the monitor wedges being in her way. I tried to comply by pulling them to the front edge of the stage. Not good enough, according to the stage manager. Because the portable stage was over two feet off the ground, I had to go find a case the right size and build-up a little wing for the cabinets. Then we had to reroute the wires so that they were completely out of the dance troupe's path when they came up to the stage. After several tries at attempting to accommodate this one dancer, I quickly assigned her to the "diva" category.

The last straw was when she walked over and proceeded to ignore me. So I spoke right into her ear and asked her if the stage was now to her satisfaction. No response; she seemed to look right through me. Now I was sure she was a self-centered prima donna who couldn't be troubled with the stage crew. Oh well, I thought, as long as she did her job and I did mine, we shouldn't have any more conflicts.

They ran the finale piece again, and everything worked fine. The band was great, the lighting was moving, and the dancers were spectacular — especially "my" dancer with the attitude. I was thinking what a shame it was for someone with so much talent to be so nasty, when I saw her go to the edge of the stage for her dance bag and pull out something white. Curious, I watched as she unfolded a white cane. Yes, one like a blind person would use. And guess what? She was blind! My jaw dropped as I watched her negotiate the stairway and walk right by me. That's when I saw the other amazing thing — a hearing aid in the ear that had been facing away from me on stage. I couldn't believe it, so I asked the stage manager, and sure enough, she was almost totally blind and deaf. The reason for the black runner on the floor was simple: it was the only way she could "see" the edge of the stage.

As I watched her performance that evening, I wondered at the self-confidence and inner strength that enabled her to fearlessly dance with such intensity when a single wrong step could easily cause a fall from the stage. I'm not afraid of heights, but the thought of being almost totally blind and deaf and dancing on an elevated dance stage would scare me senseless. I'm sure I would be sitting in the corner somewhere feeling sorry for myself. Not this dancer. She danced like it was the most natural thing in the world for her to do. Moreover, she didn't ask anyone to feel sorry for her; just to move the speakers so she wouldn't trip and fall off stage, maybe breaking her neck in the process.

I've seen lots of so called "tough guys" do silly stunts off cliffs and down the sides of mountains, but I generally chalked it up to stupidity or a death wish. However, I have never been so moved as I was by a blind and deaf dancer who showed me the real meaning of the phrase: "No Fear."

—Mike Sokol



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CIRCLE 59 ON FREE INFO CARD



## DUE PROCESS

Regarding Al Kooper's column "Audio Airbrushing" in the October issue: pitch correction done poorly is something that I happen to dislike, as it sounds like Robbie the Robot on steroids. Cher's "Believe" has all sorts of artifacts from the pitch correction, especially in the latter half, but I think the song wouldn't have been nearly as big a hit if Cher's voice had been flat for half the song. Perhaps record companies should offer us the unprocessed version also, and see which one sells more copies!

I'm a 42-year-old frustrated musician with a full-time job as a software engineer. On the side, I compose my own songs, record them as best I can, and sometimes submit them to songwriting competitions (USA Songwriting Contest, Billboard, John Lennon, etc.). My most recent creation relied heavily on the pitch correction feature of my DigiTech Studio Vocalist. The pitch correction made all the difference in the world. To make it sound less like a robot, I mixed it with the original, which of course made it sound like there were two of me singing. That is, until I processed it further by pumping it through my Line 6 POD for compression and reverb. (Hey, buddy, you're supposed to use POD for guitars only! Not.)

I know, I know...the main point of Al's column was the "Milli Vannilli dilemma," that is, how will we, the poor unsuspecting public, know if it's live or Memorex, processed or unprocessed, quantized or freeform. I think we should assume from now on that most everything is processed, and judge the song instead on how good or bad it sounds (radical idea). If it sounds lousy because it's over-processed, that's no better than sounding lousy because it's under-processed. May the best songs win, no matter how they (we) got them to sound so good.

David Kroll  
via Internet

## ART APPRECIATION

Thanks so much for the Art Ring article, "Moments of Clarity" [Oct. '99]. As a freelance live sound engineer based around Chicago, I relate *very* strongly to what Art had to say about bogus PA companies! So much so, in fact, that, as an EQ reader, I'd like to take the liberty of "appending" Art's brilliant expos with a couple of my own suggestions for stupid questions:

I'll start with FOH outboard racks. Stupid question 6A (in keeping with Art's scheme) should be, "Is the outboard rack plug-and-play?" Meaning, is the rack all wired up and ready to rock, with a multipinned whip compatible with the console it will be mated with? This doesn't sound like rocket science, but I've done gigs with some PA companies that just can't get their rack wiring nailed. I will never forget one gig I did, where the outboard rack had all the gear I needed — *except* the insert cables to patch the compressors in! (Geesh...they couldn't have sent someone over to the friendly neighborhood Guitar Center to snag some Hosa Y-cables before loading the truck?) Since this was an amateur theater production, I would have been happy to just have *one* comp to put on a subgroup — but, as it was, both my personal insert Y-cables got tied up on the extra 1/3-octave EQ I had to put on a couple subgroups to deal with the six wireless lavs. (They didn't even give me cables for this extra EQ that I asked for up front!)

As if that wasn't enough, the multipin on this rack wasn't wired to all the gear in the rack — one of the signals omitted was the outputs of the main EQs. So, I had to run some 30-foot XLRs (they had nothing shorter) from the EQs back to the snake returns. (My FOH mix position was a horrible mess of cable by the time I was done — in fact, FOH took more time to strike than the stage did!)

And, as an ugly aside, the rack's cooling fan sounded like a refrigerator when I plugged in the rack's power. Of course, this fan was *hard-wired* with no switch! (They couldn't have sent this rack out on a loud rock 'n' roll show, instead of a play?)

Then (on another gig) there was the rack that *did* have all the right insert cables — and I mean *individual cables*, not a multipair whip! Imagine the massive tangled wad of cables I saw upon opening the back of this rack...imagine how long it took me to sort it out (compared to how much quicker it would have been with a proper whip)...and imagine the gnarly spaghetti my FOH position was after I had everything patched in.

I'll now move on to wireless mics — which Art didn't mention at all. (Probably because his article would have been twice as long if he did!) There are many obvious questions with wireless, but I'll just present the one stupid one: "Are batteries supplied?" On the above-men-

tioned theater gig, fewer than six batteries (all of them used) came with the six channels of wireless — and this was a two-day gig. Enough said!

Thanks again for publishing Art's article. I hope it gets read by a few Chicagoland PA companies top brass! But, until then, I intend to spend a weekend (or two) making every conceivable adapter and/or patch cable out of the scraps of Canare I snagged from an install. (Remind me to stock up on batteries, too...)

Pat McCarthy  
Suburban Chicago  
via Internet

## ROGER THAT

Great article on Roger Nichols in your latest issue. Roger is what I consider an "Artistic Genius" in the recording world. His "art" is his ability to relate his genius to us "mere mortals." Somehow, he manages to communicate his knowledge to those of us who are grappling to understand digital technology and concepts. And, on top of that, he's given us some of the best recordings of all times.

Armando Henriques  
via Internet

## CORRECTION

I don't believe that the microphone pictured is an AKG C-60. That is, it sure as hell doesn't look like the AKG C-60 that I have. Where are the proofreaders when you need them?

Rooster  
via Internet

[Good eye, Rooster. We goofed. The microphone pictured is the MBHO KA-1000, which is shown with its appropriate text in the MicroPhile of this issue on page 42. We will feature the proper MicroPhile on the AKG C-60 in our next issue. We apologize for any confusion we may have caused. —Ed.]

## WRITE TO US

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## COMPRESS TO IMPRESS

**Q** *While I am happy with the sound of my recordings, my mixes seem to lack impact. Recently, one of my songs was played on a major radio station and, lo and behold, it sounded so punchy and tight I nearly fell out of my chair.*

*I know that radio stations use multiband compression and EQ. Where would I go to learn more about compression? I know the basics, but I am starving for true knowledge. The ear may be key, but how do I translate what I am hearing into getting the maximum from my gear?*

*My budget doesn't allow me to afford training at a school. I'm 25 and have a modest studio that includes a 24-track analog machine, two ADATs, and a MOTU 2408 for hard-disk editing/recording. Mics range from Shure Beta to Rode NT Classic to Neumann KM 84's and U 87. (That counterfeit money press in the back shed helps!)*

*Rob Roy  
via Internet*

**A** A number of EQ writers are well-published, including, David Miles Huber, Craig Anderton, and Mike Sokol. Each month, a bio at the end of their articles details some personal tidbits, such as seminars, books, and concert appearances that you should check out. I haven't yet published — on paper — though my Web site contains more than one book's worth of info. (Some of my stuff was included in the compilation, *Digital Home Recording*, which also includes articles by writers from EQ, Keyboard, and Guitar Player.)

Gear is not everything; the song, the arrangement, and the performance come way before the equipment. However, there are some clever alternatives when bucks are low (and your money press is out of paper or ink...).

Using minimal-to-no EQ while tracking is a lifesaver because doing so makes you focus more on the balance (equalization can be quite a trap during mixdown). Once satisfied with a mix, adding multiband compression will effectively EQ and optimize the level in the low-, low mid-, high mid-, and high-frequency bands.

With that in mind, be on the look-

out for a pair of Dolby 361 A-type noise reduction units, which should be affordable at this point. This single-rack-space module is an extremely high quality, discrete transistor, 4-band compressor. The "gimmick" is to use them to encode, but not decode, and the "trick" — because there are no Threshold or Ratio controls — is to optimize the signal to them. For example, a lower level feed will yield more compression, while higher levels less. Then, adjust the gain to your 2-track deck o' choice. (If you want to be super radical, try a dbx encoder followed by an equalizer to recover the low-end lost in the encode process.)

That's my spin!

Eddie Ciletti  
Manhattan Sound  
Technicians  
West St. Paul, MN  
(Visit [www.tangible-technology.com](http://www.tangible-technology.com))

## TECHNICALITY

**Q** *I am a high-end project studio owner, freelance engineer, and the technical director for the Northwestern University School of Music. I have, for quite some time, focused on Eddie Ciletti's articles in EQ because he offers readers useful sound advice on technical applications. I have most of a degree in EE (as well as one in communications and music tech), and I really appreciate that. Many other articles simply state that things are not user-serviceable.*

*I have just ordered the Panasonic service manual you suggest on your Web site. Are there other books you might suggest?*

*Finally, I have just gotten bad news from Fostex regarding a D5 with what I estimate is 1500 hours use. They are asking \$550 to replace the transport and head. I can buy one new for \$600, so this seems premature. My other D5's have more hours and continue to play the same collection of tapes just fine. What do you suggest?*

*Thanks for helping the audio community.*

Brian Frost  
Owner  
Narnia Studios  
Technical Director  
NWU School of Music

**A** If you have several D5's with more hours than your non-operating D5, Fostex doesn't owe you a dime (for a \$600 machine). If I were you, I'd hold on to the broken D-5 and use it for spare parts — and buy a service manual for all your working machines.

The Fostex D-5 and the TASCAM DA-20 are great machines for the money. Since, however, Pioneer makes those machines, I can tell you that as an Original Equipment Manufacturer (OEM), Pioneer does not cut any price breaks on spare parts. In addition, DAT machine repairs can sometimes be labor intensive. Replacing the mechanism is usually the most expedient procedure — considering labor costs — using the good parts on the old mechanism as spares. (I know of several instances where individual parts are not made available, thus forcing service people to purchase an entire "assembly.")

Eddie Ciletti  
Contributing Editor  
EQ magazine  
[tangible-technology.com](http://tangible-technology.com)

## MICS FOR STRINGS

**Q** *I'm in a quandary trying to find information/recommendations on microphone and preamp choices specifically for flamenco and classical guitar for both studio recording and live performance. Most of the information I've been able to gather seems to be lumped into one category: acoustical guitar; and I'm presuming that this information is geared towards steel string guitar since these are more prevalent.*

*As the tone quality and dynamic range of flamenco and classical guitar are quite different from those of the steel string guitar (and also quite different from each other), shouldn't the equipment choices for these also differ? Can you offer any advice on this?*

*Orlando  
via Internet*

**A** Recording classical and flamenco guitar with nylon strings is not so different from recording a standard 6-string acoustic guitar. The main differences are a much lower volume level as well as a lesser high-frequency spectrum when compared with steel-



# "It's about making music and enjoying it."

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*Alex Lifeson, Rush*

"The D8B combines the best of many worlds. Because it's easy to learn, I can craft a project quickly. Because it's digital, I can store and retrieve projects easily. But most important to me is that it sounds as good or better than any console I've ever used — a statement I don't make lightly. And compared to other digital consoles, the D8B is a joy to use."

*Ed Green, 40 years of mixing experience including the Grammys, Oscars and loads of high-pressure, no-mistakes-allowed live TV shows.*

"The reason we went for Mackie D8Bs was that we needed a much faster way to mix. We move from song to song, project to project so quickly, we needed a digital board that would work as fast as we do. The flexibility and ease of operation of the D8Bs made them the perfect choice."

*Brian Pollack, engineer, Nine Inch Nails*

"We bought a Mackie D8B to complement our stupidly huge investment in analog gear. The younger acts we cater to come here wanting access to the world-renowned collection of vintage instruments, amps and effects we have. If you want a first class total-recall console people respect, and money left over to buy lots of weird old stuff, the D8B is the only way to go."

*Producer-Engineer Eric Gaurik runs The Bomb Factory in Burbank, CA where he records everything from solo Spice Girls to San Diego Punk Bands.*



"We embraced the Digital 8 believing it will profoundly affect both the studio and record businesses. We're using it for 5.1 surround mixing, and have recommended it to newly signed acts to enable them to deliver us mixes we can polish if need be. Realistically, no other console gives us that option."

*Joe Galdo, co-owns South Beach Studios, Miami, with music biz legend Chris Blackwell. Clients include NIN, Sarah McLachlin, Hole, 3rd Eye Blind, R. Kelly, Julio Iglesias, U2, Baaba Maal, and Ricky Martin.*

"The two most important factors that made me switch to the Digital 8 were ease of use and incredible sound quality. I'd rather be creative than go through the tediousness of reading manual after manual. Enter the D8B! We had it up and running in what seemed like minutes after taking it out of the box... without having to read the manual!!! The D8B allows me to make music instead of running around a large format console trying to fix another problem. And I have complete faith that everything I record will sound great and at a quarter of the price of my old analog console. I highly recommend the D8B for everyone from the part timer to the pro. It's about making music and enjoying it."

*Snake Sabo, founding member and one of the main songwriters in Skid Row, first hard rock band to debut at #1 on the Billboard album charts. Also composes and scores for major and independent motion pictures.*

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stringed guitars. This makes sense when you consider that a plastic pick on a steel string can be very bright sounding, while fingers or fingernails on a nylon string will be more bassy with almost no "attack."

I've done sound reinforcement for nylon string guitars in live concerts, and the results were a bit iffy. The combination of very low sound level from the instrument and a soft playing technique made live reinforcement quite challenging, especially on a stage with other loud instruments.

Of course, recording classical/flamenco guitar in a studio is a much simpler proposition. You need to pick mics that nicely enhance the flavor of the basic sound. You might try a pair of Audio-Technica 4060's, or maybe Shure's KSM-32's. I've had wonderful results in the studio with my classic Neumann U 64's small-capsule, condenser mics with built-in tubes. The more common Neumann version would be the KM 184, auditioned here in the September 1999 issue.

Since the SPL levels will be low, you

will want quiet preamps. I like to space a pair of mics on the front side of the guitar, one pointed towards the junction of the neck and body; the other slightly below the sound hole and just towards the tailpiece. If you have the extra channels and inclination, you can also place a mic behind the instrument facing forward for a big bass sound. Try to avoid pointing a mic directly at the sound hole, as this is usually a boomy position.

If you're going to be mixing any of this for 5.1 surround later, consider putting up a few room mics for ambience. One of the coolest classical recordings I've heard recently is by an artist named Estaban. The album was recorded in his "great room," which was a huge living room with high ceilings and lots of wood. They placed the artist in front of a huge masonry fireplace, which gave a nice projection to the sound going to the close mics, then added room mics up high in the ceiling. In the mix, the room mics were "panned" to the surround channels. This gave a beautiful, natural-sound-

ing reverb, which would be hard to duplicate with any sort of "digital" processor.

Mike Sokol  
JMS Productions, Inc.  
jmsokol@intrepid.net  
www.soundav.com

## MORE BUST'R

**Q** Thanks for Mike Sokol's great "What to Do? Build Bus'tr" article in the August '99 EQ about summing two audio signals. I have already built two of those boxes, and both are working fine.

How can I split/parallel an audio signal to four or more devices in a patch panel? Is it a matter of simple paralleled signals, or are resistors needed?

Klaus J. Zimmermann  
VISE Media  
via Internet

**A** Driving multiple loads is simple. Since the typical output impedance of most pro audio gear is some-





thing like 600 ohms, and the input impedance of most devices is quite high (say, 10,000 ohms), all you have to do is parallel the jacks going to the various inputs, and you're in business.

One caution: some consumer audio devices (like receivers) sometimes short out unselected inputs, which will mute anything else hooked up on the same "Mult." So, in that case, adding build-out resistors (which is essentially what Bus'tr does) will provide some isolation. If, however, you have a complex distribution situation, then you'll need to break down and buy some active distribution boxes.

Mike Sokol  
Contributing Editor  
EQ magazine

### SPEAKER DELAY

**Q** How far back would you consider putting in a delay? Specifically, a school I deal with has a speaker hanging on the back bracket of a basketball backboard (20 feet) and they are talking about adding a second speaker at

half-court. The room is highly reverberant, so more speakers at lower volume should improve intelligibility, but would a delay be useful?

Thank you for your very clear and useful articles. Keep up the good work.

M. Gregory Bierly  
PAC Technical Director  
via Internet

**A** Typically, start thinking about putting in delay stacks once you need to throw in excess of 100 feet from the stage. A delay stack is often located directly behind the FOH console, which is maybe 125 feet from the stage. Some situations call for really distant stacks — indeed, the ones we set up for the Maryland Symphony's July 4th concert at Antietam Battlefield are in excess of 600 feet, throwing to listeners some 1500 feet or more from the stage.

I've done delay rings for public speaking using Bose 800 speakers in auditoriums at about 75 and 150 feet from the stage. If you can keep the vol-

ume level down low enough so as not to excite the room, then intelligibility will greatly improve. Of course, this is for spoken voice. If you have loud bands with electric instruments, then all bets are off as to volume reduction. Still, properly implemented delay stacks can improve almost any acoustically challenging situation. The best thing to do is set this up in advance and try it.

Mike Sokol  
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## ASK US

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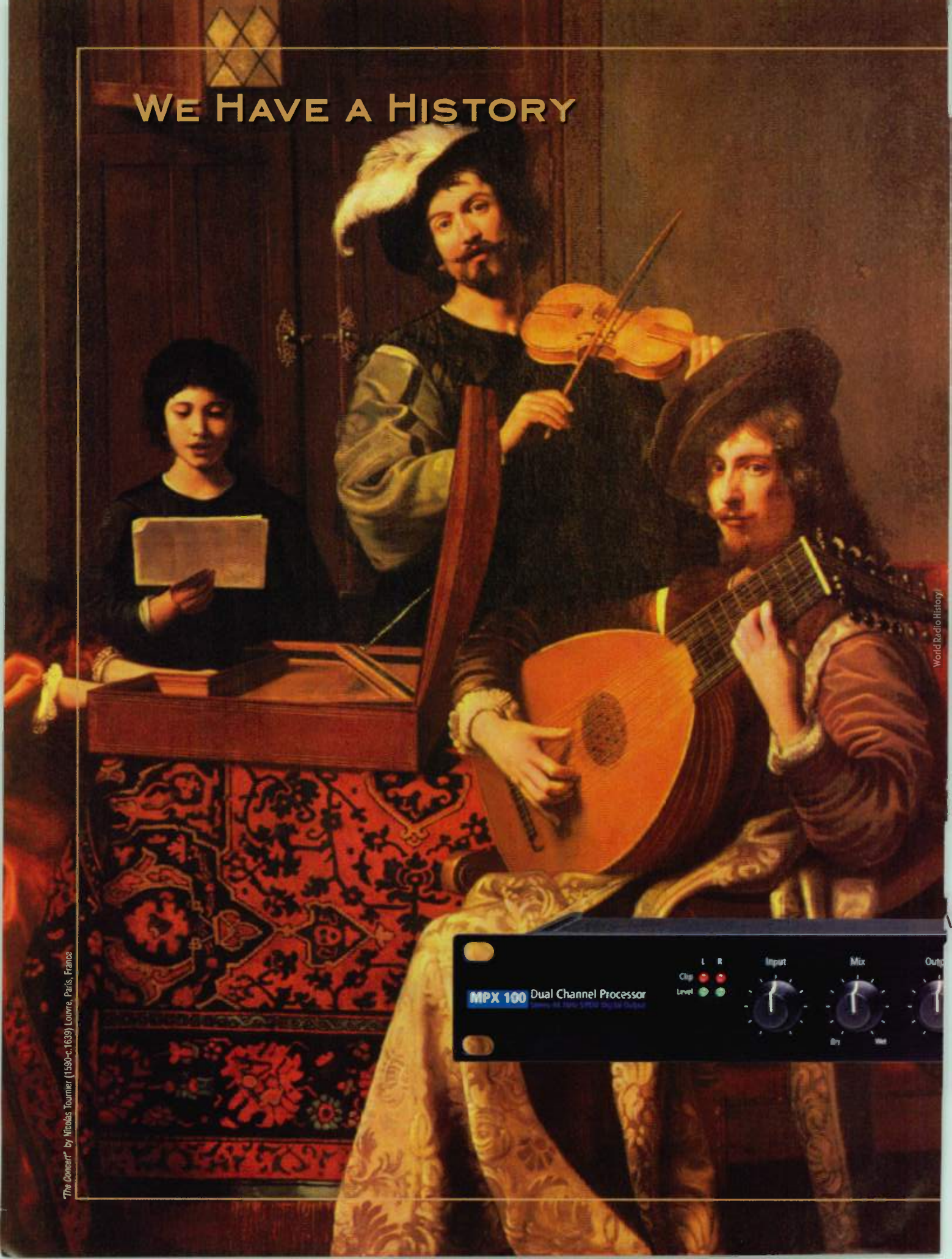
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# EQ NEWS

NOVEMBER • 1999

## MPGA Announces Possible Alignment

At AES '99, the MPGA held a membership meeting to announce their possible alliance with the National Academy of Recording Arts & Science. Some of the key participants and voices at the meeting included Phil Ramone (NARAS Chairman Emeritus and Chairman of the MPGA Advisory Committee), who emphasized the positive implications of the possible affiliation, and Leslie Ann Jones (Chairwoman of the NARAS Board of Governors and MPGA Ambassador-at-Large), who spoke of the engineers and producers who are members of the Academy and the MPGA.

## Liquid Audio Offers Internet Distribution and Mastering

Liquid Audio recently announced their Liquid Platinum, a digital distribution solution for independent musicians and record labels. Available since September 24, 1999, [www.liquidaudio.com/signup](http://www.liquidaudio.com/signup) lets users quickly and easily post secure Internet masters of their music online, and makes their music available to consumers via the Liquid Music Network. Liquid Audio also unveiled Liquid Platinum Studio, a reseller program that enables recording studios to offer Internet mastering and distribution to clients as services using the new Liquid Platinum solution.

Internet music files prepared with Liquid Platinum are protected by security features and copy controls, giving musicians the option to either give

away promotional copies of their songs, or securely sell them. Online transactions are handled by Liquid Audio's full service e-commerce capabilities and the service sends quarterly payments to participating bands as well. Another important feature of Liquid Audio's Liquid

**liquid audio**  
music to go

Platinum is that distribution through the Liquid Music Network ensures that the music is available for download via Liquid Audio's 200 affiliate music Web sites, including Yahoo! and Tower Records.

New Liquid Platinum Studio offers recording studios a new revenue stream, by enabling them to offer Internet mastering and distribution to their clients as services. Using the Liquid Platinum turnkey solution for digital delivery and the Liquefier Pro encoding tool, which encodes the music for both streaming and downloading, studios go straight from laying down tracks for a band to posting Internet masters in the Liquid Music Network, right in the studio.

Annual subscription for a copy of Liquefier Pro software and storage space to publish up to 25 MB of music is priced at \$99. For more information about Liquid Audio's Liquid Platinum, visit their Web site at [www.liquidaudio.com](http://www.liquidaudio.com).

## Yamaha Co-Sponsors the Best Band on the Net

Through the co-sponsorship of the Best Band on the Net '99 Contest, Yamaha Corporation is providing a DG-100 digital guitar preamplifier, a Stage Custom drum set, an MD8 8-track digital MiniDisc recorder, and an MU100R tone generator to be awarded to winning artists. Organized by Kaman Music for its second year, the contest will use the MP3 format to handle entries that bands can upload any time before October 31, 1999. Unsigned bands that want to participate can visit [www.best-band.com](http://www.best-band.com) for information on how to register and upload a song entry. Early entries are encouraged in that the first 60 bands to register will receive special gifts.

After all applicants have entered their songs, the public will be able to hear

the entries and vote for their favorites by going to the same site, [www.best-band.com](http://www.best-band.com). The public voting will go on between November 1 and mid-December, 1999. After all Internet votes are cast, the Best Band will be chosen from the top ten entries through a vote by a celebrity panel. Making up this year's panel are Sheila E, Alex Acuña, No Doubt's Tom Dumont, and Elton John band guitarists Davey Johnstone and John Jorgenson. The results of the Best Band on the Net Contest will then be announced at the Winter NAMM show in Los Angeles, in February 2000.

The winning band will be offered a contract with New Tech Music, a digital music label that appears as a Re-

alAudio JukeBox site, in addition to receiving various prizes from Yamaha and other sponsors. Other sponsors of the Best Band on the Net '99 Contest are Paiste, Hamer, Toca, MP3-Go, SWR, TKL, Telex, Ovation, Lee Oskar, Takamine, Evans, Fostex, Vater, Gibraltar, D'Addario, and Seiko, as well as several publications, including *Bass Player*, *Berklee Press*, *Drum!*, *Jazziz*, *Guitar Player*, and *Keyboard*.

For more information, contact Yamaha Corporation of America, Pro Audio & Combo Division, at 714-522-9011 or visit the Yamaha Web site at [www.yamaha.com](http://www.yamaha.com). Visit [www.best-band.com](http://www.best-band.com) for additional information on the contest.



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## Digigram, BIAS, and Metric Halo Partner

Digigram, Inc. has announced their partnership agreements with Berkley Integrate Audio Software, Inc. (BIAS) and Metric Halo Laboratories to ship Digigram sound cards with professional audio software.

BIAS is offering the BIAS Studio, Peak 2.0, or Peak LE audio editing tools software bundled with the Digigram VS-pocket PCMCIA card as BIAS PowerBook Editions. This combination of software and hardware was developed for audio engineers who use Macintosh computers and will enable users to take studio power on the road via their Macintosh PowerBook laptop computers. Metric Halo is offering SpectraFoo audio metering and analy-

sis software with both the VX-pocket and VX 222 cards. SpectraFoo is a high-resolution metering and analysis tool for audio production and performance that enables sound engineers to fine tune the sonic environment of live venues and recording studios. When paired with either Digigram card, SpectraFoo becomes a portable test kit for high-grade audio.

Digigram's partnerships with both BIAS and Metric Halo provide users with the technology to effect convenience. For more information on these products as well as the partnerships, visit [www.digigram.com](http://www.digigram.com) and check out [www.bias-inc.com](http://www.bias-inc.com) and [www.mhllabs.com](http://www.mhllabs.com).

## Musician's Friend and Guitar.com Form Partnership

Guitar Center's subsidiary, Musician's Friend, has formed a strategic partnership with Guitar.com to act as the exclusive retailer of musical instruments for visitors to the Guitar.com Web site. This partnership is formed as part of an affiliate program for Musiciansfriend.com, as Musician's Friend markets musical gear through this Web site. Guitar.com was launched in May 1999 as an online community serving musicians, instructors, manufacturers, record labels, and a number of product and service providers. The site offers entertainment, education, and interaction for visiting guitarists.

The Musician's Friend logo will be featured on all Guitar.com pages and Guitar.com will become a Premier Musician's Friend affiliate, participating in the previously announced affiliate program that offers a 10 percent referral fee on retail items sold through their Web site by Musician's Friend. Guitar.com will also benefit from the premier status that will afford them numerous on- and offline marketing programs, including product insertions in Musician's Friend shipments, promotional space in their catalogs, and links in the Musician's Friend e-mail newsletter, to promote awareness of their Guitar.com community. For more information on the Musician's Friend Web site, check it out at [www.musiciansfriend.com](http://www.musiciansfriend.com).

## Saint Hits the Road with HHB

Freelance producer/mixer/engineer Saint (311, Tool, The Cure, Red Hot Chili Peppers, U2) promotes the use of HHB's CDR850 CD recorder/player during preproduction. The HHB CDR850 sports a full complement of professional features added as a result of direct requests from HHB customers worldwide. Saint explains, "I bring my racks with me wherever I work, so I needed something that not only sounded great, but could withstand constant cartage."

The CDR850 allows track-by-track recording and all track recording of DAT, CD, MO, and DVD in ID synchro, in which direct copies to CD can be made with the IDs automatically converted to CD tracks.

For more information, contact HHB at 310-319-1111 and visit the company's Web site at [www.hhb.co.uk](http://www.hhb.co.uk).

## SONY Debuts Second SACD Player

Sony recently unveiled its second SACD player, the SCD-777ES, a new player that incorporates most of the key technologies and fundamental "pure audio" capabilities of Sony's reference standard player, the SCD-1. The SCD-777ES joins the ES series of audio components and, like the SCD-1, incorporates a number of new technologies including a newly developed

Direct Stream Digital (DSD) decoder LSI that reads the invisible watermark on SACD discs — then employs a high-capacity buffer memory to rearrange output data as a continuous bitstream, and an Accurate Complement Pulse Density Modulation (ACP) system that maintains the DSD pulse value consistency and eliminates switching distortion. Other features of the SCD-777ES include a Synchronous Time Accuracy Controller (S-TACT) that uses discrete components to guard high-quality performance from power supply noise and voltage fluctuations, and Sony's newest Current Pulse D/A Converter that transforms output voltage from the synchronous controller into a series of precision pulses.

Available in October at a suggested retail price of \$3500, the SCD-777ES carries a five-year limited parts and labor warranty.





# TC ICON

Icon - /aɪkɒn/ n 1 [An object acting as mediator between man and the ideal] 2 [A symbol having cultural significance and the capacity to excite or objectify a response]



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## AES Blue Ribbon Panel Examines Music Preservation

According to a recent blue-ribbon panel, record labels still have a lot to do to ensure the survival of recordings, as many are in danger of being lost due to age or poor storage. With more than 40 percent of recorded music sales in the U.S. coming from back catalogs, saving the legacy of recordings from the last hundred years is a significant undertaking that's too big a job for the commercial industry alone. The task of music preservation requires that governments, nonprofits, and music lovers take an active role. The panel, entitled "Mining America's Musical Treasury: Industry Leaders Discuss the Art and Business of Archiving and Preservation," was sponsored by EMTEC Pro Media, Inc. North American sales and marketing group for BASF-brand magnetic recording products.

Among the panel's participants were mastering engineer Bernie Grundman, pro-

ducer Joel Dorn, former Grateful Dead drummer and musicologist Mickey Hart, Rhino Entertainment VP David Dorn, and

music preservation and the role of the Internet in preserving recorded music.

Also up for discussion by the panelists was the use of digital vs. analog formats for archiving recorded music, considering that analog tape is still viewed by many experts as the best medium for long-term preservation of recorded sound. In discussing the industry's advancing technology, the panelists touched on several other topics before resolving that, "The real issue is how much we value the music." Besides sponsoring the panel, EMTEC Pro Media announced the award of three grants worth \$10,000 each to the Country Music Hall of Fame, the American Folklife Center, and the Armstrong



(l-r) Joel Dorn, David Dorn, Mickey Hart, Roger Nichols, Bernie Grundman, and Gerd Cyrener.

EMTEC's director of applications engineering Gerd Cyrener. Producer and engineer Roger Nichols moderated the panel. The panel discussed the importance of recorded sound as well as the commercial viability of

Archives. For more information on EMTEC's extended campaign to raise awareness in the recording industry about the preservation and archiving of music, call 888-295-5551 or visit [www.emtec-usa.com](http://www.emtec-usa.com).

## Studer Expands in North America

Studer North America was recently formed from a merger of Studer USA, Studer Nashville, and Studer Canada Ltd., to serve the North American market. The merger is designed to enhance efficiencies and customer service. The North American headquarters is located in San Leandro, CA, where the company shares space with Harman Professional's sister company, Orban.

Studer North America president John Carey explains, "The resources of two companies will now be combined to better serve our customers. We have access to

a tremendous facility in San Leandro, with plenty of room to handle the growth we are projecting." The previous president of Studer Canada Ltd., Prodromos Constantinou, has been appointed senior vice president of Studer North America, and will oversee all systems sales, design, and custom engineering requirements for North American clients. Studer will maintain its presence in Nashville with a sales and service facility.

Contact Studer North America direct at 510-297-2711 or visit their Web site at [www.studer.ch](http://www.studer.ch) for more information.

## Massenburg DesignWorks Digital Hi-Res Parametric EQ

As creator of the parametric EQ, George Massenburg has seemingly conquered a particular analog mountain. Massenburg's digital goal, according to Massenburg DesignWorks marketing liaison Jim Pace, is "To make the best-sounding digital EQ ever designed." Audio connoisseurs will be able to discover for themselves if Massenburg was successful or not by using the EQ on the Mackie D8B, Sony Oxford, and Sonic Solutions' mastering system.

How will one use Massenburg's EQ on a Mackie D8B? As a multiple-sample rate mono or stereo parametric EQ plug-in available via the \$399 Mackie UFX card, on the master stereo bus, any individual channel, or on the surround busses. A \$399 Mackie UFX card is required for plug-in operation, and one UFX card can run up to four plug-ins. Up to four cards may be installed in the Digital 8•Bus for a total of 16 simultaneous 3rd-party plug-ins.

For more Mackie or Massenburg DesignWorks product information, please contact Massenburg DesignWorks at 818-781-1022, Mackie Designs Inc. at 425-487-4333, or visit Mackie's Web site at [www.mackie.com](http://www.mackie.com).

## Scheiner Does Sting's *Brand New* DVD

Grammy-award winning engineer Elliot Scheiner recently worked with Sting to mix the DVD version of Sting's newest release *Brand New Day*. The DVD version is the first made of a Sting release as well as Scheiner's first experience using a Panasonic DA7 digital mixer on a surround sound project. Scheiner was able to take advantage of the DA7's automated mixing and surround sound functions by linking the DA7 to a Neve VR console via SMPTE timecode.

Scheiner explains, "The DA7's pan-

ning functions are just incredible. It's wonderful that I was able to link it up to an analog console like the Neve VR and expand my mixing and panning options. For the mix of *Brand New Day*, I used the DA7 for all automated panning, and as a result, the panning effects on the DVD are unbelievable." Scheiner also took advantage of the DA7's recall and memory functions for the mix. For more information on the Panasonic DA7, call 323-436-3500 or visit [www.panasonic.com/proaudio](http://www.panasonic.com/proaudio).



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# EQ PRODUCT VIEWS

## SURROUND CONTROL

**T**he Magtrax MusicBox Surround Monitoring Controller provides flexible centralized control of surround monitoring systems for a variety of



Dolby Surround, 5.1, and 7.1 applications. Manufactured in a yellow 1U-high rack-mount switch with a compact desktop remote control, the MusicBox manages all the routing and interconnection between mixing or workstation, recorder, loudspeaker amplifiers, and the surround encode/decode matrices. The system interfaces with a console's standard monitoring functions, such as Talkback, Dim, and Solo, and merges all channels at the appropriate level when collapsing a surround image down to stereo or mono. For more information, call Independent Audio at 207-773-2424, fax them at 207-773-2422, or visit [www.independentaudio.com](http://www.independentaudio.com). Circle EQ free lit. #111.

## ONE TO WATCH

**O**nePower has introduced its updated power sequencing and control models — the CQ-1500, CQ-2000, and CQ-2200. All units allow the remote and coordinated control of AC power for audio and other similar electronic equipment. All models include high-current, 30-amp relays, real-time monitoring of processor and sequence functions, and fail-safe “watch dog” processor programming and manual override switching to ensure 100-percent operation. Each unit has a self-contained processor and circuit. The units interconnect with 6-wire modular RJ-11 telephone cable. For more information, call onePower at 713-772-1404, fax them at 713-772-7360, or visit [www.juicegoose.com](http://www.juicegoose.com). Circle EQ free lit. #112.



## JUICE JUNIOR

**J**uice Goose celebrates its 15th birthday with the introduction of the JG Junior power distribution device. This smaller and less-expensive product is designed for primary power distribution requirements. The JG Junior features six power outlets, a master power switch and circuit breaker, voltage spike protection, and AC line noise suppression — all housed in a 4 1/2-inch-deep, rackmount chassis. The JG Junior has a one-year warranty backed by Juice Goose and retails for \$59. For more information, call Juice Goose at 713-772-1404 or fax them at 713-772-7360. Circle EQ free lit. #113.

## A FINE MESH

**A**KG Acoustics has introduced the C 3000 B, a cardioid microphone with a 1-inch diaphragm designed for a wide variety of live and studio applications. The mic uses a two-layer wire-mesh cap, which comprises a fine mesh that protects the high-impedance parts of the capsule from electrostatic and electromagnetic interference and a coarse screen for mechanical protection against shock and impact. The die-cast metal body is vacuum-cast to prevent cavitation. The entire high-impedance circuitry is coated with special PU varnish and installed directly beneath the capsule for added protection. All electrical contacts, including the XLR output connector pins, are hard gold-plated and resistant to aging and corrosion. For more information, call AKG Acoustics at 615-360-0499, fax them at 615-360-0275, or visit [www.akg-acoustics.com](http://www.akg-acoustics.com). Circle EQ free lit. #114.





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— Gary Chapman



"The O2Rs are the most reliable devices in my studio. I work on a huge variety of projects, from records to television to film, and I count on the O2Rs' excellent sound and flexibility every day. They have never let me down!"

— Rob Arbittier



"As you can see, I know just enough to be dangerous, and not enough to not need everybody else around me. So, I'm enjoying the freedom, the power that I get from something as user-friendly as the O2R."

— Clint Black



"I love it! It's fat, punchy, warm, deep, airy, transparent... all those things you want a console to be. Then, there's the absolute total recall. Amazing!"

— Mark Hammond



"I've had it with huge, heavy consoles. My pair of O2Rs are not only portable, they give me 48 tape tracks and complete recall of all my settings and effects for each song."

— Alan Parsons



"I traded my \$250,000 analog console for O2Rs which should tell you what I think of them."

— Hans Zimmer



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"The O2R has become an invaluable tool for creating music. The fact that it can recall works in progress saves an enormous amount of time."

— Michael Omartian



"Using the total recall on the O2R has allowed us to save incredible amounts of time while working on this record. We literally have started mixing since day one."

— Michael W. Smith



"I find that the auto-mix, scene memory, and digital format conversion features are now indispensable to fast, repeatable creative sessions and mixes."

— Tim Myer



"The Yamaha O2R is the ideal console for amateur or professional boutique studios."

— Christopher Cross



"We did not just look at the bells and whistles. The Yamaha O2R sounds great. It has tons of headroom, is extremely reliable, and is comparable to consoles many times its price."

— Marco Pulecini



"I have one word. AWESOME!"

— Tommy Sims



For more information, visit [www.yamaha.com/proaudio](http://www.yamaha.com/proaudio) or call (800)917-7171 ext. 633 for literature. ©1999, Yamaha Corporation of America, Pro Audio Department, P.O. Box 6600, Buena Park, CA 92622-6600

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# EQ PRODUCT VIEWS

## LIVING IN HARMONY

**P**erfect for both the studio and the stage, the new Vocalist VR from DigiTech enables singers to quickly and easily add up to four natural-sounding harmony vocals to their voice. Thanks to DigiTech's patented harmony algorithm, the Vocalist VR's harmonies maintain all the characteristics of the singer's voice for very realistic-sounding backup harmonies. The processor also allows users to choose between Chordal or Scalic harmonies, select the key and scale, determine whether the harmonies are below or above their voice, assign individual mix levels for their voice and the harmonies, add warm reverbs, and much more. Six lighted Voicing switches (Bass, Lower, Low, Double, High, and Higher) on the left side of the unit's front panel provide a visual indication of whether harmonies are above, below, or in unison with the input voice. For more information, call DigiTech at 801-566-8800, fax them at 801-566-7005, or visit [www.digitech.com](http://www.digitech.com). Circle EQ free lit. #115.



## CABLE-READY

**T**he 5596 series debuts as Gepco International's next generation of 110-ohm AES/EBU digital audio cable. Designed for both better electrical and mechanical performance, the 5596 series transmits all formats of AES3 digital audio, including 24-bit/96 kHz. The 5596 series features an extended 12.3 MHz bandwidth, ultra-low attenuation and jitter, mechanical stability, and a precision 110-ohm impedance. Optimized for 96 kHz bandwidth requirements, 5596 is also ideal for extended distance runs of 44.1 or 48 kHz formats. Its ultra-low attenuation and precision impedance enable longer runs (up to 60 percent longer than other types of twisted pair), reducing the need for transformers or repeaters in the interconnecting system. Both versions — the 5596EZ and 5596M — feature 24-gauge, oxygen-free conductors insulated with Gepco's new T165 dielectric compound. For more information, call Gepco International at 847-795-9555, fax them at 847-795-8770, or visit [www.gepco.com](http://www.gepco.com). Circle EQ free lit. #116.



## YES, MASTER

**F**ollowing the successful worldwide launch of the market's first Formatted ADAT Master tape products, EMTEC Pro Media has announced that it will be delivering the BASF Formatted DTRS Master for digital multitrack recorders. BASF Formatted DTRS Master eliminates the need for real-time formatting of DTRS masters before recording, allowing artists and engineers to go immediately to tape. In addition to the hours of production time that can be saved by using formatted DTRS master tapes, the "drum-on" hours of real-time formatting would also be eliminated, significantly extending the life of your DTRS recorder heads. The Formatted DTRS Master will be available in Jan. 2000 in a 113-minute length with a sampling rate of 44.1 kHz. For more details, call EMTEC Pro Media, Inc. at 888-295-5551 or visit [www.emtec-usa.com](http://www.emtec-usa.com). Circle EQ free lit. #117.

## FOUR ON THE FLOOR

**S**hure's new 4-channel SCM410 automatic mixer is suited for smaller installed and transportable systems. It packs many of the performance attributes of Shure's 8-channel SCM810 mixer into a 1/2-rack space, along with automation for several operator functions and proprietary circuitry that fights feedback, reverberation, and comb filtering. Other features include adjustable low-pass filters, high-frequency shelving filters for each channel, four balanced XLR inputs, a single balanced XLR output, an unbalanced RCA auxiliary level output, a peak output limiter, and master output level control. The SCM410 is also equipped with Shure's IntelliMix and NOMA circuitry. The suggested retail price is \$995. For more information, call Shure at 847-866-2200 or visit [www.shure.com](http://www.shure.com). Circle EQ free lit. #118.







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# EQ PRODUCT VIEWS

## FOR YOUR EARS ONLY

**B**eyerdynamic introduces a new, low-cost, closed-system headphone with high audio quality and a lightweight design. The DT231 has a frequency response from 20 Hz to 18 kHz and a power handling capacity of 112 dB SPL. The headphone's closed system design reduces unwanted bleed-through during overdubs. The soft, rubber aural ear pads and adjustable headband ensure long-term use without fatigue. For more details, call beyerdynamic, Inc. at 516-293-3200 or fax them at 516-293-3288. Circle EQ free lit. #119.



## PRODUCTION CREDIT

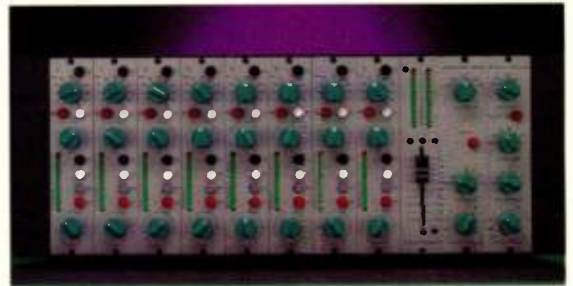
**B**ased on the classic ISA Range, first introduced by Rupert Neve in 1985 (ISA stands for Input Signal Amplifier),



the Focusrite ISA 430 "Producers Pack" brings together the key audio processing elements into one unit, to be used either together as one "super channel" or as separate processing elements. This 2U unit features a classic Focusrite transformer-coupled microphone pre-amp stage and an original ISA 110 parametric EQ, as currently featured in the Focusrite ISA 215. The compressor and expander/gate features a proprietary Class A VCA and sidechain circuit — the same as is used in the vintage ISA 130. Other features include a de-esser, a multiband limiter, routing and monitoring capabilities, single or split modes, and a stereo A/D converter. For more information, call Focusrite Audio Engineering at 516-249-1399, fax them at 516-753-1020, or visit [www.focusrite.com](http://www.focusrite.com). Circle EQ free lit. #120.

## ALONG CAME A SPIDER

**C**rane Song's Spider is a high-quality 8-channel mic preamplifier/mixer with two types of digital outputs — stereo and 8-channel. The stereo output is for recording engineers who do live stereo or multichannel recording and want a very flexible audio path. The 8-channel output allows the system to function as an analog front end for DAWs, digital mixers, and modular digital recorders. In addition, the stereo bus can be assigned to digital outs 7 and 8, and leaves two channels independent. For more details, call Crane Song at 715-398-3627, fax them at 715-398-3279, or visit [www.cranesong.com](http://www.cranesong.com). Circle EQ free lit. #121.



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# CAD E350 Condenser Microphone

CAD debuts a new mic that's powered in an interesting way

sign with 3-micron, high-tension membranes. The E350 provides three polar patterns (cardioid, figure-eight, and omnidirectional), as well as a 20 dB, non-capacitive pad designed to lower the mic's sensitivity without compromising its frequency response. CAD's active servo circuitry is used in the preamp, which removes capacitors from the amplification path in an effort to extend low-frequency response and minimize sonic coloration. As a result, the E350 spec's in with a very low self-noise level (EIN is claimed to be 11 dB, A-weighted), a maximum SPL handling capability of 148 dB, and low-frequency extension down to 10 Hz.

Identical to the Optema capsule used in CAD's popular VSM 1 and VX2 condenser microphones, the OS 110 capsule is a proprietary design manufactured at the CAD factory in Conneaut, OH. Overall capsule diameter is 1.34 inches, with a 1.1-inch inside diameter. Each OS 110 capsule is tuned by

proper diaphragm damping as well as consistent frequency response, enabling CAD to offer the E350 in

matched stereo pairs. The microphone's power requirements are 48 to 52 volts DC phantom, with a current draw of about 6.5 milliamps.

An interesting aspect of the E350's design is that it is powered by a combination of 48-volt phantom and a pair of rechargeable batteries. Operating the microphone in this manner provides several distinct advantages, the first of which is that it overcomes the current limiting present in most phantom power supplies. When a condenser microphone is called upon to capture high-SPL transients, increased current is drawn from the phantom supply. If the phantom supply does not produce the requisite current, the mic cannot reproduce the audio signal properly. As a solution to this problem, the body of the CAD E350 houses two 9-volt, rechargeable batteries. Under normal operating conditions, these batteries are trickle-charged by the phantom supply. The batteries augment the phantom power's current supply so that consistent operation and optimum performance may be maintained. When phantom power is removed, an auto off circuit shuts the mic down to conserve battery power. This feature can be disabled for applications where the E350 is to be powered via battery only. The mic can run for up to six hours on battery, and may be operated using two standard 9-volt cells.

Engineers will find the E350 useful for ENG, live-to-DAT, and location recording applications, as well as for studio and sound reinforcement.

Specifications claimed for the E350 include a frequency range of 10 Hz to 20,000 Hz, a signal-to-noise ratio of 83 dB with a 94 dB SPL, THD of less than 0.15 percent, and a dynamic range of 137 dB. The mic is packaged with the ZM-1G shock mount; optional accessories include the SM-1 swivel mount and WS-1 windscreen.

*The CAD E350 is available at a suggested retail price of \$699 and is now shipping. For more information, contact CAD at 250 Corporate 90, 2550 S.O.M. Center Rd., Willoughby Hills, OH 44094. Tel: 1-800-762-9266. E-mail at sales@cadmics.com. Circle EQ free lit. #101.*

## BY STEVE LA CERRA

Introduced at the September 1999 AES Convention in New York, CAD's latest microphone offering is the E350, a multi-pattern, side-address condenser mic intended for both live sound and recording applications. Employing CAD's proprietary OS 110 Optema gold-sputtered capsule, the E350 is a handmade, dual-diaphragm de-





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# Apple Power Mac G4

Fasten your seat belts, it's going to be a fast ride

BY STEVE LA CERRA

With the rapid evolution of technology over the past decade, we've come to expect increases in CPU speed with each passing year, but upon introducing the G4 processor, Apple claims a *leap* in speed, allowing their new machines' sustained performance of over 1 billion floating-point operations per second (theoretically, the G4 processor has a peak performance of 4 billion floating-point ops per second). No doubt the floating-point performance, in conjunction with clock speeds of 400 to 500 MHz, make the G4 a screaming fast CPU, but the G4 chip — invented and manufactured by Motorola — also incorporates a high-speed "sub-processor" that they call Alti-Vec. Apple has dubbed this subprocessor the Velocity Engine™. Although Motorola and IBM will manufacture G4 chips both with and without the Velocity Engine, Apple plans to use only G4 chips *with* the sub-processor in their computers.

The Velocity Engine has the ability to process data in 128-bit chunks instead of the 32- and 64-bit chunks used by most conventional processors. Though applications will have to be modified to take advantage of the Velocity Engine's horsepower, several software manufacturers have already announced Velocity Engine support for their products. At press time, Adobe had announced a plug-in for Photoshop that would make the application Velocity Engine-supportive.

When you combine the high-clock speed, the floating-point performance, and the Velocity Engine, the result is a Power Mac that excels at computation-hungry applications such as 3D rendering and digital audio. According to preliminary measurement data, the G4 performs almost three times faster than the most powerful Pentium III-based PCs when running Photoshop.

Looking at the G4 from the outside in, the first thing you'll notice is the change to a handsome color scheme that makes the G4 look much more professional than the G3's blue-and-white housing (the G4 won't clash with all that gear in your racks). The side panels are a silver-gray and the front of the unit is a graphite color. Fortunately, Apple has retained the swing-open side door, allowing easy access to expansion slots and memory slots. Initially, three models of G4 are being introduced: a G4/400 MHz, a G4/450 MHz, and a G4/500 MHz. In addition to the obvious

differences in processor speed, the '450 and '500 are considered "high-end" G4's, employing a totally new logic board design with a 100 MHz system bus. The 400 MHz machine uses the G4 processor on a slightly modified version of the G3's logic board. One of the big alterations in the design of the new G4 logic board is that the graphics slot has been updated to a 133 MHz AGP2X slot (Advanced Graphics Port). According to Apple, any of the AGP cards currently available for Intel PCs will work in the 450 or 500 MHz G4. All new G4's incorporate a 1 MHz backside level-2 cache, which increases CPU performance by storing frequently used data for quick CPU access.

Features shared by all three G4 models include built-in 10/100BASE-T Ethernet, an Ultra ATA hard drive plus support for two more internal Ultra ATA drives, one optical drive (CD-ROM, DVD-ROM, or DVD-RAM), two FireWire ports, two USB ports, and RAM expansion to at least





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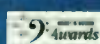


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## ON THE WINDOWS SIDE...

Apple isn't the only company changing the face of hard-disk audio: here's a quick look at Cakewalk's latest introduction for the PC. Cakewalk Pro Audio Version 9 is the newest revision of the company's multitrack digital audio/MIDI sequencing software. A highlight of Version 9 is the implementation of Cakewalk's WavePipe™ audio technology, which provides direct communication from the software to standard Windows-compatible audio cards. WavePipe results in an increased system response to real-time audio commands such as mixing, muting, solo, record, and track playback. In Version 9, Cakewalk Pro Audio supports the AudioX standard, allowing the software to be used with AudioX hardware such as the Yamaha DSP Factory, Sonorus STUDI/O, and DAL's CardDeluxe. Version 9 also offers the ability to record at 16-, 18-, 20-, 22-, and 24-bit depth, at sample rates of 11.025, 22.050, 44.1, 48, and 96 kHz.

A number of MIDI enhancements are also featured in Version 9, starting with real time MIDI FX plug-ins, which may be applied to MIDI tracks via the console view for nondestructive, on-the-fly editing of MIDI tracks. Session Drummer™ is a MIDI FX plug-in facilitating arrangement and composition of drum tracks with real-time drag-and-drop, as well as off-line editing.

Style Enhancer™ provides performance models for a more "human" feel in MIDI recordings, with more than 30 instruments and styles modeled, including lead guitar, strummed guitar, slap bass, fretless bass, lead sax, and horn sections. Additionally, Version 9 has the ability to import AVI, MPEG, and QuickTime videos, supporting frame-accurate sync between video and audio tracks. Cakewalk Pro Audio Version 9 is now shipping (see their Web site at [www.cakewalk.com](http://www.cakewalk.com) or call 888-CAKEWALK); stay tuned to EQ for more information.

1 GB. Hard-disk recordists will be happy to hear that, in addition to the dedicated graphics slot, three PCI slots are provided, as is an internal SCSI bus that can support up to three drives. Those requiring an external SCSI bus for their drives will have to install a SCSI accelerator card into one of the PCI slots, leaving two slots open for digital audio interface cards. Rumor has it that a six-slot G4 is on the horizon.

Apple Power Mac G4 computers are now shipping in the following standard configurations: Power Mac G4/400 w/64 MB RAM, 66 MHz PCI graphic slot, three PCI slots, CD-ROM drive, 10 GB Ultra ATA/33 hard drive, and 56 kbps modem, \$1599; Power Mac G4/450 w/128 MB RAM, 133 MHz AGP graphic slot, three PCI slots, DVD-ROM drive, Zip drive, 20 GB Ultra ATA/66 hard drive, and 56 kbps

modem, \$2499; Power Mac G4/500 w/256 MB RAM, 133 MHz AGP graphic slot, three PCI slots, DVD-RAM drive, Zip drive, and 27 GB Ultra ATA/33 hard drive, \$3499. Other configurations may be ordered at the online Apple Store (<http://store.apple.com>).

*For more information, contact Apple Computer at [www.apple.com](http://www.apple.com).*



The advertisement features a central image of a smiling man with a beard and a necklace, wearing a white t-shirt. Above him, a row of various audio and music equipment is displayed, including a keyboard, a microphone, a CD-ROM, a cassette tape, a guitar, a camera, and a hard drive. The background is a warm, textured orange-brown. The text is arranged in a clean, sans-serif font.

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## MICRO PHILE

**MBHO KA-1000**

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**MICROPHONE NAME:** MBHO KA-1000  
**TYPE OF MIC:** Large-diaphragm condenser  
**POLAR PATTERN:** Cardioid  
**FREQUENCY RESPONSE:** 10 Hz to 20,000 Hz  
**MAXIMUM SPL:** 132 dB  
**ELECTRICAL IMPEDANCE:** 200 Ohms  
**SENSITIVITY:** 1.1 millivolt/microbar  
**OUTPUT LEVEL:** 11 millivolts/Pascal (into 1 kohm @ 1000 Hz)  
**SELF-NOISE:** 14 dB (A-weighted)  
**SIGNAL-TO-NOISE RATIO:** 80 dB (A-weighted)  
**POWER REQUIREMENTS:** 12 to 48 volts DC phantom power

**MIC NOTES:** Although it certainly maintains a “retro” appearance, the KA-1000 microphone is the current production model from German microphone manufacturer MBHO (“Mikrofonbau Haun”). Designed and hand-built by Herbert Haun — who has made capsules for several well-know microphone manufacturers — these mics are sometimes referred to as “Haun” microphones. MBHO microphones have been in use for the past 30 years, mainly in broadcast applications. More recently, MBHO mics have been showing up increasingly in studio and live music applications. MBHO microphones are completely manufactured by hand, all the way down to the windscreen. Every MBHO microphone includes a detailed capsule data chart that is also stored on file at MBHO for future reference, in case an engineer desires a match to their first microphone.

**USER TIPS:** This particular MBHO microphone is a combination of the KA-1000 capsule and the MBC-603 preamp. A large-diaphragm capsule, the KA-1000 was designed for recording acoustic instruments such as piano, saxophone, and guitar, as well as choir and vocalists. Several other interchangeable capsules are available for the MBC-603 preamp, including the KA-100 (omni), KA-200 (cardioid), KA-500 (hypercardioid), and KA-800 (figure eight). For applications where the mic needs to fit into tight spaces (or be visually inconspicuous), the KA-1000 capsule may be used with MBHO’s MBC-648A preamp, which separates the preamp from the capsule for easy placement.


**CONTACT:** For more information, contact MBHO at 718-963-2777 or info@mbho.de. 



PHOTO BY EDWARD OLSEN



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provement over the usual 10 to even 20 ms of "slop" experienced with many computer systems. Next came Steinberg's VST 2.0 spec, which allowed MIDI synths to serve as plug-ins; programs could send their data directly to software synths, bypassing not only MIDI delays, but also any synth-based hardware delays.

Now MOTU has introduced MIDI Time Stamping; this, like AMT, requires specific hardware (in this case, MOTU's USB-based interfaces). However, MTS allows timing precision to within 1/3 of a millisecond — dance music fans who have been irked by wobbly four-on-the-floor kick drums can rejoice. Of course, you have to use MOTU products, but this is still a major breakthrough in improving the accuracy of MIDI timing.

**Hard-Disk Recording Takes Over the World.** Hard-disk recording is no longer just for editing, but for day-in, day-out tracking. Mackie and TASCAM both showed cost-effective, stand-alone 24-bit/24-track hard-disk recorders. The Mackie HDR24 has a video out and enough software to support cut, copy, paste, move, and other basic editing features; for EQ, mixing, aux bussing,

and the like, it has the connections to go to their D8B or similar mixer. TASCAM's MX-2424 offers a variety of I/O, and an expansion drive bay for additional drives such as a DVD-RAM for backup.

For mid-level systems, having a bunch of odd cables sticking out of your computer's rear is giving way to more professionally oriented breakout boxes, à la SeaSound, Guillemot, MOTU, etc. Even Digidesign, which dominates the hard-disk high-end with Pro Tools, is getting into mid-level systems with the cross-platform Digi 001. This \$995, 24-bit audio/MIDI digital audio system includes a PCI card, software, and multichannel breakout box with eight analog ins (two with mic pres), eight analog outs, S/PDIF I/O, Lightpipe I/O, and MIDI I/O. Pro Tools LE, the host-based version of Pro Tools software, runs the show.

In Windows-land, Cakewalk 9.0 includes their new "WavePipe" technology, which dramatically cuts latency (with some cards, you can't detect any delay when you do things like move faders with the mouse). While not the only enhancement in Cakewalk's latest version, it is the most significant because it banishes a persistent prob-

lem characteristic of these types of programs.

**Digital Tape: Continued Evolution.** Despite the dominance of hard-disk recorders, digital tape still holds its own. TASCAM countered ADAT's Type II 20-bit resolution with the DA-78HR, which takes the DA-88 format to 24-bit resolution. Meanwhile, Alesis continued to showcase the ADAT/Edit system, which shuttles tracks between tape and hard disk. In the process, digital tape becomes a removable storage peripheral for computers, with "native" record/playback capabilities.

MP3 Export. If you can't export to MP3, you're not hip. Pro Tools, Cool Edit Pro, Cakewalk 9, and several other programs now export to MP3. As there are several free or low-cost "ripping" programs for converting WAV or other file formats to MP3, this trend is more about user convenience than a genuine breakthrough. However, in the long run, the real message is that MP3 is here to stay (at least until MP4 arrives).

Overall, the show's tone was somewhat subdued owing to the lack of any new breakthrough technology, but there was also

*continued on page 142*

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CIRCLE 86 ON FREE INFO CARD  
World Radio History



# A Hunka Hunka Burnin Laser



PHOTO BY JONATHAN POSTAL

Let's have a look at  
the addictive world of  
CD burning

BY AL KOOPER

I heard about it. I read about it. Other people had one and waxed ecstatic about it. I wanted a CD burner so bad.

Last semester, my assistant transferred some DATs for me using the Berklee (where I teach) CD burner using proprietary software. Due to her inexperience with said software, the end results were a disaster (fades cut short, speed down by over a half tone, etc.). As a fledgling CD-recorder user, one quickly realizes that a certain percentage of one's early output will be relegated to holding drinks. I began to procrastinate. Then, on an impulse, after getting a great deal, I purchased an HHB 850 CDR.

It sat in the house for two weeks while I debated the final location of its installation. If I put it in the studio, it would be next to the computer where I could (after purchasing new software) shorten fades, slow down tempos, and screw up myself, due to my own inexperience — with no help necessary from any assistants. If it was in the living room, I could burn some flash CDs of stuff from my vast LP collection that had never been on CD before. If I put it in the kitchen, I could make toast with it. If I put it in the bathroom...well,

you get the idea. So after two weeks of confusing deep thought, I put it in the living room because:

A. That's the place it would get the most use.

B. It was time to retire my nine-year-old CD player.

C. If I needed to interface with the computer in the studio, I could do it to DAT and then digitally bounce it from DAT onto the burner in the living room.

I next ventured to the local discount store (the place where ya buy 19 rolls of toilet paper in bulk for 28 cents) and bought blank CDs in a 15-pack for \$19.99. Then I went to the AES show and met with the HHB folks and asked them many questions. I thought you may wanna know some stuff I found out:

There are four kinds of dyes used in blank CD manufacturing — green, blue, silver, and gold. You can tell which is which by the color the CD is on its belly side. If it's blue or green, you're at minor risk for long-term reliability. With silver or gold, you may rest easy (except when you purchase said blanks — they're not as cheap as the blue/green meannies). Imagine trying to deal with the salesman in Radio Shack or Circuit City when you start talking about dyes! I'd love to be a fly on the wall for their retorts. What is the minimum knowledge you need about audio to work in those places? Probably knowing how to plug in an appliance will get you out on the floor just in time for the Xmas hell. Anyway, I digress.

So, naturally, the discs I had already bought were green dye jobbies. I said screw it. I wanna play with my new toy. Then I looked at the back of the burner and I was plunged into my next dilemma: Which way should I hook it up? My receiver is buried under three other components and doesn't have enough wire slack to completely turn its back to you, so I don't relish hooking *anything* up to it — *ever*.

I decided this was a job for a Berklee student. So the night the poor lad was scheduled to come over, two visiting recording-engineer friends of mine decided to descend on the Kooper Kastle. All three arrived at the


same time and were all confronted with my problem. What a circus! Each guy had a definitive opinion about the best way to connect it. I finally decided to go with the Berklee kid because, of the three, his breath smelled the least like alcohol.

He suggested that I plug in from the digital ports of my Panasonic DV-3800 DAT machine into the digital ports of the burner. This means I can record digitally onto the burner from the DAT machine and vice-versa. However, any other sources would have to go through the DAT machine in the analog domain. Sounded good to me. The Panasonic machine and the HHB machine both have great converters in them, so

I can just pre-record to the DAT machine and then go back to digital from the DAT copy when I burn. This — amazingly — took only two RCA gold cables to hook up (which I had in the studio) and, thankfully, bypassed the receiver. The Berklee lad left after 20 minutes, *fait accompli*. Then the two inebriated guys and I chilled — staying up until 3 AM laughing about diodes and non-P&G faders.

The next day I burned my first CD. It didn't play in my CD jukebox. Then I remembered

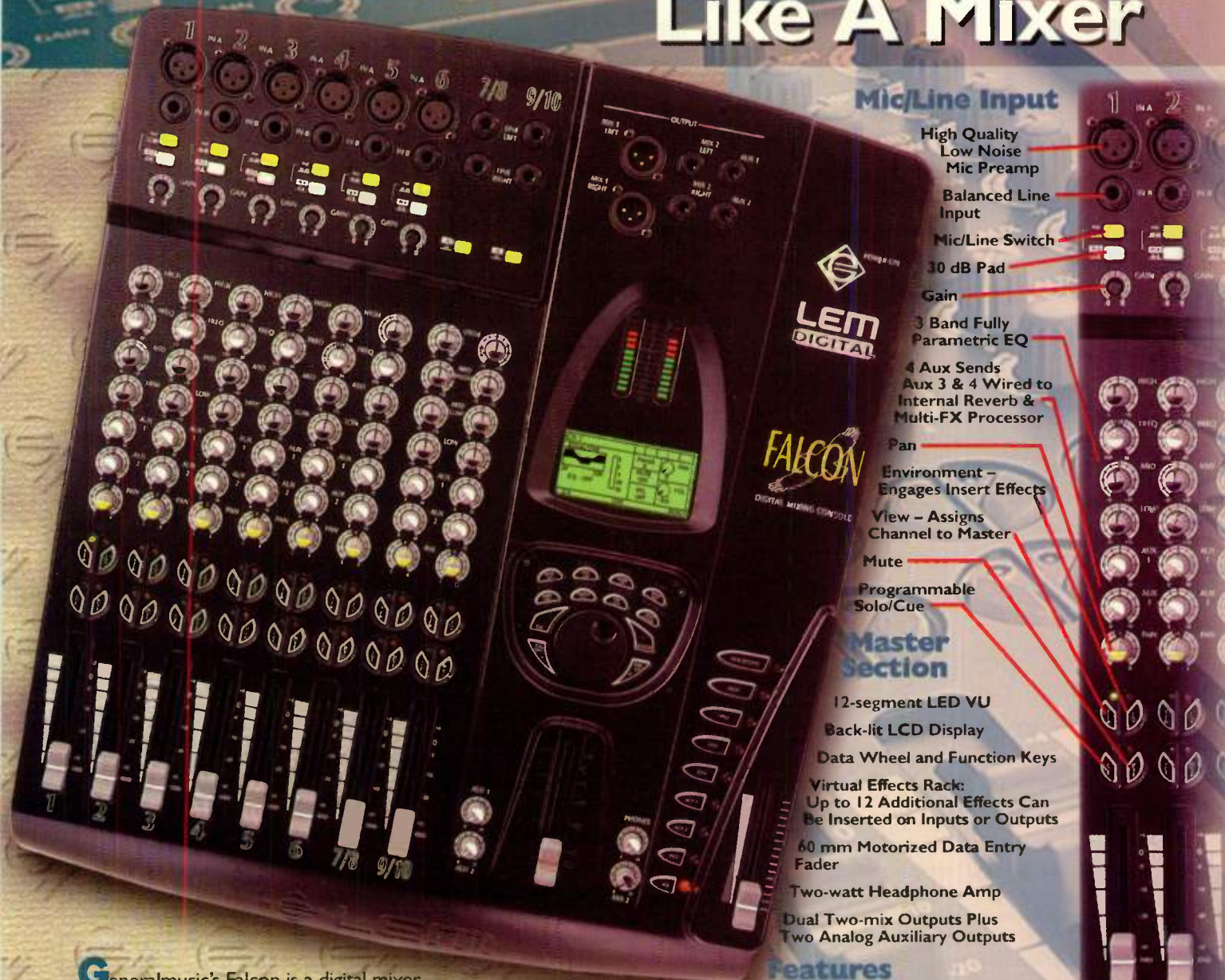
that ya gotta *finalize* these puppies. So I put the CD back in the burner and pushed finalize. Something did happen, but it didn't seem like any great shakes or finalization was taking place. Now I had to get out the manual for the first time (I hate when this happens), and sure enough you have to push pause after you push finalize. Simple as that. So I put my finalized frisbee in my jukebox and *it worked!*

As of today, I have gone through a fifth of my 10,000 LPs and picked out the tunes that have never seen (and will never see) the laser light of day and I've made four CDs of the Virgin Vinyl (as I call them) collection. It's great fun, and the green-dye CDs are doing okay in their first week of life. I think that when people first purchase CD recorders they probably burn about 100 CDs (if they can afford them) before they calm down. Just call me Excitable Boy (with a K — not a Z) for now. Only 96 more green CDs to go! 

*I think that when  
people first purchase  
CD recorders they  
probably burn about  
100 CDs before they  
calm down.*



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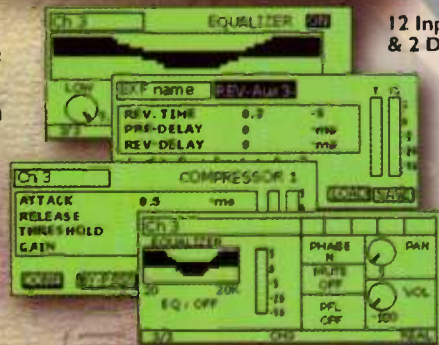
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CIRCLE 27 ON FREE INFO CARD





# Lisa Loeb *and* Dweezil Zappa



PHOTO BY ED FREEMAN

## Excerpts from the AES '99 Platinum Artist Seminar

BY MR. BONZAI

**Bonzai:** Lisa, you began your recording career right here in New York City?

**Loeb:** Yes, I actually recorded my albums in a home studio with producer Juan Patiño on 52nd between 9th and 10th, using only one A-T microphone for most of the work.

**Your most recent single is from the *Rugrats Movie*, scored by Mark Mothersbaugh of Devo. How was that experience?**

**Loeb:** I didn't work with Mark on the single, but [I did] on a song where I was the voice of a baby.

He's really funny. How was your visit to Cuba?

**Loeb:** It was great hanging out with Andy Summers and Stewart Copeland. The Police were my favorite band when I was in the 8th grade. I also got to write a song with Burt Bacharach.

**Dweezil has had a number of albums, among them *Confessions—of a Deprived Youth*.**

**Zappa:** We altered the lyrics in the song to "Complexion of a Deep Fried Youth."

**Two years ago you told me you had an album with guest guitarists coming out...**

**Zappa:** Well, I've been saying that for about ten years now. One of the highlights was working with Yngwie Malmsteen. We recorded his tracks in Miami at Criterion. I had to travel to make this record: England with Brian May, Texas for Eric Johnson, different places. It's going to be an interesting album, but I've had some technical problems. It started on a na-

### LISA LOEB

**Birthplace:** Bethesda, MD. Raised in Dallas, TX.

**Notes:** In 1994, Lisa's song "Stay (I Missed You)" was on the soundtrack to *Reality Bites* and became a #1 song in the U.S., Japan, France, and other countries. Grammy nomination and a Brit Award. First and only #1 hit for an unsigned artist. Her first album, *Tails*, was released in 1995, and the single "Do You Sleep" was a top 20 hit. Her second album, *Firecracker*, was released in 1997. "I Do" made the top 40 and she was nominated for a Grammy. Lisa was a participant this year in the Cuban "Music Bridges" musical event. As an actress, she appears in the thriller *House on Haunted Hill* opposite Oscar-winner Geoffrey Rush. Lisa is now completing her third album with engineer/coproducer Dweezil Zappa.

### DWEEZIL ZAPPA

**Ancestry:** "Mostly Italian, but we're mutts — a little Danish, Portuguese, Hawaiian."

**Occupation:** Guitar player, composer, engineer, producer, self-described "studio dog."

**Albums:** *Havin' A Bad Day* (1986); *My Guitar Wants To Kill Your Mama* (1988); *Confessions* (1991); *Shampoo Horn* (1994); and *Music For Pets* (1996) with brother Ahmet in the group "Z."

**Location of Conversation:** Special Events Hall, AES Convention, NYC. Produced by Lisa Roy.

log tape before I got involved in doing my own engineering and we had a tape stretch problem, so the music was impossible to tune to in overdubs. It moved from analog to digital multitrack, and after two weeks of overdubbing massive amounts of guitar, we discovered the tape had a glitch, then chunks were missing, and then all of it was missing. I started doing the engineering myself, put it on DA-88 in my own little project studio, and I have had no problems since.

**What's the console these days in your little room?**

**Zappa:** My project studio is the former vocal booth of the big studio, and I now have a Soundcraft console. There is so much equipment in there that it gets about 30 degrees hotter than the rest of the studio.

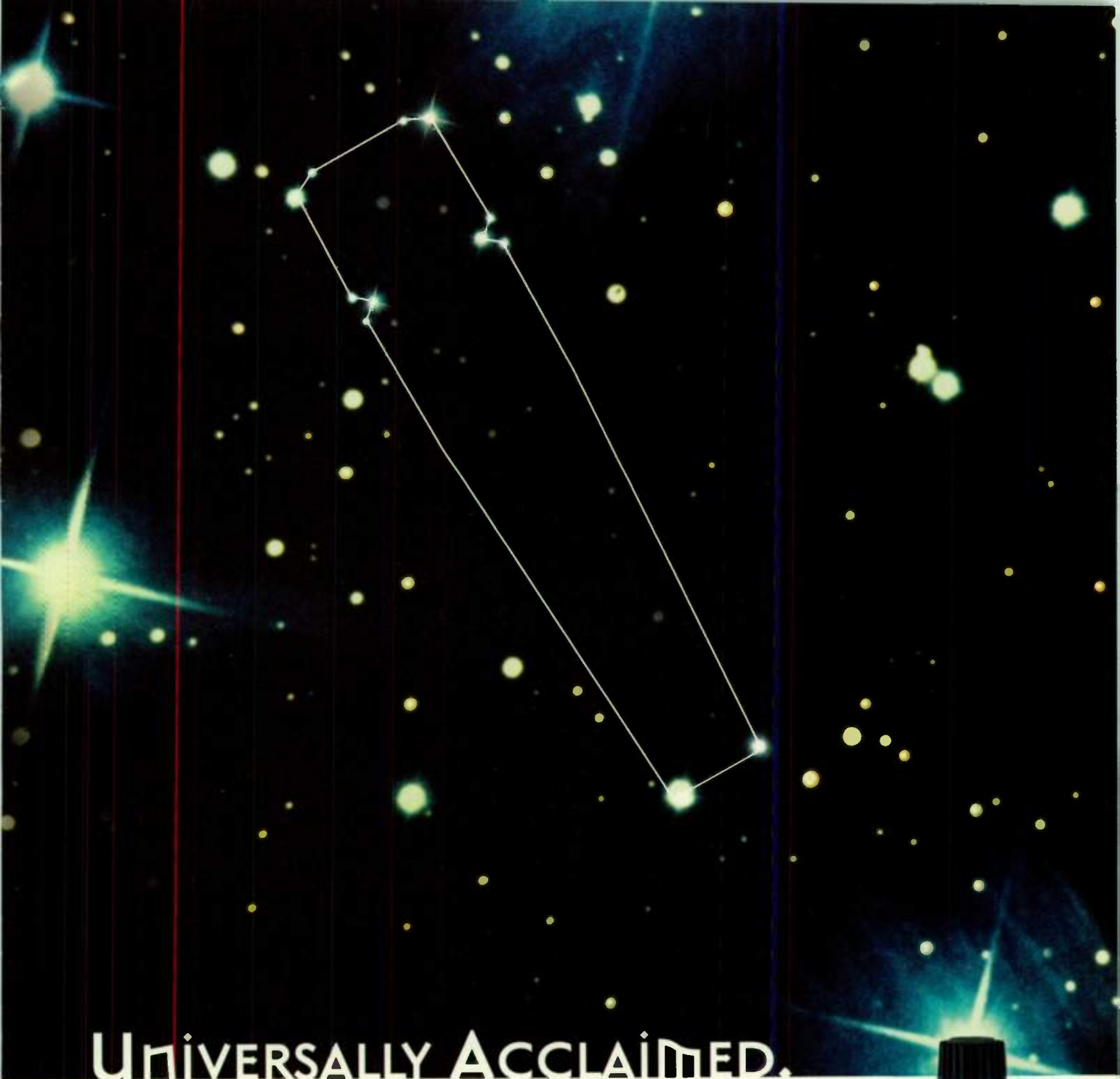
**There must be quite a Zappa tape vault?**

**Zappa:** There is an enormous tape vault under our kitchen that



ZAPPA AND LOEB PHOTOS BY MR. BONZAI





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has every master recording of every album and every live recording that Frank did, in a chamber with a 40-foot ceiling and wall-to-wall tapes. There's about ten years of archiving work to be done.

**Are we going to see albums coming from the archives?**

Zappa: Yes, we are going through it now and are planning on three or four releases soon, from

rare versions of bands that toured with Frank, and interesting album outtakes. The thing about Frank's stuff is that it was always so far ahead of its time in the audio sense. We have material recorded in 1966 that sounds amazing — after you bake the tape.

**Well, if I knew you were comin' I would've baked a tape. Lisa, last week you recorded a song with Randy Scruggs?**

Loeb: Yes, I wrote the song with him and we recorded and mixed with engineer Dave Reitzas.

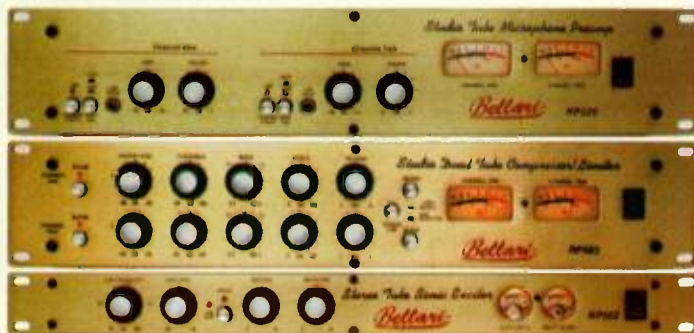
**Wow, a world premiere here at AES! Let's listen to it. [4-minute pause] Did you do a lot of preproduction on that song?**

Loeb: No, I had worked on it, actually in Cuba, and Randy helped me finish it. I played an acoustic version on the answering machine of



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my drummer, Ronny Crawford. Lee Sklar played bass, Jim Cox played keyboards, and Randy played guitar and sang. We played it a few times, recorded it, and then did a few overdubs and lots of harmonies.

**Did the song change as it was being recorded?**  
 Loeb: Yes, originally it was a 6/8 acoustic number, but it ended up with a lot more power than I had imagined.

**Dweezil, you engineered most of Lisa's new album?**

Zappa: Yes, and played some electric guitar, too. Bob Clearmountain is mixing most of the

songs — he mixed Lisa's last album.

**There's a big piano in the Zappa studio...**

Zappa: Yes, a big Bösendorfer, but no one in my family plays piano.

Loeb: Except the cat.

Zappa: Yes, the cat did perform on one song, "Too Fast Driving." The cat has fully posable action thumbs — looks like he's wearing boxing gloves. His name is "The Tantalizer," and we decided he should start a recording career. We tossed him onto the piano and he walked around — he played really good, when you consider the pressure. He didn't worry about

the first take syndrome. His attitude was, "Just whatever, man."

**So, the album is almost done?**

Loeb: We're going to record a few more songs. And I'm going to use a demo I recorded at a castle in France. Miles Copeland has a castle and invites songwriters to visit and work, and you write and record the same day. I think I'll use the live performance I recorded there. Demos often have more feeling than the final recording. We try not to make demos — just final recordings. If there is a demo, it is usually just a rough solo performance of a finished song into a tape recorder. The song really just develops as you record.

**Let's take some questions from the audience. Susan Sloatman asks, "What's with the sideburns?"**

Zappa: The sideburns allow me to trap the bass when I am in the studio.

**Curtis from Trinidad asks, "Are you using Pro Tools?"**

Zappa: The song recorded with Randy Scruggs used some Pro Tools.

Loeb: My first record was done with ADATs and Pro Tools.

Zappa: I don't have Pro Tools — my studio is too small.

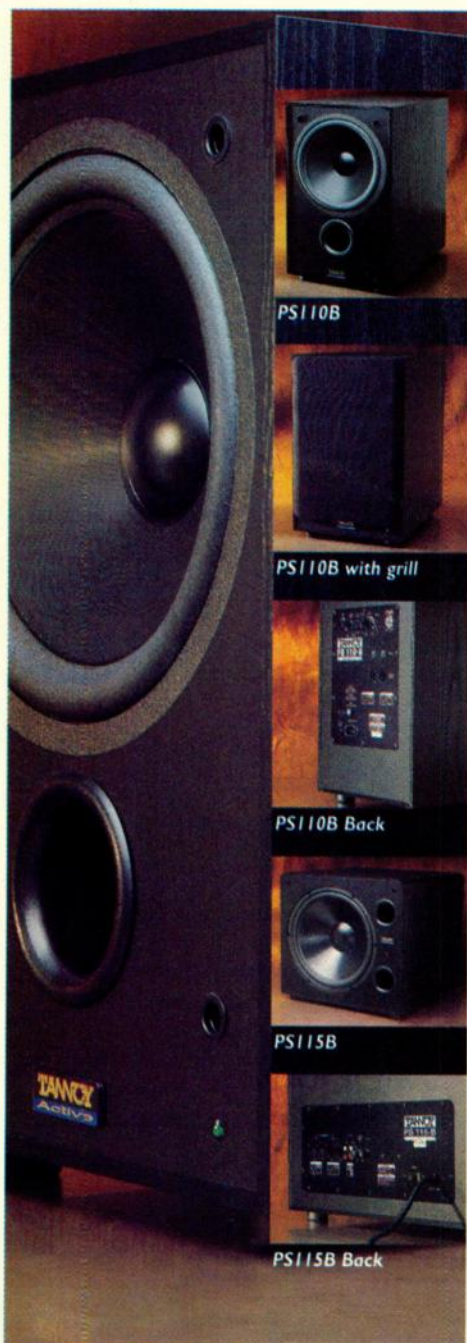
**Joe from Winter Park, FL wants to know if you use personal monitors on tour?**

Loeb: Yes, I do when playing with a band because, if I can't hear myself, I sing too loud and I sing sharp, especially if I am next to the bass player. If I am solo, I don't use them.

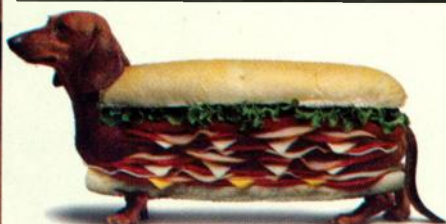
**Justin wants to know what guitar is your favorite, Dweezil.**

Zappa: I use a lot of guitars. I just sold about 45 guitars and have about 70 left. Mainly, I get guitars based on what they look like. I make them do what I want them to do. I usually like things that are ugly in a cool way. I have a little Fender DuoSonic, a 1956 model, and also a new reissue. I use an old

*continued on page 142*



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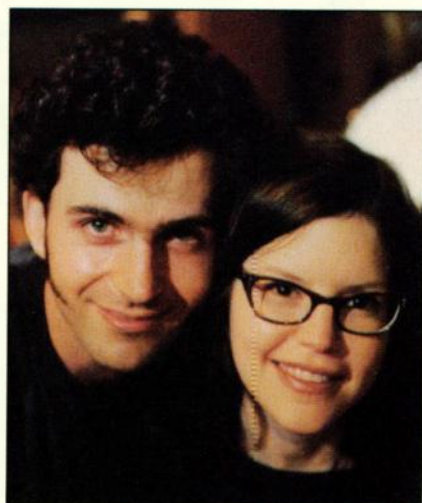
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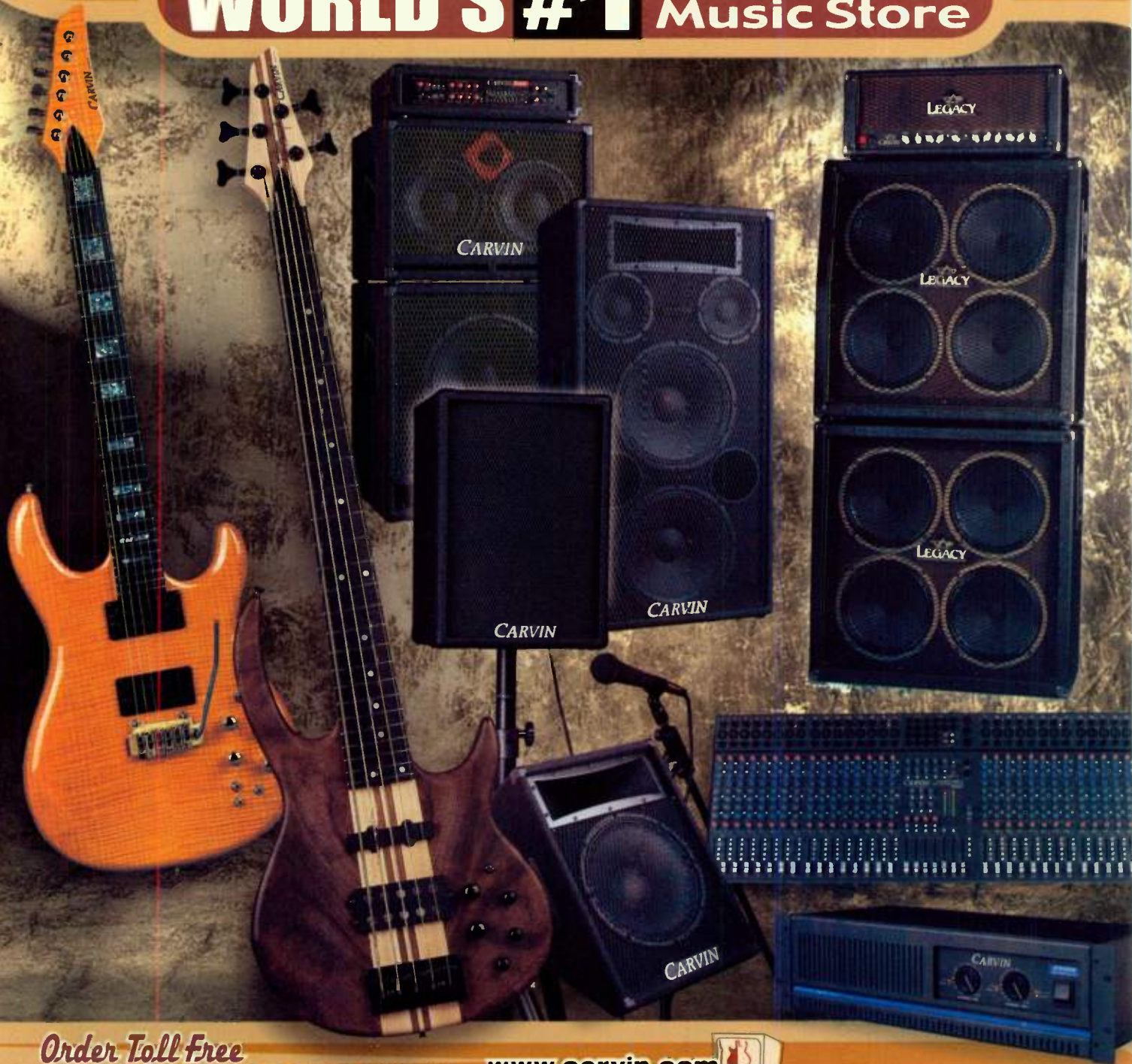




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# Ralph in Wonderland

Behind the board and capturing the flavor with engineer Ralph Sutton

BY HOWARD MASSEY

*Every budding engineer (and many an established engineer, too!) fantasizes about what it must be like to land a gig with a musical legend. Ralph Sutton is one of the select few who has lived that dream. Currently chief engineer at Stevie Wonder's Wonderland Studios in L.A., Sutton started out assisting at City Recorders in 1979, building a client list that included Kansas, Motley Crüe, and Jesse Colin Young. In 1982, he moved to Motown Hitsville, where he was able to focus on his musical genres of choice: funk and R&B. There, and later at Kenny Rogers's Lionshare Studios, Sutton had the opportunity to work with the aforementioned Mr. Wonder, as well as superstars including Smokey Robinson, Rick James, Jeffrey Osborne, the Temptations, and the Four Tops. Along the way, he also handled the technical side of seminal rap records by artists such as Grand Poobah, Rakim, and Curtis Blow. More recently, he has made the transition to producer, working with Lionel Richie, while continuing his association with Wonderland.*

*Lively, earnest, and clearly dedicated to his craft, Sutton took time to share some of his recording tips and techniques with us, as well as his unique gridiron- and fruitbowl-oriented approach towards mixing (we kid you not). Mr. Sutton is a fascinating man with a fascinating perspective.*

**EQ:** Many people working on a project can't figure out when it is finished. How do you know when enough is enough?

**Ralph Sutton:** When you've achieved your original idea. When you've done everything you first thought of doing.

What if, though, you think of new things along the way?

You add them in, provided they do not interfere with your original concept. You have to always be careful not to walk out of the room, hear something on the radio, and think, "God, I should have used the [Antares] ATR because it sounds so great on Cher's voice!" You can't get caught up like that, because then you've gone from creating to re-

creating...you've crossed the line.

**What common mistakes are people making in their projects?**

Many times people get anxious and they want to rip through what they're trying to accomplish; for example, using just any mic. Anybody who has their own studio should invest in one good mic; perhaps it's a Neumann M149 or a Sony C800, something like that. They need to have one mic that is *the* mic. They're better off buying one good mic as opposed to a bunch of the latest gizmos.

Also, it seems that a lot of people are doing their vocals in an ambient area that's uncontrolled — one with parallel walls — and

then they effect it, too. So now, you have a strange tonal quality. Sometimes it's going to work out well, but, for the most part, it doesn't. People need to think about what they're trying to accomplish and understand that, if you're going to effect a vocal, you need that vocal to be as controlled and as dry as possible for the environment you're in. For example, you might want to put a mattress up against a wall and face it, then put the mic between you and the mattress. You don't want to do a vocal in a bathroom and then try to put more synthetic room sound on it, because you've already achieved that organically. There's going to be a conflict.



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Same thing with guitars. Most people would be better off tight-miking the amp or going direct, as opposed to trying to come up with something that they possibly don't yet understand how to do. People think that to get a big guitar sound they need to put the amp in a big room and stick a mic at the other end of the room. However, that's exactly

might want to get into some kind of compression, but that's all stock stuff. But we also do some crazy stuff, like running a Clavinet through a stack of Marshalls; that creates a great vibe because it's an analog keyboard. I'll take the mono output from the Clav into one head and set it bright and sparkly, then daisy chain the signal into another head and leave

lars, believe me, it's *not* the bomb. The dbx 160x is a good, inexpensive solid-state compressor; there are a lot of affordable solid-state devices that are very nice.

**What about tips and techniques for recording bass?**

I get the pleasure of recording Nathan East all the time. What works for him is a 1147 FET

## TECHNIQUES INTERNET

## Untangling the Web

How to find pro audio information on the 'Net

BY JERRY TARDIF

Can't find the lowest price for that digital mixer on the Internet? Or is it taking hours to find some free MP3 music files? Is the Internet more of a pain than a resource?

Currently, there are an estimated 800 million Web pages with approximately 1.5 million new pages being added each day. Most of the information is in English, but it's of no use to you if you can't find it. Finding pro audio information isn't difficult, but it requires a little knowledge of the resources and the use of basic query composition techniques to do it quickly and effectively.

There are two main parts to a search that are important to efficiently use the Internet as a source of information: [1] searching as widely as possible and [2] cutting through the attendant clutter.

### SEARCH RESOURCES

Almost everyone knows that you need to use a search resource to find the Web documents you want. These "resources" come in several types and are not created equally. Though they all use indexed databases that can be quickly searched by fast computers, the method they use to populate those databases affects the quality of the index and its completeness. Let's take them one by one:

**Directories** (e.g., YAHOO! and LookSmart) — The actual classification and indexing is performed by professionals, and therefore the quality of the information is higher. Also, the topics are placed into a hierarchical-based subject structure, making it easy to navigate. The disadvantage is that they cover a much smaller portion of the Internet (usually, less than 1 percent) because there are so many Web pages needing review and classification, and there are never enough reviewers to keep up.

**Search Engines** (e.g., Alta Vista and HotBot) — These resources use

"spiders" to crawl Web sites and update the database 24 hours a day. They index each word on a Web page and each query you pose is compared to those keywords. When a match is found, the URL of the document is provided to you with a link to the Web site. The advantage is that many more pages can be indexed because the process is automated. The disadvantage is that the quality of information is lower because it doesn't get reviewed by a thinking and knowledgeable human.

**Meta-Engines** (e.g., Metacrawler and Inference FIND) — Meta-engines use multiple search engines and/or directories to scan the Internet. Their biggest advantage is that they cover much more of the Internet. A disadvantage is that you'll often get duplicates because multiple sources are used for each search.

**Search Utilities** — These are software programs that you run on your computer. Almost all of them use multiple search resources. The disadvantage is that, except for the simplest ones, you have to buy them.

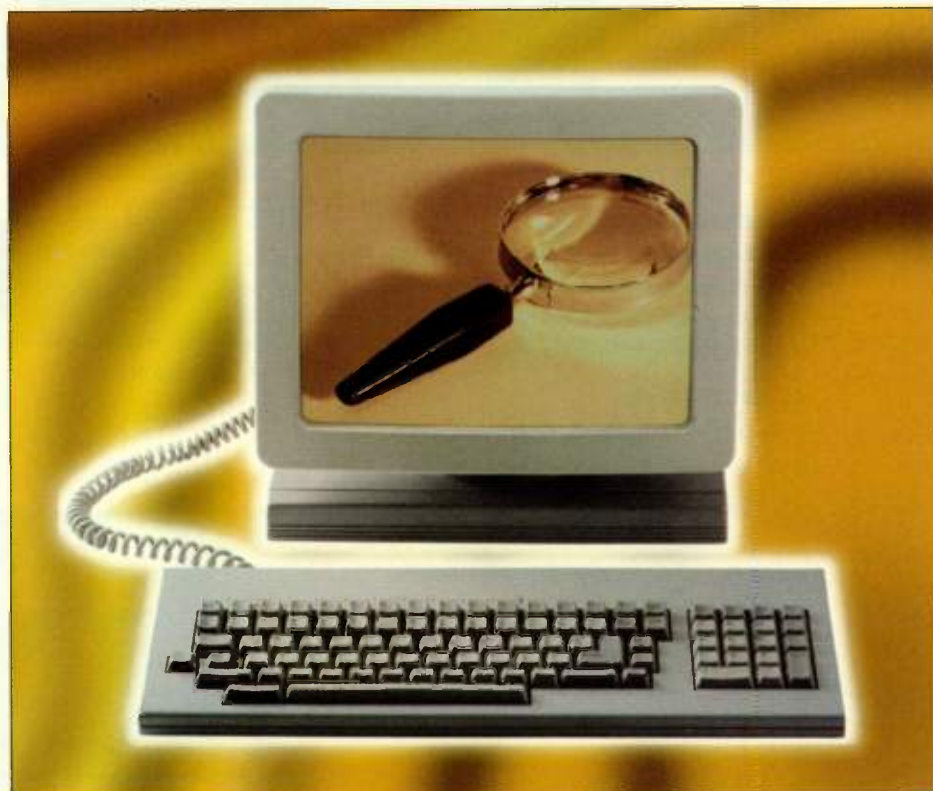
A study of the Internet published in the journal *Science* (April 3rd, 1998) re-

ported that no search engine covered the entire 'Net. The one covering the most, HotBot, covered only 34 percent. Following came Alta Vista (28 percent), Northern Light (20 percent), and the rest, still less. The degree of overlap, when it occurs, varies from topic to topic. As the 'Net continues to expand at its tremendous pace, the engines and directories can't keep up.

What does all this mean? You'll get the best coverage of the Internet by using a meta-engine or a search utility. In fact, search utilities let you select multiple meta-engines plus other resources, allowing you to cover more of the 'Net than in any other way. Search utilities can also have other additional powerful features to further improve search productivity.

### THE QUERY

Once you're scanning much more of the Internet, the most important aspect of the search is the query itself. The quality of the query makes the difference between finding your target in the first or second search or spending hours or weeks





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searching and never finding it. This is where most people mess up. Your search results will only be as good as your query. It literally is: "garbage in" = "garbage out."

So, how can you conduct a much more effective search? First, think hard about your query terms. Choosing keywords that are unique to your targeted information will do wonders to cut out useless information. If you're looking for sites that offer free FX plug-ins for your DAW, don't search for the keyword "FX." You'll get pages about everything from sound effects to magic to special effects and everything in-between. Instead, use more discriminating keywords: Direct-X, VST, etc.

Second, use phrases whenever possible. A phrase is denoted by enclosing it within quotation marks. For example: "digital audio workstation." This way, "digital audio workstation" is handled as one keyword. Otherwise, you'll get all manner of pages about digital signals, digital cell phones, audio books, soldering workstations, and much, much more information unrelated to your query and search goal. Phrases are the most powerful and discriminating query constructs of all!

Third, many searchers tend to use only one or two keywords in their queries. That's a mistake! When you do that, you often spend endless hours looking at useless documents. If you don't already use Boolean operators, start doing so. While learning many of them will be valuable if you search often, you can accomplish much just by using one of them — the "AND" operator, and really cutting down on unrelated results. Your queries will look like these:

mixer AND digital AND "32 track"  
AND "built-in effects" compressor AND  
plug-in AND "soft knee"

This construct tells the search resource: "provide me with *only* those Web pages that contain the keywords "compressor" AND "plug-in" AND "soft-knee" in the *same* document — reject all others. If your search was only for "compressor," your results would also include air compressors, ring compressors, etc. And when using Boolean operators, make sure you use Boolean engines or they'll have no effect. On some engines, such as Alta Vista, there is a Boolean or advanced search mode —

you must be in this mode for Boolean operators to work properly.

There are other things you can do to further improve your search results that we don't have the space to describe here, but, incorporating these simple techniques will greatly improve your search productivity and reduce the time you spend searching by at least half; most likely much more.

*[Editor's Note: In the shameless self-promotion department: The EQ Buyer's Guide is still online, and will be updated in December with all of the new product introductions from the recent AES Convention. The database is searchable by keywords and full text, and you know that you'll only find pro audio products within its pages. Check it out.]*

*Jerry Tardif writes, plays, and records his own material in his project studio and is a co-founder of the company that develops and markets the Mata Hari Internet search tool. Visit the Web site at: [www.thewebtools.com](http://www.thewebtools.com).*

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# Absolute Power

## AC Power: Safe and quiet in the age of audio

BY DAVID MILES HUBER

In the June 1999 issue, I wrote about the virtues of power conditioning and UPS (Uninterruptable Power Supply) systems. Basically, it spoke of the need to use a high-quality "surge suppresser" to eliminate any nasty power spikes, line noises, and power outages that might compromise your work and even your computer system.

Those of us who work in professional music production have concerns that make the choice and design considerations of a power conditioner/UPS even more important than those concerns of the average PC user. In this second installment, I'd like to touch on special power conditioning issues that relate to keeping our audio systems and circuits safe and quiet.

### VOLTAGE REGULATION: DEALING WITH SAGS, SURGES, AND BROWNOUTS

In an ideal world, the power coming from your studio outlets should consistently be in a range that's fairly close to the standard "mains" voltage level of your country (120 V, 220 V, 240 V, etc.). Unfortunately, due to short transients or changes in usage on the "grid," power can sharply rise in level, sag over short periods, or drop in level for longer periods.

Although high-level, short-term

spike and surge conditions are often "clamped" using a metal oxide varistor or MOV (which lets normal voltage levels pass, while increasing in resistance to stop excessive spikes from damaging your equipment), longer-term sags and surges in power require the use of a voltage regulator (VR). In short, a VR will often use a transformer that has multiple voltage level taps that can be electronically switched to match the output voltage to the ideal level (or as closely as possible).

Most of the power conditioners on the market have been designed for the average computer user. They're often made with bulky, conventional transformers that only have a limited number of voltage taps and may induce hum and noise into nearby audio circuits. You should take care to choose a device that uses a heavy-duty toroidal (doughnut-shaped) transformer that has at least eight, electronically switched voltage taps.

### KEEPING THE LINES QUIET

Just as the noise in our environment seems to be on the increase, so is power-related noise in the form of electromagnetic and radio frequencies that can sneak into the audio path of a studio. Although electromagnetic and radio frequency interference can sneak in from sources other than the power line (e.g., lights, transformers, radio transmitters, and CB radios), noises that are transmitted through power lines can often be reduced in higher-quality conditioners

through the use of a low-pass filter.

Although most conditioners use low-pass filtering, you should make sure that EMI/RFI noises are suppressed by at least 40-60 dB in the 1-10 MHz range. Regulators solely designed for computer use often will suppress these noises by only 15 dB.

### BALANCING ACT

Just as it's wise to use balanced audio lines (whenever possible) to reduce noise and interference, it's often a good idea to use a power conditioner that's balanced as well. However, the reasons are slightly different. Instead of reducing induced EMI/RFI noises, a balanced power line is used to isolate the power line from ground as much as possible. This has the effect of reducing unwanted voltage potentials that might exist between the audio signal lines and chassis grounds in a connected system (the basic cause of unwanted hum and buzzes). Balanced circuits may be more expensive, but you know what they say: "Silence is golden!"

### POWER SEQUENCING

We've all done it. You flip a single, master switch on an audio system and "POP!" Not only can turning on several circuits at one time create a big-time annoyance through the speakers, it also can create a transient that can shoot out over audio paths that are completely separate.

The solution would be to use a power conditioner with several output circuits that are successively turned on, one at a time. In this way, you can turn on your equipment



POWER PLAY: Power conditioners, like the IT-230 from Furman, help ensure the power your equipment receives is up to par for audio recording.



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1. Basic standby (where the backup batteries stay offline until the power fails);
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Since you'll probably want surge and voltage regulation protection, line-interactive and online UPS systems are the obvious choice. Beyond this, the foremost consideration is, "Is it big enough?" That's to say, will its batteries be powerful enough (or in good enough condition) to keep the system running long enough to see you through an outage, or, at best, let you shut down. I've been using a UPS that's under-rated for my PC for almost a year now. Although I feel secure that it's doing a good job as a surge/noise conditioner, when I pull the plug, it barely gives me enough time to shut down. Moral of the story: most PCs that deal with audio have more hardware than the average, meaning that they need more of a battery reserve to see them through an outage. In short, if you're looking to buy a UPS, make sure that it has a power rating that's high enough for your audio needs. Take the time to add up your total wattage ratings and find a UPS that can handle the power load.

### AVAILABLE SYSTEMS

Finally, although there are tons of power conditioners made for the computer industry, only a few manufacturers design their systems for professional audio and video applications. Some of these companies include: Brick Wall ([www.brickwall.com](http://www.brickwall.com)); Emagic, Inc. ([www.emagic.de](http://www.emagic.de)); Equi=Tech ([www.equit-tech.com](http://www.equit-tech.com)); ETA Systems ([www.etasys.com](http://www.etasys.com)); Furman Sound ([www.furmansound.com](http://www.furmansound.com)); Galaxy Audio ([www.galaxyaudio.com](http://www.galaxyaudio.com)); New Frontier Electronics ([www.frontierelec.com](http://www.frontierelec.com)); and Tripplite ([www.tripplite.com](http://www.tripplite.com)). (My apologies to companies I've missed; feel free to let us know who you are and what you make.)

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e thought it was time that the project studio had the recognition it deserves. You agreed. We nominated. You voted. What you will see in the pages that follow is the result of this collaboration. The winners of this year's Project Studio Awards all exemplify the principles and potential of what a project studio is — the ultimate creative

tool for musicians, producers, and engineers. They all provide professional service, and are extremely successful. They serve as examples of what can be achieved by every reader of this magazine. So take a look inside the winning studios and take note: the 2000 Project Studio Awards are only a year away...





## Producer/Engineer-Owned Studio

# KING

BY STEVE LA CERRA

On the southeast edge of the French Quarter in New Orleans, LA lives what may well be the ultimate residential studio — Kingsway Studio. Built into a 19th-century landmark home, Kingsway began as the vision of producer/engineer Daniel Lanois, known for his work with elite artists such as Peter Gabriel, U2, and (most recently) Bob Dylan. Prior to establishing Kingsway, Lanois had an arsenal of recording equipment that he would transport to various atypical environments, set up, and use to make records — the main idea being that a comfortable workspace encourages artistic creativity. Eventually, Lanois came upon

the house that is now Kingsway Studio and rented it as a place in which to make recordings.

As Kingsway Studio grew roots, it became a more permanent studio. Ultimately, Lanois purchased the home, and Kingsway Studio truly became a permanent residential studio. From recording projects as diverse as *Soup* (Blind Melon), *Sheryl Crow*, *Wrecking Ball* (Emmylou Harris), *Hot* (Squirrel Nut Zippers), *Wiseblood* (Corrosion Of Conformity), *up up up up up up up* (Ani DiFranco), *Coast To Coast Motel* (G Love and Special Sauce), and *Automatic For The People* (R.E.M.) to Lanois's own *For The Beauty of Wynonna*, Kingsway Studio has consistently provided a relaxed working environment



Pictured: Twilight Singers.  
Photo by Danny Clinch



# SWAY

## New Orleans, LA

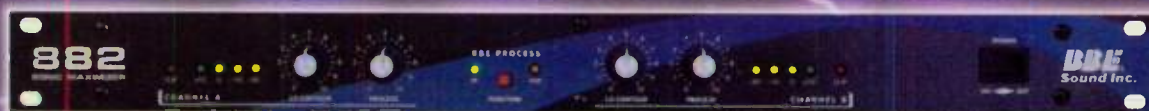
designed to let creativity flow — and that's why we're here in the first place.

Producer/engineer Ethan Allen, who has been based at Kingsway Studio for the past four-and-a-half years, describes it as a "different flavor from most studios in a couple of ways. It's a residential studio [that is] literally in a house, not a separate section. The musicians and production staff are all in the same space, so line-of-sight and actual mouth-to-ear communication is greatly facilitated. We try to set up an inspiring situation for an artist to create in, and let them do that — rather than imposing upon a band a template of a studio to create through.

"As a residential studio, it's the removal of the ticking clock. You can wake up in the morning, have a cup of coffee, and come down to work. If you're struck with an idea in the middle of the night, you can work on that just as easily, so, as a result, it's also a great place for writing. There are a number of environments here that are more like a home than a studio, and generally you feel comfortable creating here."

Key to the atmosphere at Kingsway Studio is the fact that the building maintains the traditional appearance of a home. There's been no interior buildout to turn the rooms into iso booths or clinical control rooms, though one-foot-thick walls and double-paned windows and doors keep external noise

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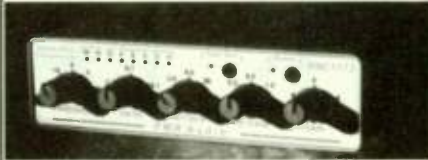
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down to the point where it is not a huge consideration. (Unless one of the doors is open — in which case you might hear a carriage go by. Sometimes such noises end up on records anyway because they add character.)

As opposed to the standard acoustically treated control room, the foyer of the house serves as both the control room and a large meeting area, and is often used as a recording space as well. A 40 x 24 x 24 API console forms the centerpiece of the studio along with a Studer A820 2-inch, 24-track tape machine. In cases where an artist might want to use a remote part of the home for writing music, several small "satellite" recording setups are available. A TASCAM DA-88 and Neve sidecar might find their way into a spare room, where an artist can write undisturbed while recording continues in the foyer. To further avoid sonic distractions (and the possibility of ruining a take) the doorbell and phones have been wired to a flashing light system — and the disappearance of clocks or telephones in the control room make Kingsway a timeless space.

According to Ethan, acoustic separation of instruments occurs in many "non-traditional ways. We have these pieces of industrial foam that can be moved around to create very dry acoustic spaces for vocal booths and those sorts of things when needed — if they don't already exist in the house. The house



Pictured: Seven Mary Three.  
Photo by Danny Clinch

itself has a variety of acoustic environments: a second floor landing with hardwood floors, plaster walls, and a large open space often is used as an echo chamber or a tracking space. There're several small, tile bathrooms — each with a very different sonic nature. A lot of the acoustic spaces are used as reverb on records here. We have several different snakes, and a variety of power amps and guitar amps used to put sound out into a room or into the stairwell (which is a three-flight stairwell at the center of the house) so we can use those areas as live echo chambers, and print those sounds to tape.

"Given the nature of the layout, we're predominantly a tracking studio, but we have mixed here, so it's common for the echo chambers to be set up for a mix. The 'studio' comprises most of the first floor. The second floor is the residential space, but all of it can [be] and often is used to record in. The first floor has actually been wired through the fireplaces, so the aesthetic of the house is definitely maintained — and that's a prime consideration. A lot of vocals take place in the bathrooms for a tight, bright sound. Having so much space and many different rooms



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Pictured: Seven Mary Three.  
Photo by Danny Clinch

has proven to be a saving grace. If everyone is cooped up in the control room while one person is overdubbing, it's difficult for the person doing the work because they are being observed. It's also difficult for the other people because they don't have a place to go. It shortens the span of your attention on both sides of the glass, so to speak."

Drums tend to be recorded in several of the larger rooms, but the second floor landing has proven a very interesting and often-used space due to its longer decay time. This landing overlooks the control room area, so line-of-sight is much improved over a typical drum booth. How-

ever, it also means there are situations where non-traditional monitoring must take place. When sounds are being worked on, loudspeakers may be used in the control room in the typical manner. But when it comes time to actually record, the production staff might turn the loudspeakers off (thus preventing them from leaking into nearby microphones) and use headphones for monitoring the proceedings.

Ethan maintains, "It's a rare situation where your only resource for setting up a sound is headphones. However, if that is the case, the engineers here have come up from

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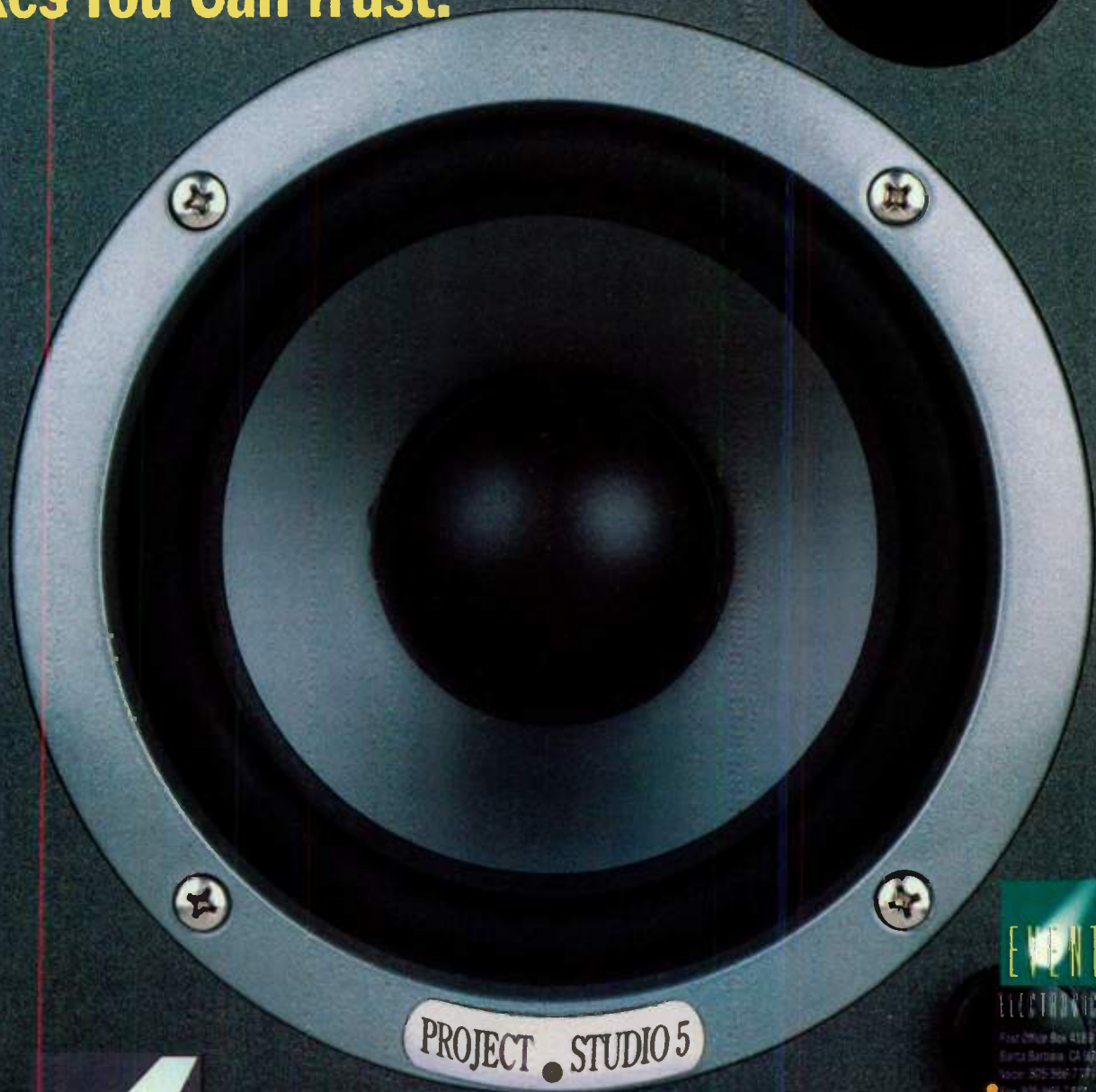
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Pictured: Twilight Singers.  
Photo by Danny Clinch

a school that has one foot in live recording — in other words, it's better to get a sound on tape and preserve a performance rather than to miss a moment in favor of getting the best sonic character. Under certain circumstances, an experienced engineer can set a preamp to the right spot, use this mic and that compressor, and the gain structure to tape will be right.

"While in the recording studio, record. Make sure you document whatever is happening — that's the prime consideration. Since a lot of writing takes place here — not just the recording of already-existing material — you have to make sure there's always tape rolling. *Always* — even if it's a running DAT. If anyone is playing with an idea, noodling around, or even discussing arrangements, it's always preserved on tape because sometimes things are forgotten a day later. Someone may try to remember 'what was that idea we talked about for the second verse...' You can always go back to a DAT to refer to that. There's a lot of notes taken on those running DATs so that we're able to access that information later. As the DATs are rolling over the course of the day, an assistant engineer takes notes to chronicle not only the song, but the evolution of an arrangement as well. Many times musicians will play something off-hand that even five minutes later they can't exactly remember. If you're only doing 'when-the-red-light-is-on' type of recording, then you might not have preserved that idea.

"People's own performances speak to them in a way that sometimes conscious thought doesn't. You have to be able to present them with their former selves. One good way to think of it is that there is no such thing as a demo or pre-production. You set up your recording session from the beginning to capture whatever is going down, in whatever way you can. Usually everything is routed to the multitrack, so you spend time in setup making sure that's intact. That's the platform built upon for the rest of the session. Also, the runoff of the board (i.e., the stereo mix) is always going to a DAT machine. Sometimes even the 2-mix of the board is also going back to the multitrack to preserve your sonic experience. It's an old-school approach, but we're making sure that nothing is wasted in the way of time or effort."

Due to the fact that headphone mixes for performing musicians can be critical to the success of a session, Kingsway Studio has worked out a rather interesting method of providing cue mixes. After trying some of the commercially available headphone mix systems, Kingsway adapted the idea to something that would more suit their needs. A series of six headphone stations were built, each with a Mackie 1604 mixer and a patchbay; a small power amplifier and an effect unit are available if needed. These allow a musician individual track monitoring, access to the stereo



"control room" mix, and the ability to use a floor wedge for monitoring if that's their preference.

In addition to the input of the API console, output from the 24-track machine is also sent to a parallel connection that feeds four different muted outputs — providing a total of eight headphone feeds. A 32-channel input matrix is used to route signal to the headphone stations. Typically, between 8 and 16 signals are patched from the tape machine into the headphone matrix, but the system can accommodate as many as 32 tracks if necessary (note that by using the aux returns as inputs, one Mackie 1604 can accept up to 24 tracks). As an example, kick, snare, and overheads can be patched into the headphone matrix as opposed to just a stereo pair of "drum kit" tracks — allowing a bass player to bring the kick drum up a bit if they find it helps them lock in with drummer.

Additionally, the 2-mix from the console is usually patched into the headphone matrix, giving musicians access to the "control room" mix as well. If a musician gets confused or frustrated with their independent headphone mix, they can always mute their mix and use the control room feed. When it comes time to overdub, Ethan encourages musicians to kill the individual tracks and use the 2-mix, so if recording is moving quickly from track to track, it isn't necessary for an assistant to also be patching along at a headphone station. Finally, a DAT machine may be hooked up to the stereo output of the Mackie 1604 for recording the headphone mix in case there's something special happening due to a particular balance between tracks.

### COMFORT-ABILITY

While most engineers and producers might be running for the studio exit after an extended workday, that is not as strong an impulse at Kingsway. Ethan feels the studio is "large enough to walk upstairs and be in an altogether separate place. Having separation between the work space and living space is important, but when you reduce the unpleasant aspect of working in more of an office environment and enhance the comfort level, then that need for complete separation is not the same. Longevity of the work day is maintained by everyone's satisfaction from being in the room, being happy to continue working — rather than feeling like they've stepped in and punched a time card for the day.

"Making sure there's a conducive mindset to inspiration is more important than any real technical question or any piece of gear that we use. There is a sacred nature to what happens in the studio. Everyone here is encouraged to treat it that way. Playback is a quiet, respectful, and almost grand experience. You don't disturb that with unnecessary conversation or any activity that would distract people from listening. Of course, discussion happens — it's not church — and not every producer or engineer works the same way. But every studio with a tradition of making good records develops their own school of doing things."

Ethan describes his favorite aspect of Kingsway as being that "the fabric of your work is not within the clinical nature of working in most studios. It is your home where you stay and sleep, where you do some living of your life other than the in-studio work. It's not an office you work out of. In a way, it's a bed and breakfast with a console," he muses. "It points you in a direction more towards creativity and experimentation, working the musical side of things rather than the technical filter everything is going through. Usually people show up the first day, eyeball the situation, and raise an eyebrow. But after they have been here for a day, they end up loving it because what you might give up in the way of a treated, refined control room you gain in the fact that everyone is inspired to be there."

*Ethan Allen may be reached at 504-522-3277 or through Kingsway Studio at 504-561-1127.*

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CIRCLE 13 ON FREE INFO CARD





# Musician-Owned Studio



Pictured: Brian Wilson.  
Photo by Harry Langdon

Brian Wilson, St. Charles, IL

"My wife knew I needed the right environment to make music in," says Brian Wilson. The right environment, in the case of the former Beach Boys leader, songwriter, and producer, is a 4000-square-foot SSL recording facility on the lower floor of Wilson's second home in the Chicago suburb of St. Charles, Illinois. This is where he did most of the work on his new album, *Imagination*. The disc is replete with Wilson's sunshine harmonies and trademark lavish arrangements. It's a glowing affirmation from a man who has emerged victorious from years of well-publicized psychological and drug dependency problems.

Wilson still spends a lot of time at his house in Beverly Hills in sunny California. His St. Charles residence is a hybrid retreat/workplace: a safe haven from the crazy world of L.A. and the music biz. The house is on lakefront property. The place next door belongs to Wilson's coproducer, Joe Thomas, who has been part of Brian's team since the 1996 Beach Boys tribute album *Stars and Stripes*. The two men actually owe the whole cozy setup to their wives, who discovered St. Charles on an antiquing foray.

"The studio took seven months to build," says Wilson. "Meanwhile, Joe and I were writing a lot of songs. And as soon as the studio was done, we started recording there."

The end result is, as Joe Thomas puts it, "not your average project studio. We have an 80-input SSL G+ console that's kind of the cornerstone. We record with two Otari DTR 900's [digital 32-track tape machines]. And for the more intricate sounds we've got a Studer A827 [analog 24-track machine]. We'll put drums, bass, or certain other instruments on that. Then we've got 16 tracks of recording in our Pro Tools system. So it's about 104 tracks in all. But we usually go over that and have to bounce down."

**CONSOLE:** 80-input SSL G+ Series

**OUTBOARD GEAR:** Lexicon Primetime, PCM60 [2], PCM70 [4], LXP-1, LXP-5, and PCM42 [2]; Yamaha SPX900 [2], SPX1000, SPX90 [2], and MEP4; Klark-Teknik DN780, DN1500 comp. and DN3600; Ensoniq DP4+ reverb; GML 8200 Series II parametric EQ; Summit TLA-100A tube compressor and Dual Tube parametric EQ; TC Electronic 2290 [2] and M5000; AMS DMX 15-80S and RMX 16; Valley Gate; Drawmer DS201 [4]; UREI LA4 [2], 1176LN [3], and 1178; Teletronic LA-2A [2]; Studio Technologies Mic PreEminence; Eventide H3000 and 910; dbx 160; BBE Sonic Maximizer [2]; Korg Digital Rack Tuner w/Calzone flight case; EMT 140 Plate Reverb; Lexicon 480L; Apogee AD 1000

**TAPE DECKS:** Sony PCM 2700 DAT [3], Umatic 3/4-inch video machine, and 2500 DAT; Otari DTR-90 DAT [2], DTR-900 32-track [2], and Autolocator for DTR-900 [2]; Studer A827 w/Autolocator; Alesis ADAT XT; Panasonic SV-3700 DAT [3]; Hitachi VCR FX602, TASCAM DA-30 DAT, 102 Mark II [4], and 112R MkII cassette deck [3]; Akai GX 912 cassette deck and Silver cassette deck [3]

**CD PLAYERS/RECORDERS:** Sony CDP391 CD player; Marantz CDR620 CD writer and PMD320 CD player; JVC CR82504 6-disc CD player

**HEADPHONES:** AKG K141 [6] and K240M [4]; Fostex T20 [3]

**DI BOXES AND HEADPHONE MONITORING:** Whirlwind Director direct box, IMP2 DI [10], and headphone box [3]; PROCO headphone box [2]; Private Cue monitoring station [8]

**POWER AMPLIFIERS:** Yamaha P2250; Hafler Pro 2400 [2] and Pro 5000 [2]; QSC MX1500; Fostex 5030 line amp; Dwight Cavendish distribution amp; Private Cue distribution amp

**MONITORS:** Genelec 1031A studio monitors [2]; TAD 1016 monitors [2]



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# Indie Record Label Studio



Pictured: Nile Rodgers.  
Photo by Wes Bender

Sumthing Else Musicworks

There's no question that Nile Rodgers has worked as a producer with some of the most influential artists in the music business including Chic, David Bowie, Stevie Ray Vaughan, Peter Gabriel, Madonna, and Mick Jagger. This past year, Nile expanded his musical activities into record distribution with Sumthing Distribution and his label Sumthing Else Musicworks — continuing his strong presence in music.

Nile describes his step into distribution as by saying that he "wanted to have a better relationship with my product as far as its life span is concerned. Here's what my whole life has been: I make a record and after I master it, it's out of my hands... there is no way I'm going to let my part of this business go down. There are too many talented people, too many great artists, there are too many great music chains — hell, they want to sell more records, too, and I want to help them! I want stores calling me going, 'I love that! I want 50,000 more!'"

Nile explained to us that Sumthing Distribution is different from other companies because his setup is on "a one-to-one approach. I can get records to people in a real retail situation because we're small, agile, and we know the buyers. It's like boxing: power is great, but speed always wins because, if you beat the person to the punch, they never have the chance to hit you. My business is modeled after other forms of business, not the traditional record business model. Now when I'm making a record, the things I know as a producer far exceed what I knew when I first started. Therefore, just that expertise allows me to do other businesses."

**CONSOLE:** Mackie 8-Bus console 56x8x2 (32-channel console with 24-channel expander)

**RECORDERS:** Sony 3324S DASH 24-track multitrack; Panasonic SV-3800 DAT machine; TASCAM DA-30 MkII DAT machine;

Nakamichi MR-1 cassette deck; Sony BVU-800 U-Matic video deck  
**OUTBOARD GEAR:** Lexicon 480L w/LARC; TC Electronic M3000 and Fireworx; Eventide DSP-4000 and H-3000SE; Summit DCL-200 tube compressor; Anthony DeMaria Labs compressor/limiter; vintage Neve compressors; Ensoniq DP/4; API 550b modules [8]; Focusrite mic pre/EQ; Avalon M4 mic pre

**MONITOR SYSTEM:** Yamaha NS-10M with Canton subwoofer and Carver amplifiers; Genelec 1032A powered monitors

**MICROPHONES:** Various models from Neumann, AKG, Shure, Audio-Technica, and Soundeluxe

**COMPUTER HARDWARE:** Apple PowerMac G3/300 in a Marathon rack enclosure with 300 MB RAM, 22 GB internal HD, Adaptec 3940UW (SCSI accelerator card), ATI video card, Mitsubishi 15-inch LCD monitors [2], Magma 13-space PCI expansion chassis, Pro Tools 4.3.1, DAE 3.42, MIX core, MIX Farm cards [4], PCI Farm, SampleCell II PCI card, Glyph Trip rack, Seagate Cheetah 18 GB drives [4]

**HARDWARE INTERFACES:** Apogee AD-8000SE [3]; Digidesign 888/24 I/O [2]; Otari UFC24 digital format converter; Apogee PSX-100 converter; Digidesign Universal Slave Driver; Opcode Studio 5 LX MIDI interface

**PLUG-INS:** Digidesign factory plug-ins, JVP, D-Verb, D-Fi, Focusrite D2, TC Tools Reverb and Chorus, MDT, Hyperprism, Antares AutoTune, Drawmer, DINR, TC MegaVerb, Wave Mechanics bundle, VocAlign, Line 6 Amp Farm

**KEYBOARDS AND MIDI GEAR:** Ensoniq TS-10 and ASR-10 [2]; Roland JD-800, JP-8000, JV-2080, JD-990, P-330, MKS-70, and VG-8; Kurzweil K2000rs with orchestral expander; Korg Wavestation A/D; EMU Planet Phatt and Orbit; MiniMoog w/Studio Electronics MIDI modification; various drum machines by Roland and Alesis ■



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# Film/TV Scoring and Soundtracks



Pictured: (l-r) Bob Casale, Bob Mothersbaugh, Josh Mancell, (seated) Mark Mothersbaugh. Photos by Mr. Bonzai



Mutato Muzika, Los Angeles, CA

The folks in Hollywood, moguls and tourists alike, are gawking at a chartreuse spaceship nestled on the Sunset Strip across from the landmark Tower Records. Formerly a holistic hospital known as the "Little Forum," due to its distinctive circular shape and arches with mirrored windows, it is the 9500 sq. ft. home of Mutato Muzika. The company is the brainchild of Mark Mothersbaugh, co-founder of the seminal techno-band Devo and now creator of music at a furious pace for television, film, commercials, multimedia, and the Internet.

Mothersbaugh's credits include the films *Rushmore*, *Rugrats Movie*, *Drop Dead Gorgeous*; TV shows *Dawson's Creek*, *Liquid Television*, *Beakman's World*, and *Rugrats*; and hundreds of commercials for such clients as Toyota, Miller Lite, Universal Studios, Coca-Cola, McDonald's, Nike, Sony DVD.

Mutato Muzika, launched in 1990 and now staffed by eight full-time employees, has created a new home for the members of Devo. Lead guitarist Bob Mothersbaugh (Bob #1) collaborates with Mark, went solo scoring Klasky Csupo's *Santo Bugito* cartoon show for ABC, and now scores *Rugrats*. Rhythm guitarist Bob Casale (Bob #2) is chief engineer/producer. In-house composer Josh Mancell spearheads the interactive division of Mutato, taking on projects such as Sony PlayStation's *Crash Bandicoot* and Activision's *Intersate 82*.

"Progressive concepts drive Mutato," says Mark as he loads up some software in Studio A's Apple Macintosh G4 running Opcode's Studio Vision. "We're open to any style of music and have always been interested in technology." —Mr. Bonzai

**CONSOLE:** CAD (200-input)

## SYNTHS AND SAMPLERS:

Casio VZ-10M; EMJ Proteus 1, Proteus 2, Proteus 3, Orbit, Planet Phatt, Carnival, Audity, Procussion, Vintage Keys, and Morpheus; M DIMINI; Alesis D4; Korg M1/REX, Wavestation AD, Wavestation SR, and M3R; Kurzweil 150 and K2000R w/sampling option; Studio Electronics P Five; Yamaha TG33, TG77, TX816, TG500, and DJX; Oberheim Matrix 1000 and TVS 1 [2]; Kawai K1RII and K5M; Roland MKS-20, MKS-30, MKS-50, MKS-80, MPG-80, U-110, U-220 [2], JV-2080 (fully expanded), D-550 [2], R-70, S-760 [5], JJ-800, and A-80 (88-key controller); EML 101; Opcode Studio 5 LX [4], EMS VCS3 synth

## COMPUTERS AND SOFTWARE:

Apple Macintosh PPC 9600/300 with 128 MB RAM running Opcode Studio Vision Pro version 4; [2] Digidesign 888 I/Os, Video Slave Driver, Pro Tools 4.1; 9 GB Internal HD, 9 GB external [2], 23 GB external drive

## OUTBOARD PROCESSING:

TC Electronic Finalizer+ and Finalizer Express [4]; Roland GP-8 guitar processor; Manley Dual Mono Preamp and Pultec Stereo EQ; Presonus Stereo Compressor [2]; dbx 166 compressor [2]; UREI 1176 compressor [2]; Ensoniq DP/4+; Lexicon PCM 70 and 300L; Yamaha SPX90; Tech 21 SansAmp; Publison Infernal Machine

## RECORDERS:

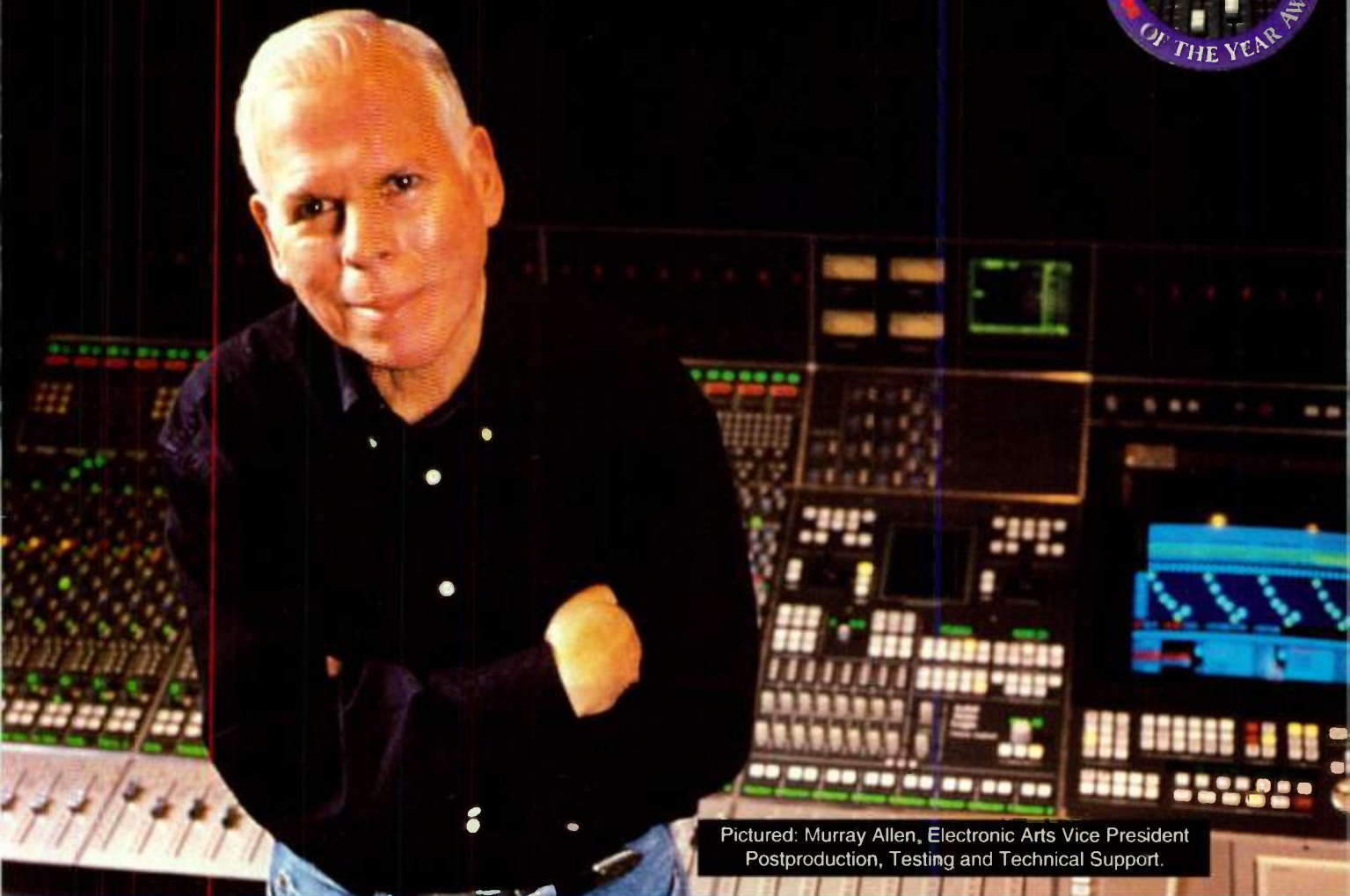
TASCAM DA-88 [4]; Panasonic SV3700 DAT machine

## AMPLIFIERS:

1958 Fender Amplifier (issue #017), WEM Amp ■



# Video Game/Multimedia Studio



Pictured: Murray Allen, Electronic Arts Vice President Postproduction, Testing and Technical Support.

Electronic Arts is the largest developer of Interactive Software in the world. They have many offices worldwide, but the corporate headquarters are located in Redwood City, California. They chose to build their flagship studio at this location.

The studio complex contains two machine rooms, three Avid editing suites, one game capture room, four sound design studios, two programmer suites, a recording voice-over studio, a small 5.1 mixing studio, and a large 5.1 mixing studio.

The dimensions on the large mixing studio, pictured and described here, are 24 feet x 32 feet x 12 feet high. For video projection a Proxima 9300 LCD projector is used. This studio has a NC 15 rating.

**CONSOLE:** 96-channel SSL Avant w/Ver.3.0 software

**COMPUTERS & SOFTWARE:** Dig Design Pro Tools124, 888/24 [4], dual PT24 core cards, and Five DSP farms; SampleCell2; plug-ins by Waves, TC Electronic, Metric Halc, etc.; Peak 2.0, Barba-Batch, Infinity, etc.; Mac 9600 in a Marathon rack mount chassis; Rorke removable hard drives (Seagate Cheetahs and Barracudas); Gefen Systems monitor and A.D.B. Extendit boxes; MOTU Digital Time Piece

**DIGITAL RECORDERS:** Sony 7030 timecode DAT machine and PCM-800 [4] w/sync cards and remote; Panasonic 4100 DAT machine

**AMPLIFIER:** Hafler Pro 1200 amp

**MONITORS:** Genelec 1038 [3] (mains), 1092 [4] (surrounds), and 1094 [2] (subs); Auratones [2]

**VIDEO:** Micro-perf screen; Proxima 9300 LCD projector w/custom low noise housing

**PROCESSORS:** Eventide H3500; Lexicon MPX-1 and LXP-15; Sony R-7 and D-7; Aphex Dominator 2, Compellor, Expressor, and Aural Exciter C2; Opcode Studio 5; TC Electronic Finalizer plus; SansAmp Tech 21; Drawmer Quad gates; UREI LA-22; TC Electronic Gold Channel mic pre; Sony PSX Sound Artists development hardware

**SURROUND ENCODER/DECODERS:** Dolby SE-U4 and SD-U4

**PLAYBACK DEVICES:** TASCAM CD-401mk2 CD player; Sony DVD player

**CONVERTERS:** Apogee DA 500 and AD 1000; Aphex 124A Bump boxes

**MICROPHONES:** AKG C 460, C 414, and C 12 (Klaus Heyne mod.); Crown S.A.S.S. MkII; Earthworks Ornnis and Cardioids; Neumann TLM 170; Sennheiser 421, MKH 60, MKH 40, and MKH 30; Shure SM57 and SM58; SonicStudios DSM-6S/EH; Sony ECM-55

**REMOTE RECORDING:** HHB PortaDATs [2] and Sony PCM-800 w/road case and cabling

**DATA STORAGE SYSTEM:** Transoft Fiber Network System; Microsoft database, search and retrieval software

Electronic Arts, Redwood City, CA





# Project Record of the Year

Beastie Boys Hello Nasty

Way back in 1986 — shortly after the pop breakthrough of Run-DMC — a bunch of loudmouth brats from New York City released their first record, *License To Ill*. While it may not have been... sophisticated, it certainly had a lot of energy and attitude. *License To Ill* quickly became a hit and was, in fact, the first rap album to hit #1 on the pop chart. Almost 14 years later, Adam "Ad Rock" Horovitz, Mike D, and Adam "MCA" Yauch — a.k.a. The Beastie Boys — are still cranking it out, exemplifying the manner in which project records are made. Before recording *Check Your Head* in 1992, they built G-Son, their own studio-office-basketball court that eventually became home for the Boys' label, Grand Royal. It's like a project recording dream come true.

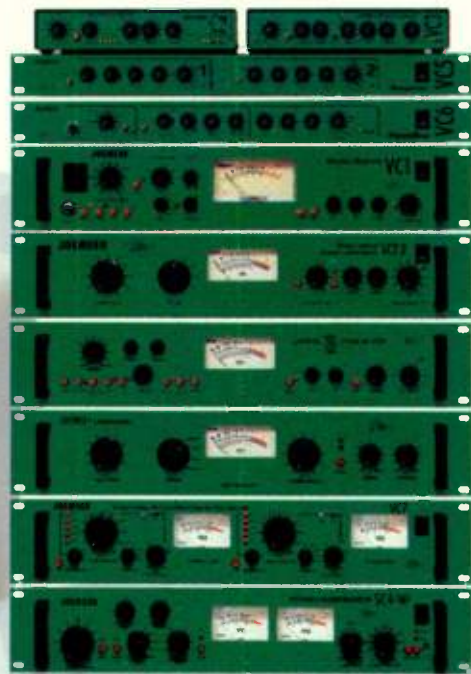
*Hello Nasty* is the latest offering from The Beastie Boys; work on the CD began at G-Son in Los Angeles, CA around October 1995. Soon after they started making *Hello Nasty*, Yauch moved back to New York and eventually the rest of the band followed. Work on *Hello Nasty* progressed in New York until the record was released in 1998. The CD marks the first time the group wrote their lyrics together since *Paul's Boutique*. According to Mike D, "On *Check Your Head* and *Ill Communication* most of the lyrics are much more, 'OK you take that and I'll say that' — they're split up. But on this record we went back to the three of us getting together and sharing ideas... it's much more of a collective where we're all saying each other's lyrics, like on *Paul's Boutique*." Mario Caldato Jr. was the engineer and The Beastie's coproducer on *Hello Nasty*. Mario mixed the project at RPM in New York City.

Horovitz is the music-addict in The Beastie Boys. When he's in-between Beastie recordings, he works on side projects like the hardcore band DFL or BS 2000, an experimental beat/collage project. The



EMU SP1200 drum machine/sampler is one of Horovitz's favorite samplers, and he uses it a lot with BS 2000 for sampling, looping, and grooving (he owns three SP1200's, one of which was purchased used from Ice-T). Yauch is the electronics addict of the group, "always tearing stuff apart to see how it works." As a kid in grade school, Yauch collected gunpowder from fireworks until he had enough to build a small bomb, detonating it in the yard of his parents' summer home using a small electronic fuse device that he had developed. ■

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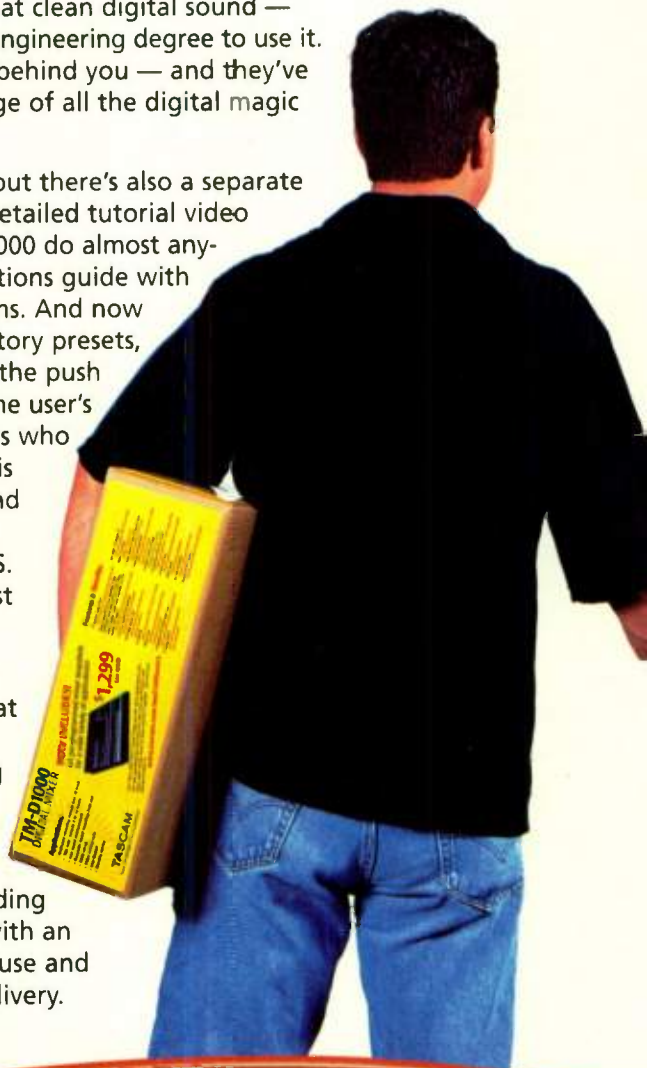
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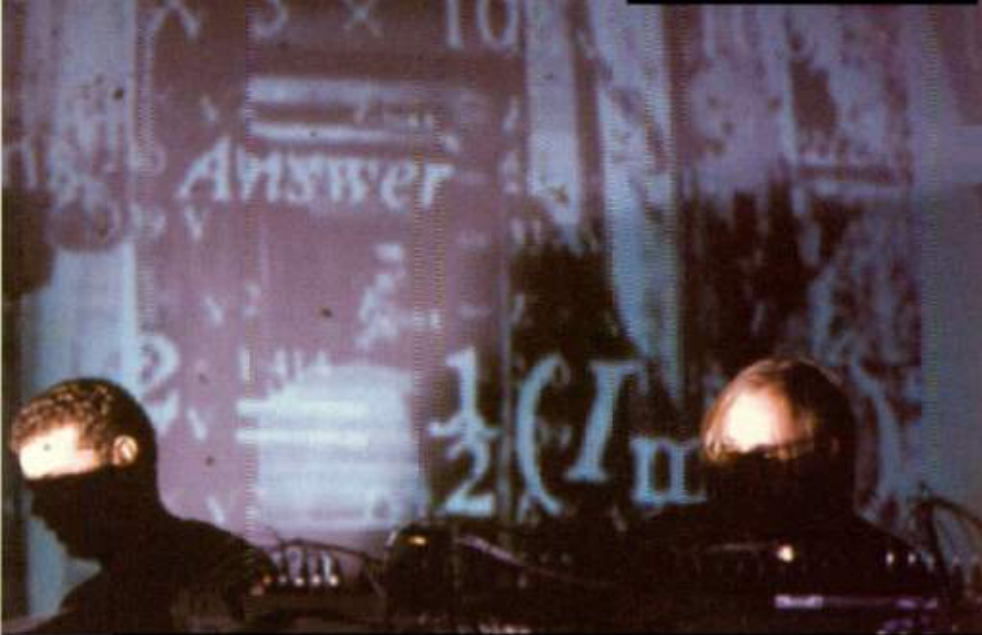
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# Project Studio on Stage

Pictured: The Chemical Brothers  
Photo by Ray Klein



Chemical Brothers

Ed Simons and Tom Rowlands — also known as The Chemical Brothers — made their live debut in 1994 at Weatherall's Sabresonic club. Later that same year, the duo spent 13 weeks mixing and remixing at the Heavenly Social in London — introducing the club's patrons to the joys of dancing to music remixes as diverse as Barry White, Oasis, and Chicago acid. They also took the opportunity at that time to play tracks from their debut CD *Exit Planet Dust*, which would be released in June 1995. *Exit Planet Dust* sold more than 300,000 copies in the United States, more than a million worldwide, and yielded two UK Top 20 singles: "Leave Home" and "Life Is Sweet."

From 1995 through 1998, The Chemical Brothers released several more albums including the EP *Loops of Fury* and the full-length *Dig Your Own Hole* — which was the first Chemical Brothers album to score on the Billboard Hot 100 and Modern Rock charts, reaching gold status in the U.S., selling more than 700,000 copies in the UK, and more than two million copies worldwide. "The Private Psychedelic Reel" from *Dig Your Own Hole* became the Brothers' set-closing anthem for the live shows on their subsequent world tour which included an extended stay at Liquid Rooms in Tokyo, Japan, as well as another sold out run through the States.

Earlier this year, The Chemical Brothers released *Surrender*, a full-length CD that hosts musical guests Noel Gallagher (from Oasis), Jonathan Donahue (with Mercury Rev), Hope Sandoval (of Mazzy Star), and Bernard Sumner (New Order). *Surrender* marks a bit of a departure for the duo's instrumental tracks, revealing influences as varied as hyper-techno in songs like "Under The Influence," funk in "Orange Wedge," and "Got Glint," which shows roots in the early days of house music.

The Chemical Brothers live on the sharp edge of audio technology, touring with a multichannel audio system that is rigged for quadrasonic production, as well as a lighting show provided by Vegetable Vision. During the course of their show, they perform songs from all three albums, remixing on the spot improvisationally. Of course, The Brothers use synths, samplers, mixing boards, effects, and anything else they can get their hands on to make their live show a recreation as well as an extension of their music.

After a successful string of live shows this summer highlighted at Woodstock '99 and Red Rock (Colorado), The Chemical Brothers completed a fall tour, visiting 16 cities in North America. As of this writing, The Chemicals were leaving for a world tour of undetermined length. ■

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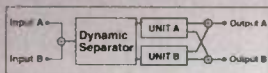


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The SRV-3030D model pictured above includes 24-bit coaxial digital inputs and outputs.





# Project Studio Legacy Award



Pictured: Frank Zappa.  
Photo by Lynn Goldsmith

Frank Zappa, Utility Muffin  
Research Kitchen, Los Angeles, CA

As a master of modern technology, Zappa pushed his project studio to the limits of record production, racking up countless accomplishments in the realms of digital audio and recording technology. He was a frequent AES attendee and he was one of the earliest adherents of digital multitrack recording. Recording technique was an integral part of all his musical creations — so much so that Zappa built the largest Synclavier system in the world and devoted much of his later work to this technology.

He was also a project studio pioneer. His Utility Muffin Research Kitchen was responsible for much of his work. Here, in this Room with a VU that was originally published in our October 1993 issue, we take a look at the facility as it existed shortly before the passing of its illustrious owner.

**HEAD HONCHOS:** Frank Zappa (owner); Spence Chrislu (engineer); Dave Dondorf (maintenance)

**PRODUCTION CREDITS:** Frank Zappa's *You Are What You Is*; *Them Or Us*; *Jazz From Hell: Ahead Of Their Time*; *The Yellow Shark*; *Civilization: Phaze III*; *The Rage And The Fury* — *The Music of Edgard Varese*, and many more

**CONSOLE:** Neve VR-60 w/Flying Faders and Recall

**RECORDERS:** Sony PCM 3324 [2], PCM 1610, and PCM 1630; Sonic Solutions digital editing system with 5 GB hard drive; Sony DAE1100 digital editor; Studer A-80; Panasonic SV-3700 DAT [2]

**MONITORS:** Custom JBLs powered by Bryston 4B amps through White EQ through Audio Art crossovers; 6-channel monitoring system with Yamaha NS-10's powered by BGW-750 amps and Kinergetics SW-100 subwoofers; nearfield system with Lost Chord Acoustic Aztecs powered by Bryston 3B amps

**SAMPLERS:** Largest Synclavier system in the world including 450 MB of RAM, 96 polyvoices, 5.4 GB hard drive, 4.8 GB direct-to-disc recording, and 2 GB optical drive

**MICROPHONES:** Many classic mics including Neumann U47, U67, U87, and KM54; AKG C24 and C12A; Crown PZM

**OUTBOARD GEAR:** Lexicon 224 [2]; Live chambers [2]; Quantec Room Simulator; Zoom guitar and reverb processors; Aphex Dominators and Expressors

**PRODUCTION NOTES:** Says Spence Chrislu: The studio is about ten to 15 years old. It was originally built in time for Frank's recording of *You Are What You Is* and it has evolved through a wide array of Frank Zappa projects. Right now we're in the midst of mixing a new album FZ produced featuring the works of Edgard Varese called *The Rage And The Fury*.

As far as the aesthetics go, UMRK has a great-sounding room with a hardwood floor, plaster walls, and a 25-foot ceiling. The environment gives the studio its own distinct sound. This is a facility where experimentation is encouraged, and, if someone gets an idea, we can immediately stop to try it out. We have the technology to do so, and the creativity to make it happen. ■



# NO WONDER THE HR824 HAS THE BEST BASS RESPONSE OF ANY 8" MONITOR. IT'S REALLY A 12" MONITOR IN DISGUISE.



## TIGHT, RESPONSIVE BASS FLAT DOWN TO 39HZ.

Reviewers and owner's warranty card responses are unanimous: The HR824 has the most accurate bass they've ever heard from an 8-inch monitor. And bass

quality is as astonishing as the quantity. Fast low frequency transients like kick drum slaps and electric bass notes have a crisp, articulation that makes other monitors sound like mush.

## ANOTHER TRANSDUCER INSTEAD OF A PORT.

The more LF transducer cone area a speaker has, the more bass it can produce. But a huge low frequency transducer isn't an option on a compact near field monitor.

To augment primary bass output, other monitors resort to using ducted ports that can convert cone movement into extra low frequency air movement. But for optimal output, a ducted port needs to have the same area as the low frequency transducer — an 8-inch near field monitor would need an 8-inch vent. Needless to say, you haven't seen any vents this big on other near field monitors. When vent size is reduced, bass output is compromised. And, forcing a lot of energy out of small ports can create audible wheezing and whooshing.

Instead, the HR824 adds a large passive transducer with the cone area of another 8-inch woofer. This ultra-rigid, honeycomb laminate piston tightly couples with the HR824's active bass transducer. With a combined cone area greater than a single 12-inch woofer, you get exceptionally extended bass without port noise complaint.

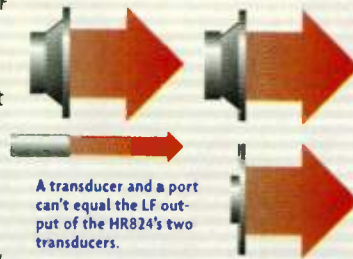
## MASSIVE POWER THAT WOULD PROBABLY POP A PASSIVE MONITOR.

Punching out crisp bass requires a lotta watts. The FR Series™ high-current bass amplifier module inside the HR824 delivers a solid 150 watts of power with peak output in excess of 250 watts (plus another 100 watts for mid and treble). That's significantly more than any other 8-inch active monitor. Moreover, the HR824's servo coupling and ultra-short signal path put that power to work far more effectively than a passive monitor and a 250-watt stereo amp could.

## PART OF A TIGHTLY-INTEGRATED SYSTEM.

Our servo bass system is only one contributing factor to the HR824's amazing accuracy.

Internal power amplifiers are "fed" by phase-accurate, low distortion electronic circuitry instead of a crude coil-and-capacitor



passive crossover. The HR824's proprietary logarithmic wave guide not only widens treble dispersion but also smooths the midrange transition between high and low-frequency transducers. Thanks to the wave guide's flaring design, the HF transducer's output is acoustically the same diameter as the LF transducer's at the critical 3500Hz crossover point.

The HR824's LF transducer even contributes to midrange accuracy. In many monitors, woofer cone harmonic vibrations bounce around inside the enclosure and then exit through the thin woofer cone. The result: smeared imaging and muddled details. Instead of a chintzy chunk of fluff, the HR824's enclosure is utterly packed with high-density absorbent foam. Cone vibrations go in, but they don't come back out.



**DON'T SKIMP.** It's amazing how many studio owners will mortgage the farm for money-is-no-object, esoteric microphones... and then monitor on cheap, passive loudspeakers. If you aren't using some brand of ACTIVE near field monitors you're seriously compromising your creative product.

**HEARING IS BELIEVING.** We urge you to visit your nearest Mackie Designs Dealer and carefully audition all of their active monitors with some demanding, bass-rich program material. Judge our claims

(and those of our competitors) for yourself. We think you'll agree that the HR824 is truly the best of the best.



Rear view: The HR824's electronics conceal an ultra-rigid, honeycomb composite passive transducer.



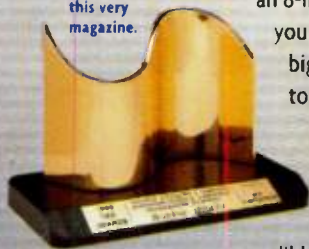
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# BLUE RIBBON

## *nominations*

**O**UR EDITORS TIRELESSLY WALKED THE FLOOR OF THE AES CONVENTION IN NEW YORK CITY TO MAKE SURE WE DISCOVERED ALL OF THE LATEST HAPPENINGS ON THE PRO AUDIO SCENE. THEN WE GOT TOGETHER AND DISCUSSED (ARGUED) ABOUT WHAT PRODUCTS DESERVED TO BE FEATURED ON THE FOLLOWING PAGES. NOW IT'S YOUR TURN — CHECK OUT OUR NOMINATIONS, AND USE THE BALLOT ON PAGE 98 (AND ON [WWW.EQMAG.COM](http://WWW.EQMAG.COM)) TO LET US KNOW WHAT PRODUCTS YOU FEEL SHOULD WIN COVETED EQ BLUE RIBBON AWARDS.



## APHEX MODEL 1100 MIC PREAMP

The new Aphex Model 1100 discrete Class A microphone tube pre-amplifier offers 24-bit/96-kHz digital outputs and features Aphex's MicLim protection circuit. The dual-channel 1100 delivers an EIN specification of  $-135$  dB and the presence of the MicLim circuit provides an additional 20 dB of headroom to diminish the likelihood of preamp overload. The A/D converter integrated in the 1100 is scaled to clip at the same point as the mic preamp, effecting digital conversion at the highest possible resolution without overload. The 1100 features AES/EBU digital audio output, clock synchronization options to allow locking to standard "word clock" and to AES/EBU clock received via back panel BNC input, an all-discrete Class A PNP first stage, and the patented Reflected Plate Amplifier tube circuitry in the second stage and in the output stage. The 1100 will be available Winter 1999/2000 at a suggested retail price of \$1995. For more information, call Aphex at 818-767-2929, fax them at 818-767-2641, or visit [www.aphex.com](http://www.aphex.com). Circle EQ free lit. #122.

## BOMBFACORY TDM PLUG-INS

Bombfactory's new plug-ins are digital versions of classic studio gear and work to create a unique vintage sound. The Voce Spin provides accurate simulation of the rotating speaker, including speaker crossover, horn resonance, different motor speeds, and pulley lengths, among other features. The Moogerfooger incorporates authentic analog designs from electronic music legend Bob Moog. The Lowpass Filter features a 2-pole/4-pole variable resonance filter with envelope follower. Users can achieve classic '60s and '70s sounds on bass and electric guitar, and the Ring Modulator provides a wide-range carrier oscillator and dual sine/square waveform LFO. The Classic Compressors are digital versions of the LA-2A and 1176, and the SansAmp PSA-1, developed with Tech 21, authentically recreates all 49 original SansAmp presets. For more information, call Bomb Factory Digital at 818-558-7171, fax them at 818-558-1611, or visit [www.bombfactory.com](http://www.bombfactory.com). Circle EQ free lit. #123.

## CAKEWALK PRO AUDIO 9

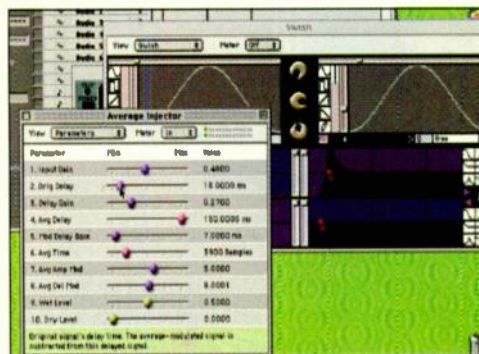
Cakewalk's Pro Audio 9 is the latest version of the multitrack recording software. The upgrade includes WavePipe technology in addition to several audio enhancements. Cakewalk's WavePipe Technology delivers instantaneous audio processing performance by providing direct communication to wave compatible sound cards, professional caliber response to mixing, muting, solo, record, effects parameters, and other real-time audio functions. The Pro Audio 9's AudioX support delivers direct control over advanced features in audio hardware such as DSP effects and SMPTE options. Other audio enhancements of Cakewalk's Pro Audio 9 are stereo track support, smooth audio scrubbing, enhanced mixdown options, new guitar features, MIDI features such as the Multitrack Piano View, and the Style Enhancer and Session Drummer MIDI FX Plug-ins. The Pro Audio 9 also features a Streamlined User Interface and MP3-encoding functions. Pro Audio 9 is available at a suggested retail price of \$429. For further details, call Cakewalk at 888-CAKEWALK, fax them at 617-441-7887, or visit [www.cakewalk.com](http://www.cakewalk.com). Circle EQ free lit. #124.

## CYCLING '74 PLUGGO

The audio processing plug-in software Pluggo enables Macintosh signal processing applications developed with MSP audio objects to work

as plug-ins for applications that support the Steinberg VST or MOTU MAS plug-in formats. A set of DSP extensions to the MAX 3.5 graphical programming, MSP consists of over 75 objects that synthesize, process, analyze, and delay audio signals in real-time on a Power PC Mac OS computer. Pluggo brings MSP's approach to

DSP sound design to a broader audience of sequencer end-users and audio plug-in developers. Pluggo and MSP are available for the suggested retail prices of \$74 and \$295, respectively. Contact Cycling '74 at 415-621-5743, fax them at 415-621-6563, or visit [www.cycling74.com](http://www.cycling74.com). Circle EQ free lit. #125.



## DIGIDESIGN PRO TOOLS 5.0

A major upgrade to the digital audio workstation, Digidesign Pro Tools v5.0 introduces a wealth of new software editing features for audio post production, expanded OMF file interchange (with the optional DigiTranslator), and support for new hardware options that offer strengthened integration with Avid video. Pro Tools 5.0 makes it easy to access and edit both MIDI and audio in a single window and delivers several professional MIDI sequencing options, including graphic controller editing, piano roll display, 128 MIDI tracks, change velocity, and change duration. Among other new features of Pro Tools v5.0 are new editing tools for music and post, including single-key commands, stationary playhead, "source/destination" style editing, "fill paste" with automatic looping, and MIDI/audio automation shape drawing and selection. Pro Tools v5.0 is available mid-November and runs on Digidesign Pro Tools/24 digital audio workstations for Mac OS and Windows NT, with prices starting at \$5995. Visit [www.digidesign.com](http://www.digidesign.com) for further details or call 888-707-3444. Circle EQ free lit. #126.

## DYNATRONICS MODEL 255

The Dynatron Corporation Model 255 digital reverberation unit is a modern implementation of a classic algorithm. The Model 255 meets current studio needs by accepting stereo input and outputting five reverberation channels with all inputs and outputs supporting the AES/EBU interface standard at sampling rates up to 48 kHz. The initial reverberation delay of 60 ms has been extended to 140 ms. The Model 255 is scheduled to begin shipping in January 2000, and will be sold through G Prime Ltd. at a suggested retail price of \$4995. For more information, contact G Prime Ltd. at 212-765-3415, fax them at 212-581-8938, or visit [www.gprime.com](http://www.gprime.com). Circle EQ free lit. #127.

## EUPHONIX SYSTEM 5

The Euphonix System 5 is a new large-format digital console that addresses the accelerating requirement for digital audio consoles in the analog-dominated high-end markets. The System 5 is designed to fulfill digital audio requirements brought on by the transition to digital multi-channel sound for DVD-Audio, Dolby Digital, and DTS



# BLUE RIBBON

*nominations*

formats. The Euphonix System 5 offers a traditional-style user interface together with 24-bit/96-kHz digital audio, 5.1 surround sound processing, Total Automation, and SnapShot Recall. For more information call 650-855-0400 or visit the Euphonix Web site at [www.euphonix.com](http://www.euphonix.com). Circle EQ free lit. #128.

## EVENTIDE ORVILLE

The new signal processing effects box from Eventide is a self-contained, independent signal processing platform, incorporating Eventide's digital audio pitch shifter, the UltraShifter. Offering multi-channel operation at 24-bit/96 kHz, the Orville is organized as an A/B machine to simultaneously process two completely independent multichannel effects. Users have up to 174 seconds of recording/sampling with real time pitch-change and time-change on playback. The Orville also features an interface to be used with Eventide's VSIGfile software, which allows users to create "signature" effect modules using the software and a PC. For more information, call Eventide at 201-641-1200, fax them at 201-641-1640, or visit [www.eventide.com](http://www.eventide.com). Circle EQ free lit. #129.

## FAIRLIGHT MERLIN

Merlin is Fairlight's new disk-based multitrack recorder that delivers a full upgrade path to 48-track/96-kHz capability, full editing functions, MFX file compatibility, and direct file exchange. Merlin features scrolling waveforms, editing functions, direct file exchange capability, and audio networking, as well as a streamlined recording controller optimized for fast and familiar operation. Merlin delivers true nonlinear random-access performance while retaining a simple and familiar user interface. Fairlight's Merlin employs advanced DSP architecture featuring the 40-bit SHARC processor, and records 24 tracks of audio with 24-bit resolution at standard sampling rates to 48 kHz. Among its many features, Merlin sports a full-color video display and offers a number of recording modes to suit different applications. Merlin I/O can be



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- ASIO, Sound Manager & WAVE drivers
- All at the price of a pro sound card!



configured as all-digital or digital-plus-analog. For further details, call Fairlight at 800-4-FAIRLIGHT and visit [www.fairlightesp.com.au](http://www.fairlightesp.com.au). Circle EQ free lit. #130.

## HARRISON SHOWCONSOLE

Harrison's LPC (Live Performance Console) is a new mixing console jointly developed by Harrison and Showco. The LPC's proprietary IKIS event-based automation provides automation on a scale not found in sound-reinforcement consoles. IKIS instant recall provides (as the name suggests) recall and reset of every function on the entire console almost instantly. IKIS will accommodate up to 10,000 recall settings, called Cues, instantly available at the touch of a button. Integrated MIDI control is also available to access outboard effects or lighting cues from the console Cue recall. An extensive, automated input selection system greatly reduces the actual active channels required for a given section of a performance. The console is available to the touring market exclusively from Showco ([hpage@vlint.com](mailto:hpage@vlint.com)) and to all fixed venue markets exclusively from Harrison ([info@glw.com](mailto:info@glw.com)). For more information, contact Harrison at 615-370-9001, fax them at 615-370-4906, or visit [www.harrison.com](http://www.harrison.com). Circle EQ free lit. #131.

## HOT HOUSE ARM 265 ACTIVE REFERENCE MONITORS

Hot House's new ARM 265 Active Reference Monitors are bi-amplified and designed to pass the input through an ultra-wide-band, high-speed signal path. Capable of solid response at the frequency ex-

tremes, the 265 has realistic transients and three-dimensional imaging. Three simple switches on the ARM 265 provide for system gain matching as well as high- and low-frequency room compensation. The ARM 265 is configured vertically as a Virtual Point Source and exhibits flat response over a 9-1/2-octave range. With long excursion 6.5-inch woofers and a low distortion recessed dome tweeter in a rear-vented 6th order alignment, coupled with a 150 kHz electronic signal path, the system provides low harmonic and phase distortion for long-term critical monitoring in the near or midfield. The cabinets feature full radiused edges on all six sides in black, red, or golden oak veneer and are available for \$6499 a pair. For more information, call Hot House at 914-691-6077, fax them at 914-691-6822, or visit [www.hothousepro.com](http://www.hothousepro.com). Circle EQ free lit. #132.

## KIND OF LOUD TWEETIE AND WOOFIE

Kind of Loud Technologies has released the follow-on products to their SmartPan Pro 5.1 panning plug-in for Pro Tools: Tweetie and Woofie. Tweetie is a monitoring and calibration plug-in for surround sound production, featuring system calibration with trim control, adjustable delays on each channel to compensate for speaker placement, and overall reference level control, including a 20 dB dim button. Tweetie provides intelligent downmixing from 5.1 to stereo for previewing mixes on non-surround playback systems. Woofie offers bass redirection tools to accommodate a variety of potential playback speaker arrangements. Woofie also offers subwoofer signal previewing before the encode/decode process, saving users time-consuming surprises. Tweetie and Woofie are available for \$495 each. For more information, call Kind of Loud Technologies at 831-466-3737, fax them at 831-466-3775, or visit [www.kindofloud.com](http://www.kindofloud.com). Circle EQ free lit. #133.

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
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*\* A Crown IQ Interface is required for initial programming, but is not required to be part of the installation.*



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# EQ Live

EQLIVE

## DRAWMER MX60 FRONT END ONE CHANNEL STRIP

BY MIKE  
SOKOL

Drawmer gear is in virtually every "A" rack on the planet. Their gates and compressors are renowned. Therefore, it comes as no surprise that they

Get a lot  
of live  
instrument  
control in  
a small  
package

have more than just a little expertise in dynamics control and signal processing. What they've done with the MX60 is bundled a whole bunch of processing gear into a single rack space and made it affordable to just about everyone. Let's go down the feature list one by one, since there really is a lot of stuff in one small package.

First, there's a mic pre with 48-volt phantom power and line-level inputs for both -10 and +4 levels. A

switch is only active for the DI input. A 4-segment LED shows input signal level, and a gain control gets you from 0 to 60 dB of boost.

In the dynamics section, there's a gate with variable threshold and a fast/slow release. The release rates seemed nicely selected for most program material, and the gate was good for eliminating a little string buzz from the bass guitar between licks. Following is a de-esser, which offers both male and female settings. This worked quite well on some narration tracks I had been sent a while ago, where the male talent had a distinct "whistle" on every "S" sound. A simple adjustment made it go away without affecting the basic timbre of the material. The compressor is nice, having fully adjustable ratio and rate; in addition, a makeup gain control is

allowing you to jack-in your favorite bass guitar or acoustic pickup. A 20-dB pad is included for really hot signals, and a bright switch

allows you to add in anywhere from just a hint of overdrive all the way to AM radio slash and burn, in low-, mid- or high-frequency bands.

Finally, a master pre-fader limiter keeps you under control, and is followed by a final gain control with an 8-segment LED. It really is like having a rack full of gear in one rack space. Almost as an aside, there's an insert jack, which would allow you to patch in an outboard processor, if desired.

So how's the sound? Well, it's Drawmer quality all the way — with only one exception. There's a rather loud *pop* when switching between the mic pre and the line-level inputs. This could be distracting in a studio setting, or ear-shattering in a live setting. So I'll ask the engineers at Drawmer to look into it and provide a fix. I would hate to see a single blemish spoil an otherwise beautiful product. (Brad Lunde from Drawmer's distributor, Transamerica Audio Group, adds: "Drawmer has since made a change to the MX60 to speed up the settling time when switching phantom power on and off, plus added an RF suppression cap. This should solve the problem. However, Drawmer still recommends users not switch between line to mic when the



switch on the front panel allows you to select between the mic and line inputs without plugging and unplugging. A polarity reverse and 100 Hz cut are also included. There's a front-panel DI input for instruments, al-

added right after the dynamics stage.

Next in line is a 3-band equalizer with shelving low-pass and high-pass filters, plus a fully parametric midrange. Then the signal passes to a 3-band "tubesound" circuit that al-

phantom is on and the gain is at or near full. This could make the pop you describe.")

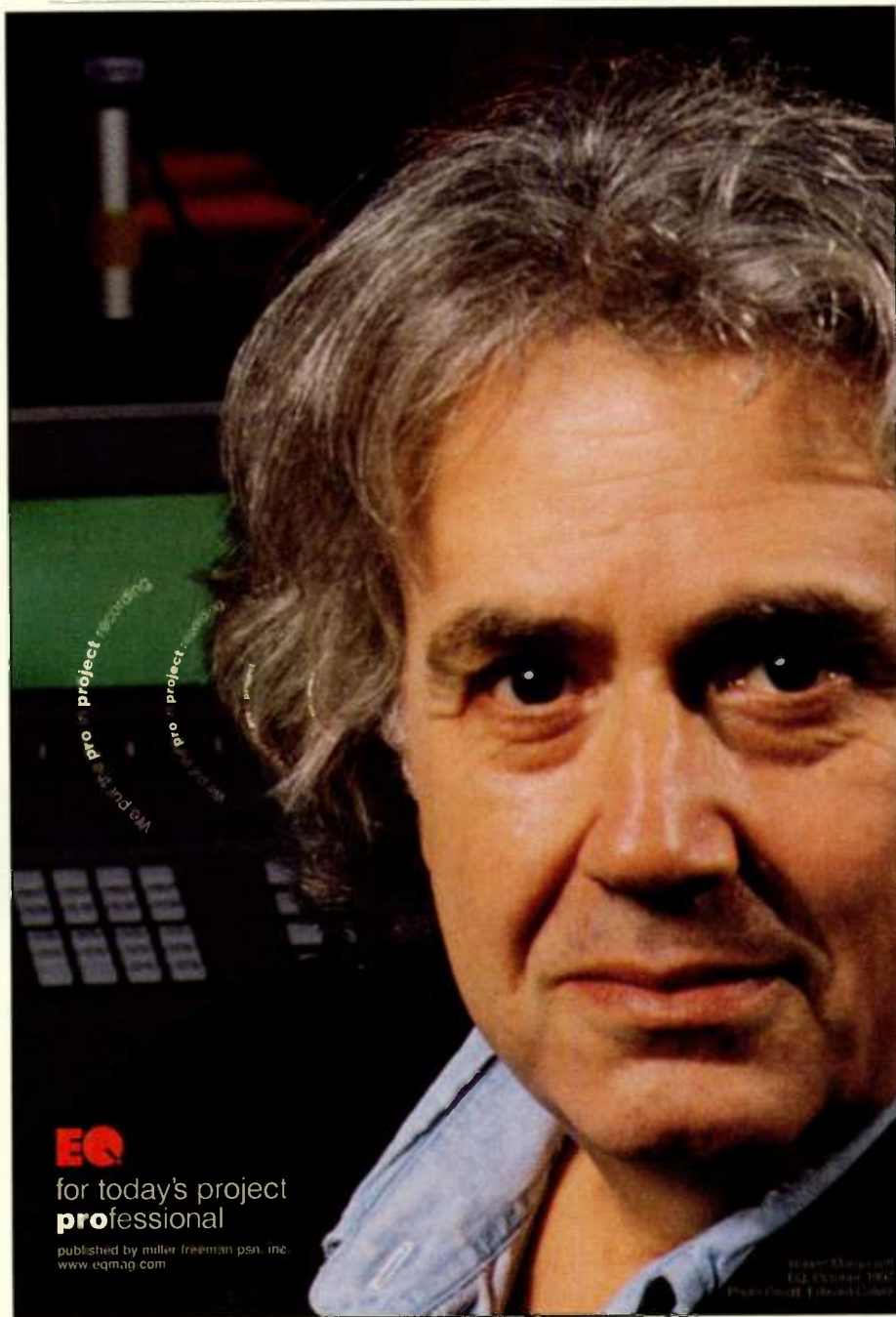
The input section and various stages had lots of extra headroom, so even when I intentionally tried to



overdrive it there was no inter-stage crunch. The other thing that bothered me a little was that the 100 Hz low-cut filter seemed a little high in frequency for my use. It seems I'm always either dumping microphone stand noise below 50 Hz in the studio or wind noise on a hammer dulcimer mic above 150 Hz on a live stage. But I guess 100 Hz is fine for most users. I don't have a lot of use for gates in a VO booth, but this one did quite well.

Further, it did work perfectly being set just above the noise floor of a C.B. Martin bass guitar.

Each processing section is intelligently laid out, and LEDs tell you when the various processing is in or out of the signal chain. Excluding the mic/line switch, all other selections were noiseless. This would be a great add-on piece both for a basic studio without a big budget for external processing, as well as for someone who



**EQ**

for today's project  
professional

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Photo: [unreadable]  
Photo: [unreadable]

## ROAD Test

**MANUFACTURER:** Drawmer, distributed by Transamerica Audio Group, 2721 Calle Olivo, Thousand Oaks, CA, 91360. Tel: 805-241-4443. E-mail: transam-ag@aol.com. Web: www.transaudiogroup.com.

**APPLICATION:** Preamp strip for single channel audio processing or recording. Put it in a voice-over booth, use it to upgrade a simple console, or take it out live to tame an out-of-control artist.

**SUMMARY:** A full-featured channel strip with lots o' processing in a 1RU package. Includes a selectable mic/instrument/line-level pre-amp with phantom power, 100 Hz low-cut and brightness switches, variable gate, fully adjustable compressor, male/female de-esser, 3-band equalizer with parametric mid, 3-band tube sound processor, and overall limiter. And it's got blinky lights; a Swiss Army knife in a box.

**STRENGTHS:** Everything you need to tame that wild vocalist or crazed bass player in a single rack space; lots of internal headroom so there's no need to handle it with kid gloves; will work with any signal level or impedance you can possibly throw at it (with the exception of magnetic turntable cartridges...do you remember those things?).

**WEAKNESSES:** There's a transient "pop" in the output when switching from mic to line input; the 100 Hz low-cut filter could be at a lower frequency, because while the 100-Hz point is fine for live use, in the studio I find that 50 Hz is a little more usable.

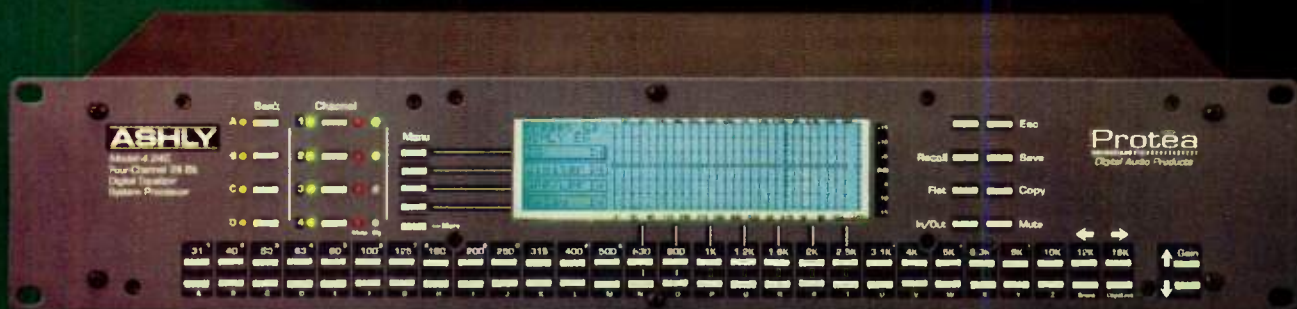
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**EQ FREE LIT. #:** 102

wants lots of extra control for a live instrument without the real estate of a bunch of external gear. A very well thought out and useful design.

*Mike Sokol is a musician/engineer/wordsmith who still has the Hammond B-3 and Leslie from his youth (you may be appropriately envious). He's looking for an Ampeg SVT head to complete/restore his collection of retro gear. If you've got one collecting dust, dial up his Web site and play let's-make-a-deal. Contact him at [www.soundav.com](http://www.soundav.com) or [jmsokol@intrepid.net](mailto:jmsokol@intrepid.net) for both new and classic ravings. You're never too old to rock 'n' roll.*



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The incredible new Protea Digital Equalizer from ASHLY is like nothing you've ever experienced for live sound, permanent installations, or even recording. It completely redefines the possibilities of equalization with four independent channels of 28-band, 1/3-octave equalization, accomplished in full 24-bit digital resolution. Its simple, push-button interface is as close to analog as you can get, while maintaining unprecedented control over all parameters via a high-resolution LCD display which provides immediate visual representation of all functions. Need to adjust a frequency? Press the button and watch the fader move in real-time on the LCD display. Plus, it provides built-in full-function compressor/limiters, time-delay alignment functions, high and low pass filters, and much more, all fully



Optional 4.24RD Full-Function Remote Control with Display

programmable and storable. Whether you operate it from the front-panel, from the available full-function remote (which works from up to 1000 feet away with an ordinary mic cable or snake), or via the free Protea System Software for Windows™, you won't believe the control and quality the Protea affords you. We've even designed it to grow with you, with 2- and 4-channel digital equalization slave units available for expansion of up to sixteen channels of precise, reliable digital equalization. Never has digital equalization been so easy to use.



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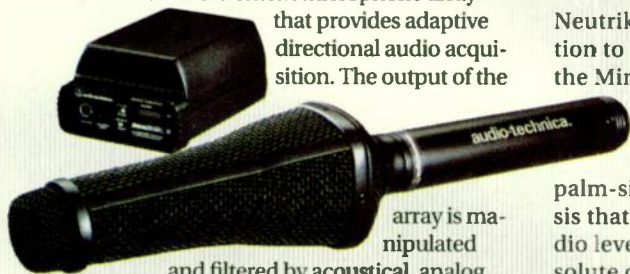
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## ROAD GEAR

### NEAR AND FAR

Available as an AT895/RK Remote Kit for field use and AT895/MK Mounted Kit for studio and fixed-install applications, Audio-Technica's AT895 adaptive-array microphone systems incorporate a DSP-controlled five-element microphone array that provides adaptive directional audio acquisition. The output of the



array is manipulated and filtered by acoustical, analog, and digital means to enhance the pickup of a sound source from a desired direction relative to unwanted background noise or interference, providing cancellation of up to 80 dB. The AT895 functions for handheld interview use or long-range sound pickup in the field, in the studio, or in security operations. For more information, call Audio-Technica at 330-686-2600, fax them at 330-688-3752, or visit [www.audio-technica.com](http://www.audio-technica.com). Circle EQ free lit. #145.

### PLAY IT AGAIN, SAMSON

Samson's new UHF EarAmp has been designed with several breakthrough features such as a diversity receiver for reception in hostile RF environments. The EarAmp also provides frequency versatility to offer more options in different live sound venues. The EarAmp offers a receiver with true diversity circuitry to reduce dropouts and interference. Housed in a metal case and equipped with an array of onboard controls that enable the performer to optimize the system's audio quality with minimal noise levels, the receiver delivers up to 200 mW of stereo audio to the system's earpieces. The system's rack-mountable transmitter's front panel features a back-lit, two-line LCD that displays the current operating group, channel, and corresponding frequency, along with an LED audio level

indicator for both channels. Other features include main and auxiliary inputs that operate in mono and stereo with independent gain adjustment and a high-performance limiter to reduce distortion. For more information, call Samson Wireless at 516-364-2244 or visit [www.samsonotech.com](http://www.samsonotech.com). Circle EQ free lit. #146.

### PALM POWER

Neutrik's Minilyzer, the latest addition to Minstruments, complements the Minirator and provides a comprehensive set of audio measurement and analysis functions. The Minilyzer is a palm-sized analyzer for audio analysis that continuously measures audio levels as RMS or peak levels, absolute or relative to a definable reference with selectable units. The accurate frequency measurement, with high resolution of 100 ppm, gives additional functions and acts as the base for distortion measurement. The Minilyzer's balance indicator continuously monitors and displays the quality of signal balance, giving immediate detection of defective or wrongly wired cables. The unit is powered by only three standard AA-size batteries. For more information, call Neutrik USA at 732-901-9488, fax them at 732-901-9608, or visit [www.neutrikusa.com](http://www.neutrikusa.com). Circle EQ free lit. #147.

### CX STEALS THE SHOW

Designed to handle a wide variety of live, studio, and broadcast applications, the Audix CX-211 is a cardioid condenser microphone with a one-inch gold vapor diaphragm, bass rolloff, and a 10 dB pad. The CX-211 features a rugged brass housing, a steel mesh grille screen, and the Audix trademark black satin finish. Op-



eration requires phantom power of 48 to 52 volts. The CX-211 is oriented so that the sound signal enters through the front end of the microphone, which allows for additional rejection of ambient stage noise. For more information, call Audix at 800-966-8261 or visit [www.audixusa.com](http://www.audixusa.com). Circle EQ free lit. #148.

### DBX DRIVES

dbx launches its drive rack loudspeaker management system, designed to be the only device necessary between the mixer and the power amps. The dbx Drive Rack line includes four components — the 480, 481S and 482S, and the 480R. The dbx 480, at the heart of the system, includes four inputs and eight outputs which can be tailored for any configuration. The 480 is fully programmable from the front panel, with the 480R remote control, or through a computer via the GUI port. The 481S and 482S are slave units that offer the functionality and features of the 480, incorporating four inputs and eight outputs, with Euroblock connectors on the 481S and XLRs on the 482S. The 480R is the master remote controller for the entire Drive Rack system and is capable of controlling and programming multiple 480, 481S, and 482S units. It features 31 flying faders that can automatically recall the Graphic EQ settings of any unit on the network. For more information, contact dbx at 801-568-7660, fax them at 801-568-7662, or visit [www.dbxpro.com](http://www.dbxpro.com). Circle EQ free lit. #149.







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CIRCLE 32 ON FREE INFO CARD  
World Radio History



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For those seeking to transfer digital audio between a computer and another S/PDIF-capable device such as a DAT machine, a minidisk recorder, a DVD player, or an audio converter, the answer is the Delta DIO 2496. The Delta DIO PCI Digital I/O Card combines coaxial and optical digital I/O with stereo analog outputs for 2-input/4-output operation at a bandwidth of up to 24-bit/96kHz. In addition, the Delta DIO provides a high-quality built-in D/A converter for monitoring or mixing down from your computer.

For more information call 800-969-6434 or see your local dealer.



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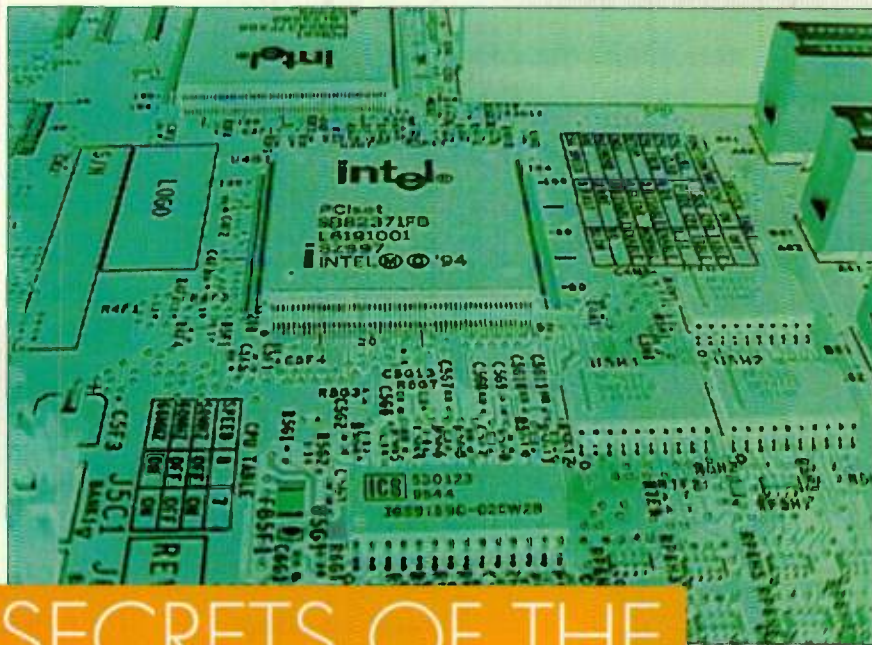
CIRCLE 49 ON FREE INFO CARD

World Radio History



# EQ Drive!

## EQDRIVE!



## SECRETS OF THE MOTHERBOARD

BY PETE LEONI

Next to the CPU itself, the motherboard (MOBO) is the most important computer component — but also one of the least understood. The MOBO handles all input/output operations; think of it as a traffic director, pointing the way for all data to flow in, out, and through the computer.

The motherboard's suitability for audio can make the difference between spending your time creating music and endlessly reciting your mantra while gazing at a deep blue error screen. Luckily, when choosing a MOBO for digital audio recording, we need to concern ourselves with only a few important issues.

1. Will the MOBO support the fastest available CPUs?
2. Does it provide the best combination of high performance and stability for your particular CPU?
3. Will it easily allow for a future upgrade to a faster CPU and more memory?
4. Does it have all the features and pe-

ripheral support needed for your intended digital audio worksta-

tion (DAW) configuration?

### THE HEART OF MOBO IS STILL BEATING

The motherboard's heart is the chip set, which is designed to support a particular CPU family. Although several manufacturers produce chip sets that support Intel CPUs, if you are using an Intel CPU, it's wise to purchase a motherboard that uses an Intel chip set. Many lockups and blue screens can be traced to subtle incompatibilities between Intel CPUs and non-Intel chip sets.

Another consideration that affects any DAW user is that bus mastering drivers written for non-Intel chip sets are generally a lot less efficient than those written for Intel chip sets. This inefficiency translates to a lower track count, higher CPU usage, and reduced real-time effect performance. Because a DAW requires so much computer power, we'll cover only motherboards with chip sets that support the Intel PIII, PII, Celeron, and AMD Athlon. All of these CPUs can deliver the high-speed FPU performance necessary in a DAW.

There are currently two chip set choices for Intel CPUs — the Intel BX and i820 (Carnino) chip sets. Intel's BX chip set is a proven performer and supports the PIII, PII, and Celeron CPUs. Intel's i820 chip set adds support for the newer (Coppermine) versions of the PIII, support for a 133 MHz front-side bus speed, plus a new faster memory called RDRAM (also called Direct RAMBUS).

However, although the new RAMBUS memory technology shows great promise, as of this writing, independent benchmarks have indicated no significant performance increase using the new i820 chip set and RAMBUS memory. You will have to decide if the possibility of increased performance via a future upgrade is worth the extra initial cost.

A different situation exists for AMD's high-performance Athlon CPU. AMD does not plan to make its own MOBO chip set, but instead is working very closely with motherboard makers to avoid incompatibility problems. Apparently, this tactic is working well, because existing Athlon motherboards from Gigabyte, FIC, and MSI all have identically (high) performance.

### DON'T FORGET ABOUT MEMORY

You can never have too much memory. It seems like every new version of Windows gobbles up more, and, in addition, programs such as Samplitude allow you to cache and edit entire audio projects in RAM. Someday soon, even 256 MB may not be sufficient! Check that the MOBO has at least a minimum of three memory slots, each accepting memory modules of at least 128 MB. Many newer motherboards that use Intel's i820 chip sets will support both SDRAM (DIMMs) and the new higher speed RDRAM (RIMMs). Purchase a motherboard that has as many memory slots as possible, and that allows you to configure and mix memory modules of different sizes.

### IS YOUR BIOS GOING SOFT?

The motherboard's BIOS chip is the first

The low-down on which motherboards are really best for audio



place a computer looks when it boots up. All basic operating functions are set in the BIOS screen. BIOS functions such as drive and memory auto-detection have become commonplace, but a recent and welcome development has been the ability to change CPU settings directly from the computer screen (traditionally, changing CPU clock and voltage settings required opening the case and flipping tiny DIP switches, or setting near-microscopic jumper pins). This makes it easy to

upgrade your processor by simply plugging in the new CPU, entering the BIOS screen, and making the necessary adjustments. Motherboards such as the BH6, BX6, and BE6 from ABIT Corporation have paved the way; now many MOBOs offer this option.

#### PLAYING THE SLOTS

If you plan to add a sound card, MIDI card, SCSI card, and a video card or two, the number of available expansion slots

becomes a real issue. A MOBO for a DAW rig should include at least five PCI, one AGP, and possibly an ISA slot — you still have that one old ISA card you can't do without, right? If you really don't need an ISA slot, there are now MOBOs with six PCI slots and one AGP (note that the new Intel i820 MOBOs will drop ISA slots altogether in compliance with the new PC 99 spec).

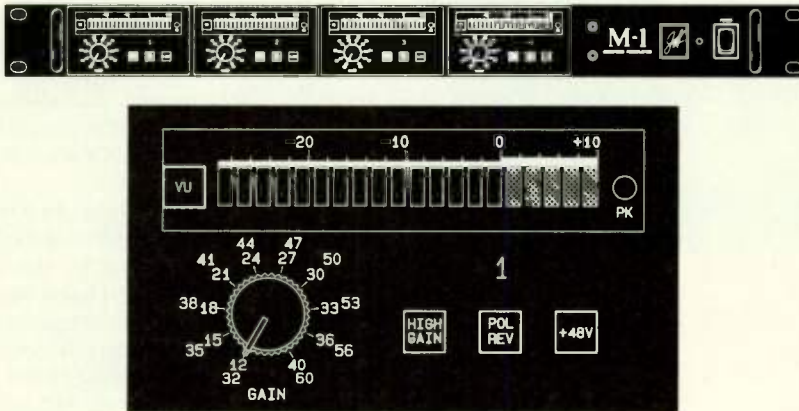
In addition, current MOBOs usually include rear USB sockets, which is very important as more USB-compatible devices hit the market. Need SCSI and want to conserve more expansion slot real estate? Some MOBOs (e.g., the ASUS "P2B" series) are available with built-in SCSI controllers. In addition to freeing up a PCI slot, these controllers can also save money compared with buying the same device as an expansion card. It is also a good idea to purchase a MOBO that supports the ATA 66 standard. Although current hard drives have not yet run up against the ATA 33 spec's maximum bandwidth limit of 33 MB/s, IDE hard drives will soon be able to exceed this.

#### ODDS AND ENDINGS

Those of you who have not built a computer recently, or who are contemplating building your first, may be in for a pleasant surprise: the new ATX computer specification goes a long way toward simplifying the construction process. Gone are the cables for the serial ports and printer (parallel) port; these connectors are now edge mounted on the motherboard. In fact, the only cables left to deal with are those for the disk drives and other storage devices. The latest motherboards also sport color-coded connectors, minimizing the chances of making a costly mistake. Add standardized mounting points along with polarized drive and power supply cables, and it gets a lot harder to fry your components. All in all, life is getting better for both geeks and musicians!

*Pete Leoni disassembled his mother's record player when he was six years old. Upon discovering that, with a little gain stage tweaking, he could get her Perry Como records to sound like Mick Jagger, the die was cast. He has been hooked on music and electronics ever since. Pete is the founder, along with Morgan Pettinato, of Q Performance Systems. His e-mail is Demotech@datasync.com.*

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Your mixer

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Your card

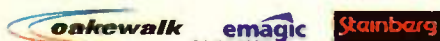
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CIRCLE 10 ON FREE INFO CARD

World Radio History



## EMAGIC LOGIC AUDIO 4.0

BY CRAIG ANDERTON

Emagic rewrites their flagship program from the ground up

The sequencer world has become pretty stable: constant upgrades encourage people to stick with the sequencer they know, and few users seem inclined to switch from one brand to another. However, Logic Audio 4.0 is an entirely different kind of animal. It's not a "creeping featuritis" update, but a from-the-ground-up program revision that may cause some people to question whether they should continue using their present sequencer.

Because Logic Audio is very deep, we won't cover standard features, but focus on its "vibe," as well as what's new. (This review covers the high-end "Platinum" version for Windows; the Mac version is functionally identical, except only the PC version has the Wave Player feature described later.)

Many changes aren't immediately obvious. For example, Logic Audio 4.0 requires Windows 98 because the code has been rewritten as a 32-bit application, resulting in better MIDI timing and higher track count. (Logic Audio 4.0 is expected to work with Windows 2000, but NT 4.0 support is unlikely due to the difficulty of obtaining accurate MIDI timing with the NT OS.) Also new: Emagic's EASI hard-disk streaming audio protocol, which you won't notice until you realize your computer isn't complaining about all the tracks you've piled up. With my Q Performance Systems Celeron A machine with 256 MB RAM, I was able to play 24 tracks (each incorporating two stages of parametric EQ, with eight plug-ins (fig. 1.)

Supported I/O includes

Digidesign's DAE-based products, TDM and Direct I/O (for Project II and all PCI Digi cards), Emagic's Audiowerk2 and 8 (also supports multiple Audiowerk8 cards), various flavors of MME (interleaved WAV, multichannel WAV, etc.), Yamaha DSP Factory, and, for the Mac only, Sound Manager, Korg 1212, Pro Tools, and direct support for the Sonorus Stud/I/O. I tested the program with both the MOTU 2408 and ADAT Edit cards. Furthermore, ASIO, VST, and DirectX compatibility allow talking to a wide range of products from other manufacturers.

Some updates are obvious, like the user interface redesign. The look is clean, easy on the eyes over long sessions, and incorporates some good use of color (e.g., panning causes a red color band to appear around the pan pot, making it easy to see overall panning at a glance).

Another major change is the removal of localized window menus. Menu options *always* appear in the main menu bar and change context depending on which window is open. This takes some getting used to, but makes sense with use.

However, beyond the user interface's visuals, Logic has endured a reputation of being difficult to set up and learn. These



FIGURE 1: Maximum tracks obtainable with Logic Audio 4.0 on my computer.

FIGURE 2: You want plug-ins? You got 'em. The Autofilter on the top left has been minimized to "controls only."

are two separate issues: fortunately, many of the formerly obscure aspects of setting up Logic, such as using environments, have been streamlined to the point where it's much, much easier to get up and running. As to using the program, the sheer depth of the functionality, coupled with some unconventional user interface choices, demand some serious studying if you want to become a true power user.

## TEST Drive

**MANUFACTURER:** Emagic, 13348 Grass Valley Avenue, #C-100, Grass Valley, CA 95945. Tel: 530-477-1051. Web: [www.emagic.de](http://www.emagic.de).

**APPLICATION:** Mac/Windows-compatible software for MIDI sequencing, hard-disk audio recording, mixing, and signal processing.

**SUMMARY:** Thanks to a complete redesign of both code and interface, Logic Audio is faster, achieves higher track counts, and is easy on the eyes.

**RECOMMENDED SYSTEM REQUIREMENTS:** Windows — Windows 98, 64 MB RAM, P200 MMX or Pentium II, high-performance SCSI controller. Mac — OS 7.6 or later, 64 MB RAM, 604e or 750 (G3) processor.

**STRENGTHS:** Useful, high-quality, automatable plug-ins defray otherwise high list price; works with lots of different audio I/O hardware; beautiful user interface graphic design; supports 24/96, ASIO/DirectX (Windows), and ASIO/VST (Mac); solid scoring capabilities; can edit multiple MIDI controllers in one window.

**WEAKNESSES:** Minimal online help and no context-sensitive help; user interface still somewhat oblique; buggy initial release (since ameliorated by updates).

**PRICE:** \$799

**EQ FREE LIT. #: 103**



## VARIATIONS ON A THEME

Logic Audio has three main flavors: Platinum, Gold, and Silver. All support plug-ins, offer 960-ppqn resolution, and allow virtually unlimited MIDI tracks. The main differences relate to audio and effects.

Feature	Platinum	Gold	Silver
Tracks (machine dependent)	64	32	24
24-bit/96 kHz support	Yes	No	No
Plug-ins included	37	23	14
Full scoring features	Yes	Yes	Limited
Per-channel parametric EQ	Yes	Yes	No
FX busses	16	8	4
Copy protection	Dongle	Dongle	Key disk
Sync capabilities	Extensive	Extensive	Limited
Direct Audiowerk8 cards supported	3	2	1
Price	\$799	\$499	\$299

Unlike most hardcore Windows applications, help is sparse. For example, I couldn't find directions on how to do simple tasks, like import an audio file into the arrange window. There's also no context-sensitive help. To compensate, Logic has always come with a comprehensive printed manual, although, as of this writing, the full 4.0 version isn't out yet — just a supplement that explains the major differences.

There are some nice safety features. The program makes automatic backups as you save (up to 100 versions) and uses a buffer to capture all MIDI input data played since the last change of the song position line *whether you're recording or not*. If you play a killer take while noodling around, simply convert the buffer data into a recorded track.

The 37 plug-ins (fig. 2) include ten EQs (some simple, like high cut, but also parametric, "DJ" EQ, and "fat" EQ), six reverbs (which take up varying amounts of processor power), compressor, expander, gate, the usual time/modulation based effects, and some more esoteric options such as envelope, distortion, overdrive, bitcrusher (lo-fi your signal down to 1 bit if desired), autofilter, spectral gate (gates according to particular frequencies), dither, and others.

Complex plug-ins toggle between an "Editor" view, which shows all controls with helpful graphics, or "Controls" view, which displays only parameter values and sliders to vary those values. The latter is great when screen real estate is tight (Logic really wants a big-screen monitor or a two-monitor setup). All effects parameters are automatable and generate MIDI controllers suitable for feeding external boxes, MIDI fader units, etc. In fact, if you're into "hands-on" control over Logic's parameters, a template for CM Automation's Mo-

torMix is included.

The effects sound very good. Yes, you can find occasional specialized plug-ins that are better than the ones included in Logic, but, overall, you get an excellent selection of high-quality, useful plug-ins. I particularly like some of the more esoteric options.

### LIVE SEQUENCING?

For live use, 4.0 has two useful functions (these are new to the PC version, but have been in the Mac since 3.0). One turns off controller resets when a sequence loops back to the beginning, so, with loop-oriented music, any changes to the mix are retained when the sequence loops. Another new feature, "Touch Tracks," can assign individual sequences to specific notes, so you can trigger entire "licks" by pressing a key. Also, the PC version offers Wave Player, where you can assign WAV files to different MIDI notes and trigger them via keyboard, which is again a handy feature for live performance.

Logic has several outstanding features that aren't new to 4.0 but bear re-vis-

iting. Some highlights are:

- Screensets (up to 90 customized arrangements of editing windows) to help manage your workspace.

- The wonderful Hyperdraw feature, which displays several of a track's MIDI controllers simultaneously.

- User-definable key commands for all functions, which you can also print out. While daunting to learn, key commands save time and mouse motion. In fact, some commands are available only from the QWERTY keyboard, not the menus.

- Simultaneous recording of MIDI and audio tracks (and you can finally record multiple MIDI tracks).

- An audio-to-MIDI groove function that analyzes audio files to create groove templates.

- Interleaved stereo file support, not just the linking of two mono files done prior to version 3.5.

Also, Logic's feel is consistently smooth, and the program has a reputation for stability (or at least after you've installed the two or three bug fixes that come hot on the heels of any major introduction — 4.0 was *very* buggy, but 4.0.3 has been stable so far).

As someone who has followed Logic's progress since its debut on the Atari platform, Logic Audio 4.0 comes across as a new generation of the traditional MIDI + digital audio sequencer. Rather than add bells and whistles, Emagic has re-thought the basics and, in the process, looked toward the future, streamlined the present, and retained the best of the past. It's a professional sequencer with a significant learning curve, but users will be well rewarded for any effort expended in learning the program. **EQ**

## (PRINTED) HELP IS ON THE WAY

For Logic newbies, the *Wizoo Guide to Logic Audio*, by Dave Bellingham, is extremely helpful. Over 1/3 of the 197 pages in the Windows version (a Mac-specific book is also available) covers the type of computer that works best with demanding programs like Logic Audio. Furthermore, there is info on usually vexing PC-related matters such as drivers, sound cards, and so on.

You still need to read the manufacturer's manual. This guide "fills in the cracks" in the existing manual, and offers a blend of useful tips along with power-user perspectives. However, it also includes extensive information on how to use EQ, not just what it is, and provides several audio examples on the accompanying CD (which also includes shareware, freebie plug-ins, and much more) to help drive the point home.

Frankly, Logic is the kind of program that could easily fill three or four of these books, but I think any Logic user would find this *Wizoo Guide* well worth having. \$29.95, softcover. Wizoo, Tel: 800-579-4832. Web: [www.wizoo.com](http://www.wizoo.com).



# DIGITAL AUDIO LABS CARD-DELUXE AUDIO INTERFACE

BY DAVID  
MILES HUBER

Killer  
sound  
quality and  
superior  
sync'ing  
features  
highlight  
this sound  
card from  
DAL

When DOS was king and Windows 3.1 was just a glimmer in Bill's eye, I already was one of Digital Audio Labs' biggest fans. Why? Simple: The sound quality that came from my PC was among the best I'd ever heard from any pro system. Period. Now, after more than a decade of doing business, DAL has released its first PCI card — the CardDeluxe.

The CardDeluxe combines both analog and digital I/Os onto a single, half-length card that operates at sample rates from 22 to 96 kHz and bit depths from 8 to 24 bits. All analog ins and outs use heavy-duty, 1/4-inch TRS balanced connectors whose levels can be individually selected to reference standards of either +4 dBm or -10 dBm. I am glad that DAL placed the RCA S/PDIF digital connectors directly on the card-slot's face, alongside the analog I/O connectors. This is a nice change from dangling interface cables, or having to give up an extra slot just to add on a piggyback digital faceplate. The CardDeluxe will soon offer an option that'll let you add on an AES/EBU digital I/O bracket. This, presumably, will make use of a piggyback card slot and breakout cable for connecting to digital devices at the pro level.

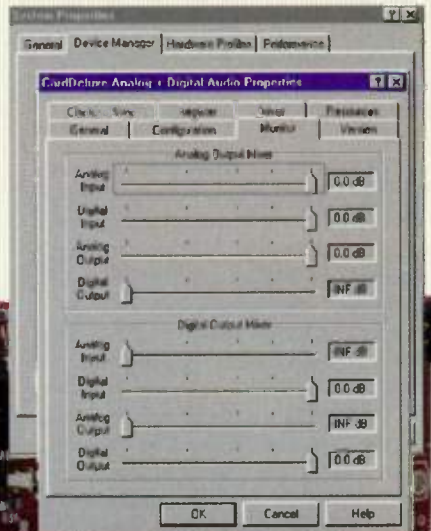
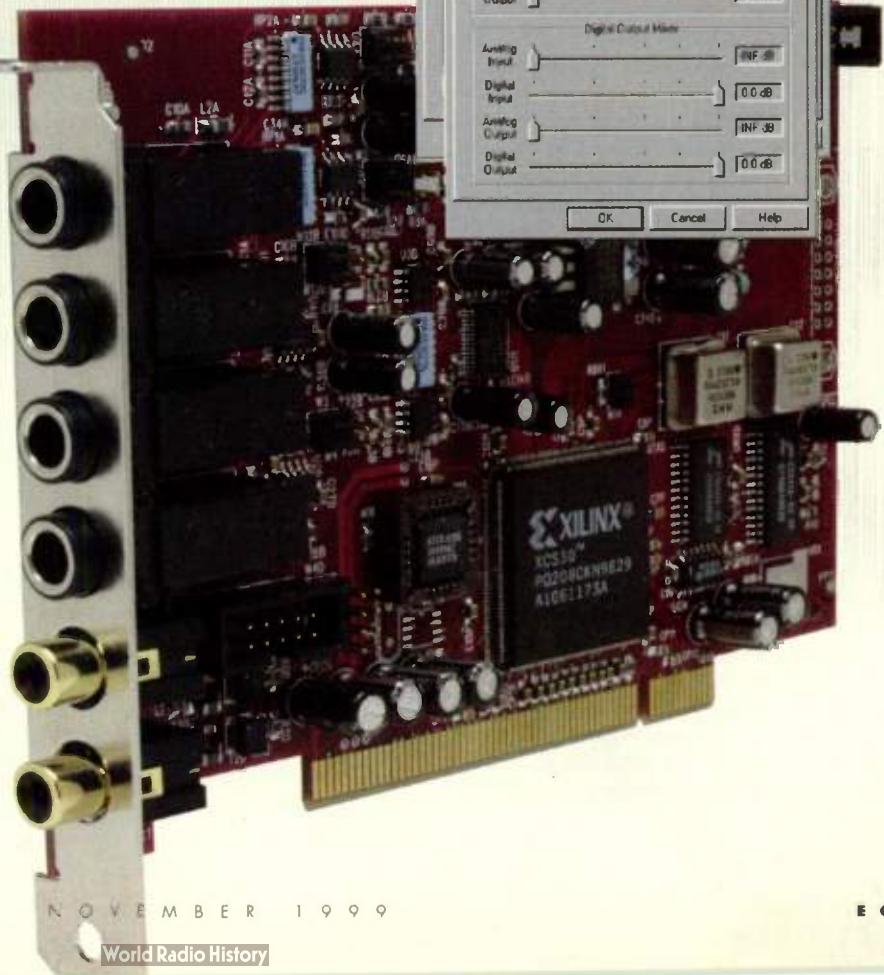
### ALL GOOD THINGS COME IN MULTIPLES

Unlike many cards that offer digital ins and outs, the analog and digital audio paths on the CardDeluxe are completely separate from each other. By simply routing the card's digital outs to (or inputs from) a DAT recorder, you'll effectively be able to use the card as a discrete, 4-channel interface.

Installing multiple cards into a PC is simple; however, DAL has improved upon the usual scenario by locking the sample clock of all the cards together via a chain of interlinked data cables. In addition, they've developed a new WavSync feature that locks together the digital timing clocks of any card in the system. It seems that, when punching into record on a traditional multicard system, one card will go into record, then the next, then the next, sequentially. This introduces noticeable delays in the start time from one input to the next (and so on down the line). This delay similarly affects playback. Using WavSync, the system will lock the timings together and all the cards will begin recording at the same time; thereby eliminating this delayed "stairstep" effect.

Since releasing the CardDeluxe, the folks at DAL have developed a new hardware and driver update that has fixed a few known problems and has added a great deal of functionality to the card. The most important of these include new monitoring features, the addition of a beta ASIO driver, improving the system's responsiveness when opening the card's driver, and adding WavSync support.

Updating the card was easy. Once the folks at tech support e-mailed me the updates (you can now download the files from the Web), I went about the task of updating the programmable EPROM chip on the card itself. (Altering hardware via a software update has always given me a rush.) After carefully





# TEST Drive

following the steps, updating the hardware, restarting the computer, and loading in the new driver set, I was quickly back in biz.

For me, the most important update was the inclusion of a set of monitor tabs that can be accessed from the "Control Panel/Sound, Video & Game Controllers/Properties" tab. These options let you set the digital I/O, record mode, and record monitoring parameters. This was a necessary improvement, as, before the update, users couldn't hear what was being recorded through the card itself. With the mixer, you not only can hear through the card, but you also can alter the mix of the input/output signal path. For example, you can continually change the I/O levels for "both" the analog and digital ports, and mix the signals to both ports so that an analog input could play back

**MANUFACTURER:** Digital Audio Labs, Inc., 13705 26th Avenue North, Suite 102, Plymouth, MN 55441. Tel: 612-559-9098. Web: [www.digitalaudio.com](http://www.digitalaudio.com).

**APPLICATION:** Analog and digital audio sound card for recording at rates up to 24/96 kHz on the PC (Mac drivers are in the works).

**SUMMARY:** A high-quality PCI audio interface with independent balanced analog and S/PDIF digital ports and sample rates from 8 to 96 kHz at bit depths of 8 to 24 bits.

**STRENGTHS:** As with all DAL cards, the quality is killer; offers four independent inputs and outputs (using both the analog and digital I/Os), wide sample-rate and bit-depth capabilities, sample-clock locking of multiple cards, and ASIO driver support.

**WEAKNESSES:** None, other than that after loading the updated drivers a slight click occurs at the beginning when playing back a soundfile.

**MANUAL:** The short-'n'-sweet guide fills you in on the specs, as well as the general procedures for installing the card (or multiple cards) and software (under 95/98 or NT).

**SYSTEM REQUIREMENTS:** Pentium 166 MHz-type motherboard or better with an open PCI slot and 32 MB RAM. Windows 95/98 or NT 4.0 (or higher).

**PRICE:** \$595

**EQ FREE LIT. #:** 104

through both output ports (of just the digital port). It is, in short, a hyper-flexible option.

As expected, the CardDeluxe sounded superb — and that's the bottom line. Because it combines balanced analog and digital I/Os, four discrete I/O channels, ASIO driver support, and support for games, the CardDeluxe is definitely high on the bang-for-the-buck category. Mac folks should take note that drivers will soon be in the works, too.

Finally, an important feature of DAL's products (besides the sound quality) is that they often integrate their cards into their future multi-channel interfaces. For example, my original CardD (at least seven years old), plugged right into, and became part of, my new V8 system. That's because the multichannel V8 saw the CardD as a digital port offering two channels of additional I/O. I'd wager that the CardDeluxe will also integrate into future PCI systems these Minnesotans have on the design tables — a big plus in my book. **EQ**

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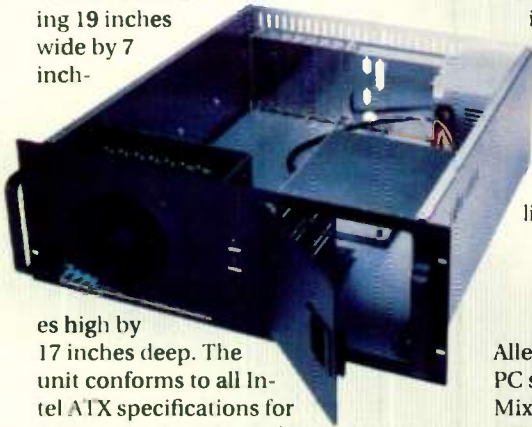
**CIRCLE 12 ON FREE INFO CARD**  
World Radio History



## DRIVE! GEAR

### ENCASING THE BRAIN

Middle Atlantic's new model RM-CPU-ATX rackmount computer chassis packs the brain behind your system in an enclosure measuring 19 inches wide by 7 inch-

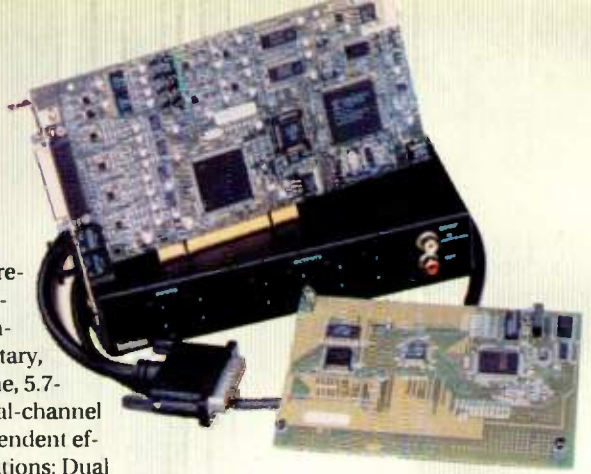


es high by 17 inches deep. The unit conforms to all Intel ATX specifications for 2.01 motherboards, and is equipped with a rear panel that accommodates a standard ATX I/O panel. Tapped for Middle Atlantic's optional rack slides, the chassis is additionally outfitted with a removable rear bay to facilitate switching between different ATX models and a 300-watt, UL listed ATX power supply. The RM-CPU-ATX's front panel features include a hard-drive bay capable of housing a trio of 3.5/5.25 disk drives behind a latching front door, a removable front grille for filter replacement, a reset switch, and LED power/HDD indicators. The unit's chassis is plated in grey zinc, while a durable black textured powder coating is applied to the front panel and lid. The unit has a suggested retail price of \$655.50. For more information, contact Middle Atlantic Products at 973-839-1011 or visit [www.middleatlantic.com](http://www.middleatlantic.com). Circle EQ free lit. #150.

### HARD CORE

Lexicon introduces the MP-100, the latest option for Lexicon's Core2 desktop audio system. The MP-100 incorporates all of the effects and controls from Lexicon's MPX 100 dual-channel effects processor on a snap-on card. This option gives stereo dual-channel processing with hun-

dreds of presets with classic reverb programs such as Ambience, Plate, Chamber, and Inverse, as well as Tremolo, Rotary, Chorus, Flange, Pitch, Detune, 5.7-second Delay, and Echo. Dual-channel processing allows two independent effects in a variety of configurations: Dual Stereo, Cascade, Mono Split, and Dual Mono. Lexicon's Core2 system provides connections for four channels of analog in, eight channels of analog out, eight channels of ADAT digital I/O, and a stereo S/PDIF pair. The MP-100 will have a suggested retail price of \$149. For more information, contact 781-280-0300 or visit [www.lexicon.com](http://www.lexicon.com). Circle EQ free lit. #151.



### MIXING MAGIC

Allen & Heath has announced a bonus PC software release for users of its MixWizard series WZ16:2DX and WZ12:2DX compact mixing consoles. The new software, the WZ FX Editor, allows users to access the mixer's on-board FX processor via a Windows front end rather than selecting from the presets offered. The new software also gives owners full control over effects parameters, in addition to providing more effects types, plus access to additional noise gates and EQ processing. The software is available free of charge at the Allen & Heath Web site: [www.allen-heath.com](http://www.allen-heath.com). For more information, call Allen & Heath at 801-568-7660 or fax them at 801-568-7662. Circle EQ free lit. #152.

### MAKIN' WAVES ON STUDIOPC

Wave Digital Systems introduces their new digital audio workstation. The Digidesign Pro Tools for Windows NT Workstation includes features such as separate hard drives for the operating system and the user's music files, separate AGP (Advanced Graphics Processor) video bus, Adaptec Ultra2 SCSI, fast Synchronous DIMM RAM (up to 768 MB), ATX form-factor chassis with advanced power management, and a 250-watt Ultra-Quiet power supply. All systems come preconfigured for and preinstalled with Pro Tools for Windows NT and all associated drivers are configured to Digidesign's specs for optimum performance and smooth operation. The new StudioPC is available with several options, including desktop, tower or rack-mount chassis, CD recorders, DVD drives, Iomega Zip or Jaz drives, internal DAT tape backup, removable SCSI hard drives, internal hard drives up to 36 GB, and various monitors. For more information, contact Wave Digital Systems at 973-728-2425, fax them at 973-728-2931, or visit [www.wavedigital.com](http://www.wavedigital.com). Circle EQ free lit. #153.





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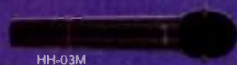
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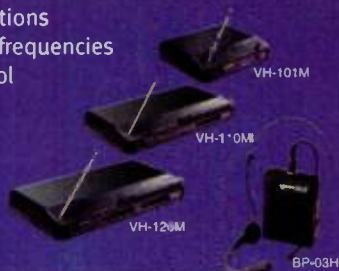


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- Adjustable squelch control
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## NX Series - VHF Wireless Systems

- 15 possible system configurations available in 6 VHF frequencies
- AF (audio-frequency) level control
- Adjustable squelch control
- Auto-mute circuitry
- 250-400 foot range (depending on receiver chosen)



HH-07M



NX-201

NX-210

NX-220

BP-07

## UX Series- UHF Wireless Systems

- 15 possible system configurations available in 6 UHF frequencies
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- Adjustable squelch control
- Auto-mute circuitry
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3	-	Audio Technica W327-8M	\$190
4	-	Azden 311DR	\$280
5	-	<b>Gemini VH-100M</b>	<b>\$199</b>
6	5	Telex ProStar VR-12L	\$250
7	3	Samson Series One UHF	\$499
8	-	Shure TPD	\$480
9	-	Telex ProStar VR-12D	\$340
10	-	Audio Technica Pro 228	\$549

August 15, 1999

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# EQ Groove



FIGURE 1: Whether you use hardware drum machines or a software groove box like Steinberg's ReBirth (shown here with the Metallicon mod), your beats don't have to sound mechanical, if you know a few important techniques.

and selectively add 1/16 notes later on another track.

### 3. SPACE CASES ARE GOOD

Fill in empty spaces, but not all of them; don't be afraid to delete as well as add. Filling in a groove's spaces with different sounds generally creates a better sense of counterpoint, or at least makes the groove drive harder, but remember that silence is very loud, too.

### 4. GHOST (NOTES) IN THE MACHINE

Use two tracks for the same sound, but play a different rhythm on each, then lower one track's velocity. This is especially effective on snare drums because you can put the heavy beat on one track and all the ghost notes that make the groove really happening on another track with a lower velocity value. This is easier than trying to get perfect velocity changes in one track only.

### 5. EXTREME TUNINGS

Layer sounds with extreme tuning (up or down) very softly in the mix, especially similar sounds. This works well when adding layers of kick and snare patterns. For an even more extreme effect, run the various layers through different outputs and EQ/process them differently.

### 6. THAT SWING THING

Use more swing percentage at slower tempos and less swing percentage at higher tempos. My favorite swing percentage values are 51, 54, 56, 59, 61, 63, 66, and 71. Grooves with very thick textures can sound cool when you use different swing percentages for different tracks.

Your guide to building better beats

## 16 SWEET TIPS FOR BUILDING BETTER BEATS

BY FRANK HEISS

Beats are my life. Well, much of my life — whether you're talking live performance, recording, or creating loops for sample CDs. In the process of beating up various machines, I've learned a few tips that have really helped me make better beats. Here goes...

### 1. ONE AT A TIME

Sometimes it's easier to think about rhythm with one sound at a time, so that you concentrate on the "groove," not the arrangement. Try programming a rhythm with only one sound (or maybe two sounds, like kick and snare).

hihats afterward, which allows creating a highly contrapuntal hihat pattern. This would be difficult to do while playing kick and snare, too (and is one of the reasons I stopped playing "real" drums). Remember, you can always add more sounds; even if your sequencer has only eight tracks, you can often merge the tracks later.

### 2. START WITH THE EIGHTHS

Start programming with 1/8 notes and then proceed to faster values, and use quantize to help. Quantize is your friend, particularly because you can often quantize to a groove. When I do break-beats at faster tempos, I always start with an 1/8-note quantize value

Then start replacing some of the beats with other sounds

I always start my beats with kick(s) and/or snare(s) and program



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# SONY

## 7. FEEL THAT TICK

Move some sounds around by individual ticks (typically 1/96 beat). If you listen carefully to drummers, you will notice that they all play a little differently. Some players are "behind" the beat, some are "in the pocket," and others are "ahead of the beat." Truly great players are all three, but apply these variations only in the right place at the right time. I think that snare drums like to drag, and occur later in time. Ride cymbals seem to rush, and occur earlier in time. Most kick drums are (or should be) right in the pocket. Also, the timing between beat 4 and the next measure's beat 1 is usually shorter than the timing between beat 1 and beat 2. Humans seem to think it's funky when you rush a little bit at the end of the bar, and drag a little bit at the beginning to make up for it. (This has programming implications that require a multi-page sermon... maybe some other time!)

## 8. RESAMPLING IS GREAT

Resampling, either within a single box that can resample or by using two samplers, can change tempos in novel-sounding ways. If you want a fast beat, resample it at a slower tempo and then pitch it up for a feeling of hyperactivity that time stretching cannot duplicate. The same is true in reverse — for a slow beat, resample it at a faster tempo and pitch it down. Another cool resampling technique is to resample several variations on the same beat with different effects configurations.

## 9. CHANGE YOUR START POINT

Try resampling your beats, but start the sequence on different sounds in the bar (kick, snare, hat). This provides several samples of the same basic beat, but starting on different sounds that are in different places in the bar. When you combine the samples in sequence patterns, the beat is gonna get crazeee. You can do something similar with hard-disk recorders by copying a track, then shifting it so it starts on something other than the 1.

## 10. RESAMPLED QUANTIZING

Some units apply quantization when you record, but others simply record triggers when you play them, and make quantization a nondestructive, playback-only function. This is cool since you can change quantization

*continued on page 142*

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CIRCLE 15 ON FREE INFO CARD



## EQ Multimedia

EQ MULTIMEDIA



PHOTO BY JENNIFER LEWI

COME BLOW  
YOUR HORNBY JONATHAN  
MILLER

Film composer; classic acoustic/electric jazz artist; New Age artist; instrumentalist/soloist; television score composer; children's

story music composer; orchestral composer; electronica pioneer — Mark Isham's done it all, evidently a musician of many parts; all of them talented. With recordings spanning three decades, Isham has, to date, scooped a Grammy and Emmy Award, plus multiple Academy and Golden Globe Award nomi-

nations for his work, both as a composer and recording artist.

In the 1980s, Isham first attracted attention with his picturesque score for *Never Cry Wolf*, and soon found himself launched on a career as a film composer. His credits include *A River Runs Through It* (Academy Award and Grammy nominee for best score), *Nell* (Golden Globe Award nominee for best score), *Quiz Show*, *Shortcuts*, *Miami Rhapsody*, *Afterglow*, and *The Moderns* (winner of the Los Angeles Film Critics Award for best score). Now his film credits number more than 50.

So on what might you expect a Hollywood film composer of Mark Isham's standing to spend his hard-earned nickels and dimes? Would, perchance, a state-of-the-art private recording studio prove useful? Too right, Isham would probably say. Point your browser at his official Web site ([www.isham.com](http://www.isham.com)) — Isham invites us to take a look at "pictures of my studio and equipment" (he even includes a blow-by-blow photographic diary of his studio's construction) — and the man's "gearhead" disposition becomes readily apparent; the temptation must have been burning a hole in Isham's pocket for quite some time, yet his reasoning makes for refreshing reading.

"Wet Dog Studios," Isham beams, "was inspired by my golden retriever, who's an avid swimmer! The kids are at school; I'm working in the studio and walk over to the house to get a cup of coffee. I look in the pool, and the dog is swimming laps!"

Forget pets, *kids* is the operative word in this idyll — likewise the foundation for Earle-Tones Music, Isham's production company, which is responsible for organizing his incredibly busy schedule: "It started with my wife, who was a very successful costume designer," grants Isham. "She was at a point where her next career move was to form her own production

Film composer/  
musician  
Mark Isham  
builds his  
dream studio: a  
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loft nestled  
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# Mackie D8B Digital Console, Version 2

Mackie releases a free major software upgrade

BY ROGER NICHOLS

Mackie has released Version 2 of the Real Time OS for the Digital 8•Bus console.

## NEW FEATURES

- The new Fat Channel Overview window is a great way to see every parameter associated with the selected channel strip.
- The Graphic Automation Mix Editor provides an excellent one of all? The upgrade is free of charge.

For those of you not entirely familiar with the Mackie D8B, a little review is in order. The D8B is a 97-fader digital console that has been folded into four layers. Each layer has 24 100-mm motorized faders—totaling 96, plus one master fader.

The first layer controls the analog inputs to the D8B. This is where you set your recording levels, EQ, and dynamics for microphone and line level inputs during the recording process. These inputs are XLR and 1/4-inch connectors located on the rear panel. The second layer is for digital tape monitor inputs. You can decide the type of inputs by choosing the appropriate card that you've inserted into the card slots on the rear panel. The third layer controls eight additional aux inputs (a fourth card) and the returns from reverb and EFX units. The fourth layer controls bus out levels 1–8, Groups 1–8, and external MIDI controllers 1–8.

When mixing your finished project, you can use the analog layer, the digital layer, and aux inputs 1–8 to give you 56 inputs from your Pro Tools or ADAT stack. Each input has EQ, compression, and gates. (I remember not too long ago when a console with these features sold for over \$300,000.)

## MY FAVORITE FEATURES

1. Mackie calls all of the rotary controls on the D8B "V-Pots." They are used to change parameters for EQ, panning, compression, gating, trims, and everything else that needs a value to be entered by the operator. Each V-Pot has an LED pointer that gives you a graphic in-

dication of the level or pan position you have entered. You can see at a glance where everything is panned on a layer just by looking at the pan V-Pot above each fader. In addition to the LED pointer, an LED null indicator shows you when you have panned a channel exactly into the center. Because the resolution of the V-Pot is much greater than the resolution of the pointer LEDs, this is a great time-saving feature.

2. All 24 tape returns are on the same layer. If you have a 24-track setup, you don't have to change layers to see the rest of your tracks.

3. All of the A/D and D/A converters are 24-bit. You don't have to use external converters to get the 24-bit resolution we all deserve. Unless you want to spend \$15,000 on the best external converters, nothing I have measured or listened to sounds better than the converters built into the Mackie D8B.

4. The fader resolution in Version 2.0 is 256 steps. This means that when you make small moves to the fader in the middle of the range, the moves are 0.15 dB. That is a little more than 1/10th of a dB per step.

5. The digital trim level has the same resolution. After you, for example, make complicated vocal rides in the automation, you can use the trim to see what the vocal rides would sound like if they were all done 0.3 dB lower or 0.15 dB louder. You can then easily get back to where you were before any of the changes.

6. Offline automation editing. Pro Tools owners know about editing automation data on screen to get exactly what they want. Mackie D8B owners can do the same thing with their console automation. Using a mouse and normal cut and paste actions, you can copy the complicated moves you made in one chorus to all of the choruses. After all, you pasted all of the instruments from one chorus to the others, so why not do it with the automation moves? I just finished mixing on a \$500,000 console that couldn't do that. I had to spend hours matching the automation moves in all of the choruses.

7. The Fat Channel Display on the attached video monitor. Well, the best of both worlds. A digital console with analog displays on the screen showing the compressor in action. There is also a graphic in-





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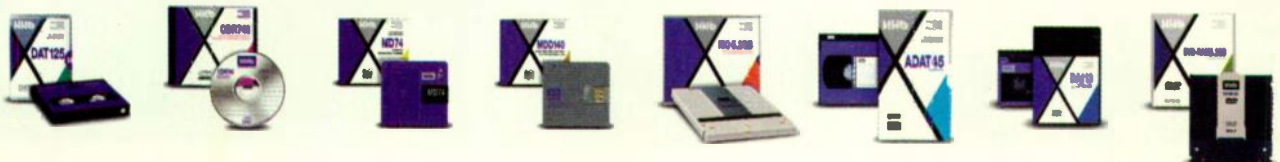
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CIRCLE 05 ON FREE INFO CARD

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display of the EQ curve. The curve changes as you change parameters, or you can draw an EQ curve and the parameters will change to match the graphic, just like on the \$1,000,000 digital consoles.

8. Automation trim mode. After you write your automation pass, you can trim the moves like on other digital consoles. However, on the Mackie D8B, the motorized fader snaps to the middle of its range to give you a graphic representation of the amount of trim you are using.

9. Dual memories for EQ, compressor, and gate settings. I can only count about a million times (I had to take off my shoes to count that high) that I have tried to find a better EQ for a particular instrument, only to forget my original setting. With the D8B, you can switch to the B-memory bank, try any EQ you like, and then switch back to the A-memory bank to compare settings. If you have compiled two vocal takes that sound a little different, you can automate the switch back and forth between the two memory banks.

10. Eight aux sends to internal EFX and two stereo cue mixes. I said two stereo cue mixes. Aux 9–10 and Aux 11–12 are used for headphone mixes when you are recording. You can use them for additional EFX sends to outboard gear when you are mixing. You can copy a mix you have on the board to either cue mix, and then modify the mix as needed. Much better than starting from scratch on the headphone mix, especially if you have a good mix on the main faders.

11. Version 2.0 software update is free.

(Mackie listens to its customers, and software updates are not two years apart, either.) V2.0 contains changes asked for by Mackie customers. New updates are available on the Mackie Web site. Just download the update to a floppy disk, put it in the D8B control computer and *Bingo!*— new software with all of the latest features. [Check out the new Version 3.0 upgrade (you heard about V3.0 here first!), which is full of new features, including plug-in implementation, surround mixing enhancements, and new networking capabilities. See the sidebar.]

Maybe this would have been a shorter review if I had listed the things I didn't like about the Mackie. Let's try it. Here are the things I don't like about the Mackie D8B:

1. It wasn't my idea. Imagine: "The Roger Nichols D8B."
2. My wife wants to replace her "other digital console" in her demo studio with my Mackie.
3. I hate spending \$2000–\$3000 per day in a studio when I could do just as good a job at home on my D8B.
4. I don't have two of them, which I could have connected with one Ethernet cable. I guess half of this reason should have gone in the things I like area. Oh, well.

### REASONS NOT TO BUY A MACKIE D8B CONSOLE Zero.

Contact Mackie at Tel: 425-402-6149.  
 Fax: 425-806-6383. Web: [www.mackie.com](http://www.mackie.com). Circle EQ free lit. #106.





## MACKIE D8B VERSION 3.0

As fate would have it, Mackie announced Version 3 of the D8B console operating system just as we were about to ship this month's issue of *EQ* out the door. This OS upgrade features many new additions, one of which is support for third-party plug-ins from TC Electronic, Massenburg Design Works, Drawmer, and Antares. Mackie plans to provide several third-party plug-ins at no extra charge along with the upgrade package, including a TC Electronic reverb package.

In addition to supporting the MFX (Mackie effects) card, which ships with every D8B, V.3 adds software support for the new Mackie UFX digital signal processor card, which is based on the Motorola 56303 DSP. When combined with V.3, the UFX allows use of four plug-ins simultaneously. Up to four UFX cards may be loaded into the D8B, allowing a total of 16 third-party plug-ins to be used at once; plug-ins may be applied to channels, the L/R master bus, or any of the D8B's surround outputs.

Mackie has also included several user-requested features in V.3 such as the ability to reassign channels to alternate D8B fader decks, a multiple undo list, bus solo, assignable MIDI send commands on transport buttons (REW, FF, STOP, PLAY, REC), an auto punch mode, 48-channel fader bank view screen, and multiple direct outputs per channel. All 48 on-board dynamic processors now have a sidechain input with an integral 20 Hz to 20 kHz-range parametric EQ for frequency-dependent processing (e.g., de-essing).

Enhanced surround functions for V.3 include compatibility with the new Dolby 6.1 EX surround format, a depth-of-center control, and LFE (low-frequency extension) control. An updated graphic user interface facilitates surround metering and panning functions for improved LCRS and 7.1 mixing.

V.3 of the Mackie Real Time OS will be available in the fourth quarter of 1999 for a price of \$99, which includes the UFX card at no extra charge.

—Steve La Cerra

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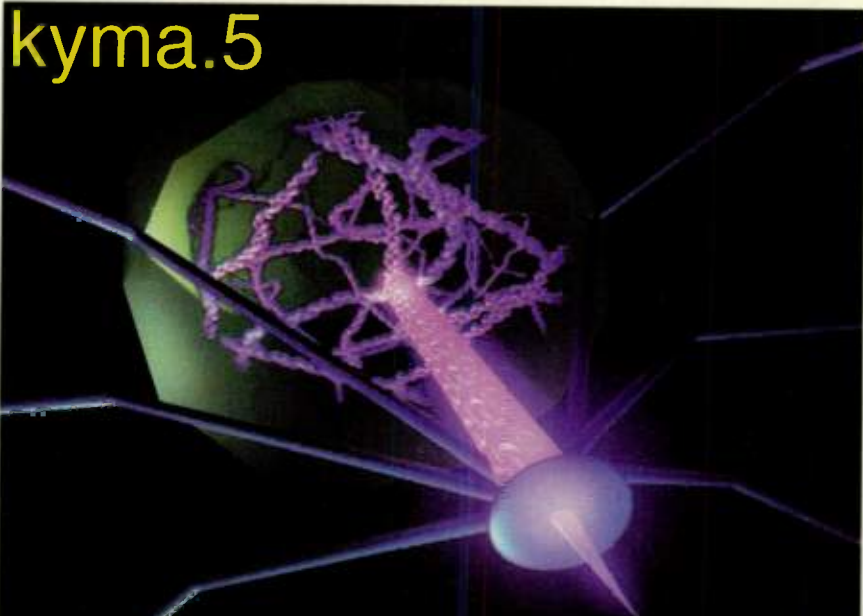
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# KRK V6 Active Monitors

Catch a wave with KRK's compact, two-way monitoring system

BY BOBBY OWSINSKI

The perfect wave — that mythical surfboard ride where time and space stand still. The ride where a combination of art, skill, and the flawless timing of nature makes for a few moments that transcend reality. However, you can't ride the perfect wave unless you have the perfect surfboard; one that you know as well as it knows you. For an audio engineer, the perfect wave is a perfect mix and his surfboard is his monitor.

In the ongoing search for those surfboard/monitors needed to ride the perfect wave/mix, what better place to look than

to the official "Surf City, USA" of Huntington Beach, CA, the home of KRK. While you can easily find any number of good-sounding small monitors on the market these days, it's really hard to find one that sounds naturally big without a certain amount of frequency response hype. Too much hype, and the monitors can sound fairly good, but their accuracy suffers.

Another problem is that most powered monitors these days are becoming unduly complicated, with any number of controls that, while well meaning, add to the time it takes to get comfortable with the unit.

Both of these concerns are erased as we "hang 10" on the new KRK V6's.

## THE SPECS

The V6 is a small, two-way system featuring a 6-inch, polyvinyl, low-frequency driver and a 1-inch silk dome tweeter actively crossed over at 1.8 kHz. The unit is biamplified, with a 30-watt amplifier used for the high end and a 60-watt amp for the lows. The rear of the cabinet is very simple, offering only an XLR/1/4-inch TRS combo-input connector and a system gain control. This is a relief from the myriad controls that today are becoming the norm on powered monitors.

The V6 measures 14 inches by 9 inches by 10 inches, yet feels very substantial (a pair has a shipping weight of 50 lbs.) thanks to construction using 3/4-inch medium density fiberboard. The unit features a stylishly rounded cabinet and port edges (there's about a 1-inch-wide port spanning the bottom of the front of the unit) that help to reduce diffraction and port flutter. The cabi-

net is finished in a neutral fingerprint-proof gray zolatone and is shielded to allow placement close to television or video monitors without interference. The power switch is located on the rear of the V6 and illuminates a yellow LED on the front of the unit when power is applied. The AC input is via the now standard grounded IEC inlet and cord set. The manufacturer states that the frequency response is 54 Hz to 20 kHz,  $\pm 2$  dB and the maximum SPL at 1 meter is 102 dB with music with 105 dB peaks.

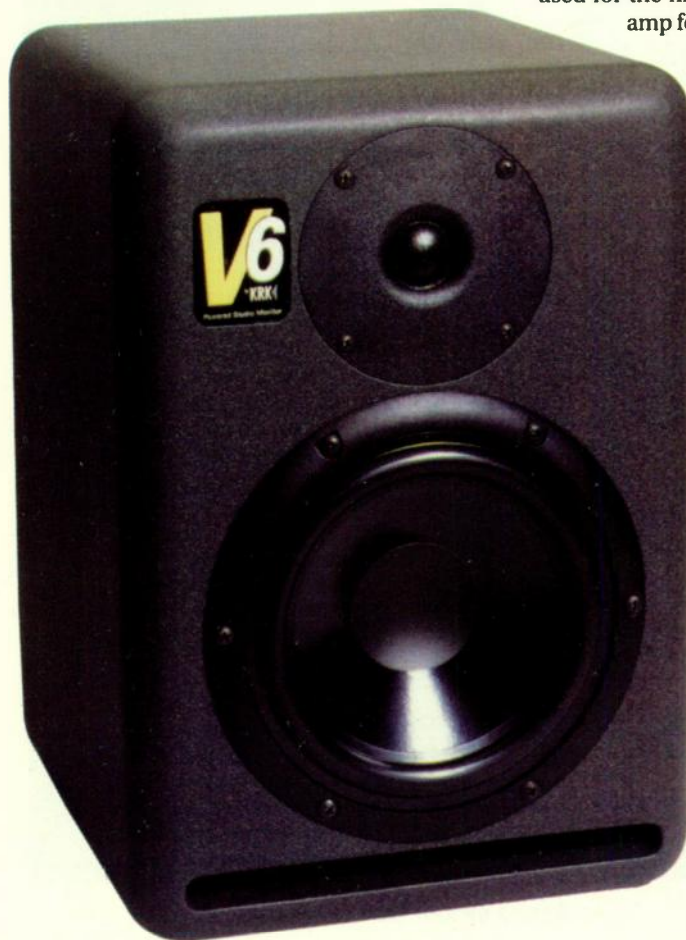
## THE SOUND

The V6 has the sound of a big monitor in the package of a small monitor. It has the biggest bottom I've ever heard in a monitor of this size. This is immediately apparent from the very first sounds played through them, which, in my case, were a collection of CDs used for a quick listen. My initial reaction was, "Whoa, what have we here?" I actually thought for a moment that we had selected the main, soffit-mounted monitors of the studio.

However, listening to previously recorded material doesn't tell you what will really happen with a monitor. You need to mix on them. So the real surfing came with a 5.1 remix of a George Winston TV special called *Seasons*. How could I mix 5.1 on a stereo pair, you ask? I've found that all surround mixes fall into place much easier if you start out in a traditional stereo manner to get your sounds and balances; then it's easier to spread things out. So I used the V6's as my basic stereo monitors.

The Winston program was demanding in that it was entirely acoustic (piano, guitar, and harmonica) with lots of transients. I was nearly satisfied with the results, but I felt that the musical pallet was a bit limited. Therefore, I then used the V6's for a mix of a power trio that I was producing so I could hear how they fared with a traditional rhythm section. Because of the low-end response, it was very easy to dial in kick and bass sounds that worked without having to resort to the main monitors. The high end, especially through the crossover area, was very smooth as well. You could really hear the definition between different things in the mix — especially reverb and left-to-right

*continued on page 143*





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# Zeep Project Manager Pro and C-Mexx Visualizer O2R Editors

Add capabilities and easier feature access to your O2R with these computer programs

BY HOWARD MASSEY

Unless you've been living in a cave these past few years, you probably already know all about the Yamaha O2R digital console. Despite more recent releases from competitors such as TASCAM, Panasonic, Mackie, Spirit, and others — and even the line of less expensive digital consoles offered by Yamaha itself — the O2R continues to rule the roost in our particular corner of the universe.

Nonetheless, even its staunchest supporters will admit that the O2R has some significant user interface limitations. For one thing, navigating around its modest screen display can be a royal pain. Moreover, like most cost-effective devices, it's menu-driven, so behind each screen lurks multiple additional pages. (Two points if you can tell me where the aux and bus master outputs are hidden — no cheating, now. Give up? You'll find them in Meters, page 3, for some bizarre reason.) Sure, it's great that you can name each channel, each EQ setting, each dynamics setting, each scene, each automix — but the logistics of naming the damn thing often take longer than setting it up in the first place! Last, but not least, there's the issue of limited memory. Out of the box, the O2R comes with a measly half a megabyte, which is barely enough to hold a few automix passes (remember, the Undo buffer — which cannot be disabled — also needs available memory to store a temporary copy of the current automix). Yes, you can update to a still-measly 2-1/2 MB (at a very steep

price — these are not standard SIMMs we're talking about), but even that barely suffices if you're doing complex mixes that include dense data streams like surround panning moves.

Enter Zeep.com's Project Manager Pro for the Macintosh, and C-Mexx's Visualizer for Windows 95/98/NT systems — two programs that allow easy editing from the comfort of your computer screen, thereby allowing you to largely bypass the O2R's onboard user interface. As a bonus, both of these programs serve to extend the functionality of the O2R itself.

Obviously, if you only have one computer in your studio, the choice is easy. However, for those of you who are lucky enough to own both kinds of systems (or if you're one of the three remaining people in the world who still don't own a computer at all), we thought it would be helpful to take a comparative look at the two programs.

An early version of Project Manager Pro (henceforth known as PMP) was orig-

don't need Max to run it, you could conceivably edit it with Max if you're a serious tweakhead. PMP is also a serious memory hog, requiring at least 13 MB of available RAM over and above your system requirements (even more if you're using its plug-ins). On my PowerMac 7100/80 with 32 MB of RAM, it ran fine — but only after I disabled virtually all system extensions. Connection is made to the O2R To Host port from either the Mac modem or printer port, using a standard 8-pin mini-DIN cable.

Visualizer is a newer product, although it is already up to version 2.84. C-Mexx is a German company, currently in the process of changing North American distributors, so the program is only available from their Web site. It requires a Pentium PC running Windows 95, 98, or NT, and is said to work just fine with 16 MB of RAM (my Pentium II/450 is blessed with 128 MB, so I couldn't prove this without pulling SIMMs chips, and whaddya think I am, nuts?). You make connection from any available COM port,

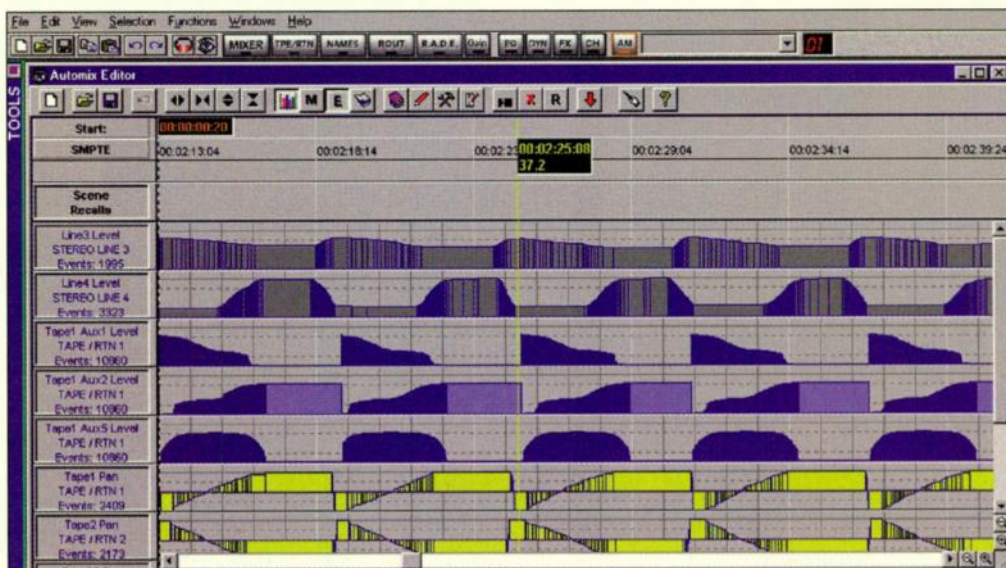


FIGURE 1: Visualizer Automix Editor

inally distributed as a freebie to the first wave of O2R owners back in 1996. Today's more full-fledged rendition (version 2.0.1) is sold directly by the manufacturer on their Web site and is also available bundled with their Localizer plug-in (which provides extensive surround panning capabilities, as we'll see shortly). PMP is actually a sub-program, written in Max. Although you

again to the O2R To Host port.

Both programs require high-end video output and as big a monitor as you can muster. They will work, though, with 17-inch monitors, if you set the screen resolution very high and borrow your grandfather's magnifying glass. Installation is simple and painless in both cases, although, depending on some control panel settings, Visualizer may



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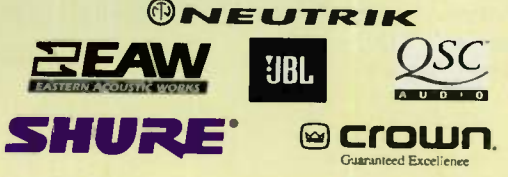
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require a little tweaking of a few simple system parameters.

In terms of their feature sets, let's start by talking about the commonalities. Both programs provide graphic overviews of the entire mixer (an extremely dense display, especially in Visualizer) and both allow remote editing of all 02R parameters directly from the host computer (using standard mouse and alphanumeric entry). Both also present these parameters in a better way than does the 02R display itself. For



FIGURE 2: Zeep Localizer

example, PMP's Automix Editor puts all the parameters from the 02R Automix screens 1 and 2 in a single window. Similarly, Visualizer's Patchbay Editor shows every internal patch in a single window (a feat that requires five subscreens in the 02R display). And when we say all parameters can be edited, we mean *all*. This includes the aforementioned dreaded scene/channel/EQ/dynamics/automix naming, which can now be done directly from the computer keyboard — a feature that, in my opinion, alone justifies the cost of either program.

Both programs save various data types (i.e., scene memories, channel libraries, etc.) in separate files and also can create global "project" files that automatically load all the data types you've saved during a particular session. Both offer graphic editing of EQ curves (pull on a point with the mouse and move it around), and PMP even provides graphic displays of dynamics settings. Both allow you to add session notes (text comments) and can even create and save graphic displays of non-automatable parameters such as preamp trims and pad settings.

Each program has a special bag of tricks that extends the functionality of the 02R. PMP, for example, provides a handy Global Copy/Paste page. This allows any pa-

rameter (or any number of parameters) to be copied from any channel and then pasted to any other channel (or channels) in any Scene (or in multiple Scenes). For example, you might want to copy the EQ, dynamics, pan, and attenuation settings from one channel — but not its aux send levels or other parameters — to a bunch of different channels in the same or a different Scene. Using the 02R's onboard capabilities, this would be a difficult and tedious process; in PMP, it's a snap.

Visualizer has a similar copy utility, and provides an even greater number of innovative features. Its Headmix Editor enables fader settings to be instantly copied to any aux send; its Label Pool is a text editor where you can type in a bunch of often-used names, which can then be dragged and dropped onto any channel. Other features are aimed at the world of multimedia; a Faderstart option allows 02R fader movements to trigger playback of soundfiles from the host computer's hard disk, and a CD Start option causes different tracks of a CD inserted in the host computer CD-ROM drive to recall 02R Scenes. Visualizer also has a neat Display 02R Messages command, which places the current 02R display in a little window on your computer. Unfortunately, this takes a second or so to be transmitted, and doesn't update automatically.

There are two areas where the programs diverge significantly: automix editing and surround panning. PMP, unfortunately, doesn't really expand at all on the 02R's onboard automix capabilities other than providing a graphic interface. It does, however, allow you to upload and download automixes from the 02R memory to and from your Mac, making it simple to

backup your data on hard drive or removable media and recall it as necessary. Visualizer takes a radically different approach to automated mixing. Its sophisticated Automix Editor provides a wealth of tools for displaying and editing automix parameters. Best of all, these edits are done completely in the computer's memory and not in the 02R, so your mixes can be considerably longer and more dense than any you might create in the console itself.

The paradigm used by Visualizer's Automix Editor is the MIDI sequencer. A graphic display (see fig. 1) presents all mix moves as curves, with the horizontal axis representing time and the vertical axis representing the degree of movement. This is very similar to the displays used by computer-based sequencers to show MIDI controller movements, with each type of data color-coded (i.e., fader level changes are purple, pan movements are yellow, etc.).

Needless to say, there are many tools provided that allow you to move, resize, rescale, and otherwise reshape your mix moves. One especially handy tool allows you to instantly delete duplicate events; this can serve to significantly reduce the size of an automix file. There's also a nifty BPM utility that allows you to superimpose bar/beat lines on the display — just tell Visualizer how many bars/beats are contained within a selection area, and it calculates the rest. My only quibble with the graphic display is that there's no provision for changing the order of the display; for example, you can't place the pan movements of one channel directly next to the level movements of another. If you're more into dealing with text, Visualizer also provides an Automix event editor. This works much like the event list editor in most MIDI sequencers. Here, individual events can be altered but not deleted — the logic of this design decision escapes me.

If you're considering entering the brave new vista of surround sound, both of these



FIGURE 3: Visualizer Surround Panner



programs have a lot to offer, although, again, they differ sharply in the approach they take. PMP itself has no surround capabilities, but from within it you can run a Zeep plug-in called Localizer (available separately or bundled with the main program; see fig. 2). Localizer is way cool, but it largely ignores the 02R's way of doing surround panning. For example, instead of using busses 1-6 as surround outputs, it uses aux sends 1-5 (there's no provision for a subwoofer send). This, of course, means that you are robbed of five of your six external aux sends. The tradeoff is that you get superb panning control and don't have to rely at all on the 02R's few preprogrammed (and boring) pan trajectories. You can freely move the sound with your mouse by moving an on-screen dot in a master Viewer, or you can create any trajectory (here called a "path") and then move the sound along it either with direct mouse movement or via an internal oscillator set to any frequency you like — you can even capture your mouse movements or trigger trajectory movements at the programmed frequency from incoming SMPTE timecode (this only works for one channel at a time, however). Stereo-paired channels can be panned simultaneously, either in tandem or with the horizontal and/or vertical movements inverted. You can also link any channel to up to two more channels, allowing you, for example, to pan a signal and its effects return simultaneously, again either in tandem or inverted.

Localizer also allows you to store and recall sets of user-defined pan paths, so you can easily create hundreds of custom surround panning movements. One caution: PMP can only access automixes stored in the 02R itself, and the hundreds of constantly varying aux send events generated by Localizer eat up a lot of memory. Therefore, without the full 2-1/2 MB of expansion, you'll be running out of real estate long before you run out of creative ideas.

Visualizer takes a slightly more conservative approach to surround panning (see fig. 3), sticking to the 02R's preprogrammed trajectories and stereo links, and also using the standard routings of busses 1-6 (leaving all your aux sends available). It does offer, however, one huge advantage over PMP, and that is the ability to freely move a sound in space using a standard joystick connected to your computer. There's also an on-screen "ribbon controller" that you can use to move a sound along the selected trajectory (either clockwise or counterclockwise) and an "oscillator" that remembers the speed of your movements and continues to loop them until turned off. The best feature of all is a Commit To Automix button, which adds your sur-

round panning moves directly to the automix currently in your computer's memory at the specified SMPTE address; this way, you don't even have to run the mix in real time to get your moves added, and they don't eat up any valuable memory in the 02R itself.

Assuming you have the luxury of two computers (or have yet to buy a computer), which program should you choose? It's a tough call, since both have so much to offer. On the downside, there may not be enough bells and whistles in PMP to satisfy the more demanding 02R user. That said, Visualizer suffers from a truly atrocious owner's manual (transliterated, not translated, from the original German) and a relatively steep learning curve.

On the upside, PMP has the advantage of being straightforward and simple, and if you're really into dynamic surround pan-

ning (and are willing to lose five of your aux sends), its Localizer plug-in is killer. For those heavily into automated mixing, Visualizer is a better way to go, since it frees you completely of all 02R memory restrictions and provides so many ways to edit your data. In addition, it also supports multiple 02R's, which PMP does not. If you're serious about the work you're doing on your 02R, you're going to need one of these programs. Either is guaranteed to redefine the way you work.

*Howard Massey heads up On The Right Wavelength, a MIDI consulting company, as well as Workaday World Productions, an 02R-based music production studio. He recently did a seven-minute surround mix on the 02R that was nearly a megabyte in size.*

## EQ LAB REPORT

### ZEEP PROJECT MANAGER PRO

**MANUFACTURER:** Zeep.com, 4001 Berri Suite 102, Montreal, Quebec, H2L 4H2 Canada. Tel: 514-286-2604 Fax: 514-844-7650. Web: www.zeep.com

**APPLICATION:** 02R editor for the Macintosh.

**SUMMARY:** Simple and easy to use, this program allows you to easily edit all 02R functions on your computer screen.

**STRENGTHS:** Short learning curve; good online help; global copy and paste function; extensive surround panning capabilities (including user-defined trajectories) provided by optional Localizer plug-in.

**WEAKNESSES:** No automix functions beyond that offered by the console itself; Localizer plug-in uses aux sends 1-5 as surround outputs; memory-intensive (requires at least 13 MB of RAM in addition to system overhead).

**PRICE:** \$295, Project Manager Pro only; \$295, Localizer plug-in; \$439, bundle price for Project Manager Pro plus Localizer.

**EQ FREE LIT. #:** 107

### C-MEXX SOFTWARE VISUALIZER

**MANUFACTURER:** C-Mexx Software, Waldstr.4, 91322 Grafenberg, Germany. Tel: 49-9192-997475. Web: www.c-mexx.com.

**APPLICATION:** 02R editor for Windows 95/98/NT.

**SUMMARY:** An incredibly powerful and deep program that adds many new capabilities to the 02R.

**STRENGTHS:** Full-featured graphic and event list editing of automix data; joystick control of surround panning; remote on-screen viewing of the 02R display; adds multimedia capabilities such as scene recall triggered by CD tracks and audio file playback triggered by fader moves; copy utility makes it easy to set up headphone mixes.

**WEAKNESSES:** Poorly written, disorganized owner's manual; steep learning curve; dense screen layout; currently no U.S. technical support.

**PRICE:** \$499

**EQ FREE LIT. #:** 108



# Aardvark AARK 20/20+ 20-Bit System

Many interfaces and quality converters make this box a good way to bring audio into your PC

BY MIKE SOKOL

I reviewed the predecessor of the AARK 20/20+ last year in these pages as part of a series called "Going Beyond 16-Bits." This model is the same, basic, cost-effective system, but with a few added bells and whistles that make it an even better bargain. [Aardvark has just introduced a 24-bit version of this unit, called the AARK 24, that has basically the same price and features as the "plus" version reviewed here, but with 24-bit A/D and D/A conversion. —Ed.]

The AARK 20/20+ is a multitrack interface that allows you to take a Pentium-based PC and turn it into a full-

physical and electrical abuse. All of the A/D-D/A electronics reside in a remote breakout box hung on the end of a 6-foot shielded cable. This design helps isolate the converters from the electrical ravages of the computer itself. This breakout box is rack mountable with an optional kit, but it's heavy enough by itself to sit on a shelf without sliding around, and rugged enough to survive a drop to the floor. Since it gets its power from the computer, there's no additional AC power cord required, which happily is one less ground-loop path.

Interface to the analog world is accomplished via 16 TRS 1/4-inch jacks for the analog ins and outs. This "plus" version adds balanced jacks for the audio connections instead of the unbalanced ones on the previous model, which, for my studio, is a big advantage. As I've noted before, I have a veritable rat's nest of analog, digital, and computer lines running in every direction. Furthermore, two powerful radio station towers are located less than a mile from my studio. (Hi Chrissey and Brenda from

there are any breaks in the shields, loose grounds, or limited slew-rates in feedback loops of gear. So I wire my racks with balanced cables and use TRS and XLR connectors wherever I can for the added insurance.

Included with the AARK 20/20+ is a software control panel for the PC that uses the on-board DSP to add functions without slowing down the computer's processor. This control panel allows you to set the sample rate to 32, 44.1, or 48 kHz, generate calibration tones (very handy), or meter any or all of the inputs and outputs. Included is software selectable routing, digital peak meters on every channel, and a stereo monitor mixing bus that allows you to quickly rough out a stereo mix — handy for real-time monitoring or creating a headphone mix for multitracking. In addition, ASIO drivers are available for Cubase VST, which provides low latency and seamless multichannel integration of the AARK 20/20+ and Steinberg's excellent application.

I installed the Host interface card in my Win98 workstation, which



featured recording system. A PCI bus card serves as the interface and incorporates a large epoxy module, which protects the electronics from

WQCM...now where are my concert passes?) Of course, having all that RF traffic so close means that demodulation of the signal is possible if

is a 233 MHz Pentium with 64 MB of RAM and some 20-plus GB of hard drive in both SCSI and IDE flavors. There were a few installation prob-



lems this time around, basically caused by all the various driver remnants left on my computer from the dozen different audio cards I've had in it during the last

lems, but, on my version of the control panel, it wasn't set as the default. Of course, this is a problem whenever you're interfacing multiple pieces of dig-

especially at very low levels where I like to listen for nonlinearity problems. Part of this transparency is due to the heritage of the low-jitter reference clock, which is similar to the circuit used in the professional AardSync II (\$1795), used in many world-class facilities. In addition, the analog electronics seemed very quiet and behaved satisfactorily even when using ultrasonic test signals and sound sources like maracas.

Note that this is a 32, 44.1, or 48 kHz converter — no 96 kHz. Still, this is sufficient for all but the most critical applications. Yes, everybody's talking about 24/96, but not many are ready to pay the price for doubling the data storage and bandwidth required. But 20-bit by 48 kHz is excellent for multitrack recording when compared to the 16/44.1 environment. Moreover, with the notable exception of the upcoming DVD-Audio disc (six channels of 24/96 without lossy data compression), everything you do eventually will end up as 44.1/16-bit CD-quality. Therefore, I'm very happy with this resolution.

The AARK 20/20+ is a real bargain for those running on a PC platform. It does its job elegantly without adding anything to the data stream. The converters sound as good as many higher-priced units, and the price is affordable. Plus, the super-accurate clock, balanced TRS connectors, and ADAT interface take it a few steps closer to the professional user. **EQ**



year. (See the sidebar for details of the battle between Bill Gates and me.)

The throughput of the PCI bus was sufficient to get eight tracks of recording and playback at the same time on my workstation, and I could switch to the ADAT optical interface for directly loading in material from my ADAT decks. Since I'm running a BRC with timecode, I could easily do multiple passes with a single AARK to get in 16 or 24 tracks without any problems. Aardvark advises that you can install up to four AARK systems in the same machine for 32-channel in/out applications. Also included is a connection for word clock I/O, essential for interfacing into a professional audio or video studio environment.

One thing to watch out for is that the internal clock doesn't automatically switch to the input selected. Consequently, it allowed me to accidentally input an S/PDIF connection from my DAT deck while keeping the clock running off the internal reference. This showed up later in playback as a periodic "glitch" every minute or so in the recording, where the two clocks drifted far enough apart to ratchet over a byte. Within the control panel is a setting that will warn you of such clocking prob-

ital gear with their own clocks and interfaces. Aardvark does make a Sync box called the TimeSync II (\$1295), which is designed for interfacing digital audio gear into the world of video editing. That box will slave to LTC timecode and make a master clock for all your little digital droids to step in time to.

Overall, the sound of the AARK 20/20+ converters seemed transparent,

## **EQ** LAB REPORT

**MANUFACTURER:** Aardvark, 202 E. Washington, #306, Ann Arbor, MI 48104. Tel: 734-665-8899. Web: [www.aardvark-pro.com](http://www.aardvark-pro.com).

**APPLICATION:** Multichannel I/O for PC. Just add a Pentium with a big hard drive and you're in business.

**SUMMARY:** Ten channels of high-quality A/D and D/A converters with PCI bus interface card and on-board DSP, 20-bit A/D-D/A, 24-bit S/PDIF, word clock, eight TRS balanced 1/4-inch analog inputs and outputs, stereo S/PDIF port with RCA connectors, MIDI ports, ADAT optical interface, Sony MiniDisc I/O.

**STRENGTHS:** Lots of great sounding but inexpensive A/Ds and D/As; no 120-volt AC power required means one less ground loop path; accurate on-board clock; MIDI, S/PDIF, and ADAT interfaces make this a one-stop box.

**WEAKNESSES:** Clock source doesn't auto-switch to the S/PDIF reference.

**PRICE:** \$899, basic system; \$99, rackmount option.

**EQ FREE LIT. #:** 109



# Frothing at the Mouth *on the Front Lines*



PHOTO BY STEVE JENNINGS

A look at some industry events affecting the musical online community

BY JON LUINI AND ALLEN WHITMAN

Fast into fall, the FezGuys finagle a furtive flight to find a frantic feeding frenzy in full swing. Phooey! True to our ongoing mandate of reporting from the frontlines, we peek inside some recent industry events—one full of suits and another full of bands.

## DDMI

We first visit the Los Angeles-based DDMI (a.k.a. Digital Distribution and the Music Industry) conference over September 8th and 9th. Purported to be the place where *the* players in the continually convulsing world of online music commerce will gather, this first-time outing of a new industry get-together by First Conferences was more thud than zing. During the two days of sales pitches and hyperbole, we repeatedly asked ourselves: does this business really need more seminars/conferences/junkets? It *does* need more education. But the panels and sessions of these music and technology conferences

typically don't deliver real-world, down-to-earth information. Once the smoke clears, it's pretty obvious nobody knows which way digital distribution standards will play out.

The conference was not without amusement. The preternaturally calm and obfuscatory Douglas Armati from Intertrust (the self-described "Meta-Utility") urged all to put "trust inside the machine." The extremely polite and dissembling Karlheinz Brandenburg from the Fraunhofer Institute reminded us that MP3 is merely a "format for a representation of audio." Michael Robertson, the uberface of MP3.com, was seen ducking out of the conference shortly after his speech with a cohort who urgently intoned: "I've got the software up in my room." Ah, the bedroom dealings behind closed doors. The FezGuys will not take that lying down! We will strip away the barriers to the truth! Place your hand over your heart and repeat with us: "MP3 is not pure audio! The Fraunhofer gang says so! They should know because they invented the damn thing and also because 1 percent packet loss is unacceptable!" (See our column in the August '97 issue (column #10 on the FezGuys Web site) about the packet loss conundrum).

The highlight of the conference was the Artist Panel. True enthusiasm for the possibilities of Internet audio and community was displayed by the likes of Nile Rodgers (producer extraordinaire) and Dave Allen (Gang of Four, Shreikback, enlightened industry guy). Made us proud to be musicians.

## NXNW

Thousands of rock star wannabes descend upon Portland, OR in hopes of a decent cup of coffee, a romp in the sack with a logger's son or daughter, or a record contract. Well, one out of three ain't bad, and that coffee was *hot*. This year's NXNW extravaganza in the City of Roses (September 30th to October 2nd) marked the first year of its "Internet Technology in the Music Business" makeover. Unlike its bigger brother, SXSW (who produces NXNW), everyone present had a lot to say about the Internet. New iMacs adorned the conference rooms, brightly projecting the NXNW Web site and associated sites of panel members for all to see. The small tradeshow floor was littered with Internet music startups urging musicians to give them a free song. The Web site hawkers promised globalosity leading to: Fame! Fortune! Success!

The weather in Portland was clear and bright, the evening fine for walking between clubs. Music festivals are the physical analog of a Web page: One wanders hither and yon, follows many intriguing links, and encounters many strange people and strange things.

The FezGuys got into the face of the above-mentioned Michael Robertson. Though generally accepted by all as the *de facto* spokesperson for the emerging online music business, it appears he doesn't get the bigger picture. The music industry is moving steadily into the Internet and digital arena. But his focus remains on stock prices and the financial bottom line. He offers no clear solutions as to how a musician might stand out from the other 20,000-odd musical entities on MP3.com (of course, it's not their business model, but you'd think with a \$2-3 billion market cap, he'd have *some* ideas!). Mr. Robertson also appears unconcerned with the downward spiral of sound quality as listeners become accustomed to 128 kbps MP3 files. What if cassette audio (or, heaven help us, 8-track) had become the standard mastering format simply because of consumers' willingness to pay for it? MP3.com currently sells between 500 and 1000 CDs per day. That's one CD sold per day for one in 25 bands. These CDs are created by converting 128k MP3 files *back* to WAV (a process which results in a loss in audio quality).

At those odds and that degraded audio quality, the FezGuys consider Mr. Robertson (ever the brilliant business opportunist) to be over-playing his role as the voice of independent musicians. Lest we seem too harsh, Mr. Robertson can be credited with speaking up for rights and possibilities at the dawn of the Internet age. The world is certainly listening and, whatever his personal motivations, his timing couldn't be better. But it's our FezGuy oath to goad anyone who has that much visibility into acknowledging a responsibility to improve the state of the industry, not just make a few billion bucks.

Oh, there was some good music too. Alien Crime Syndicate (power pop punk) energized and emoted entertainingly. Red Meat proved people still like to dance, a refreshing dose of upbeat original country amidst a sea of alternarock. The venerable Billy Nayer Show offered lounge cacaphony at its best. It's good to see music in small venues — it reminds us how important live shows are. Merely slapping an MP3 online doesn't mean anyone will find you.



**FOLLOW-UP ON SEPTEMBER'S COLUMN:  
UPLOAD SITES**

The September issue's column, concerning a review of five upload sites, gathered the strongest response yet from you faithful FezReaders. We thought we'd mention a few other points. These sites are hosting your stuff for free, but that's no excuse for providing confusing, unnecessarily complex, or just downright bad service. Without your good music, they've got nothing! If there's something you'd like to say or see changed, by all means tell them. Of course, the FezGuys always recommend politeness. As of this writing, there are new players entering the field with some new twists.

We received a suggestion from several of you to check out the following site. Your wish is our command!

<http://www.earbuzz.com/> is a cute-looking site that doesn't feel corporate. There are some spotlighted bands, but no editorial explanation of their relevance. The site seems primarily focused on sales of traditional CDs and merchandise. We follow a link to becoming a "charter member." The system of the site is unclear: Are we sending CDs to the office of this site by mail? Are we uploading MP3

songs? Both? Neither? After submitting our contact information, we get a very confusing "Error Page." The "error" is described in programming techspeak, but what, exactly, is required of the layman to correct the "error" is not mentioned. We figure it's our old privacy nemesis, telephone shyness, coming back to haunt us. Sure enough, by entering "—" instead of numerical data in the phone number box, the "error" goes away.

After successfully lying, we receive another page answering some of our first questions, but not completely. We are queried: "Song you want MP3'd?" What if we have one to upload already? Another query: "URL to RealAudio file?" Does that mean they won't create one for us? RealAudio files linked to a Web site are not "normal" music files (they are usually metafiles — see our column, March '98). What does earBuzz really want: the raw data or the RA metafile? We assume they want the raw file so they can stream it from their server but, again, it's not clear. We receive the following message after successfully completing the contact info:

"Send 5-20 CDs of each title listed above for earBuzz's inventory, plus one CD

for earBuzz promotional use (we'll record the MP3's and scan the cover, review, etc.). Also include 5-20 pieces of any merchandise you want to sell. You can also send a photo promo shot that we will put on you (sic) Web page."

The above message should be on the splash page in some form. Clarity of purpose from the first page just makes sense. It also saves a lot of time and answers a lot of questions.

Why not let us upload a soundfile or an image? Also, upon completion, the "Member Services" section doesn't activate right away. It would be useful to know how long we can expect to wait until our area is ready to edit. Will it be when our CDs arrive? Will it be one hour? One day?

At first glance, earBuzz is not our cup of tea. The primary service of the site is mail order fulfillment, which is fine as far as it goes, but, really, you can take orders and send out CDs just as easily as they can. What with all the free sites available (and happy to direct visitors to your personal Web site) it appears the earBuzz model is another example of an unnecessary commercial middleman, something already obsolete in the promise of the Internet age. **EQ**



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# More Tape Machine Tips

## User tips for Panasonic DAT and the TASCAM DA-88

BY EDDIE CILETTI



In the June issue, I detailed the procedure for checking Error Rate on the Alesis ADAT XT as well as Panasonic's DAT machines (excluding the SV-3500 and SV250 series). Based on e-mail feedback, some readers didn't understand the difference between Error Rate, which is a report of the machine's ability to recover the data from tape, and an Error Message. To determine the Error Rate — a four-digit number — the machine must be in Play — "0000" is mighty good.



Some tape machine malfunctions come under the heading of a "time out," which is the failure of an event to occur within a predeter-

mined time window. While *all* Error Messages may be cryptically displayed — because alphabetical characters are mutated by numeric-only displays — the translation, in many cases, is the same. "Something electro-mechanical is wrong. Please take me in for service. I will not eat your tape if you stop now." Don't ignore repeated error messages. Don't get frantic if the tape won't come out.

### RE-INITIALIZE

So many people are used to re-initializing the Alesis ADAT (Record and Play while powering up) that they expect to restore other products to reality with a similar fix. TASCAM's DA-88 does not have a user-accessible "re-init" procedure. When an error occurs, machines "freeze" to protect themselves and your tape. Power cycling — turning the machine off, then on — will clear most Error Messages on most machines. Repeated demonic behavior requires a trip to Doctor Tweak.

### LABEL JAM

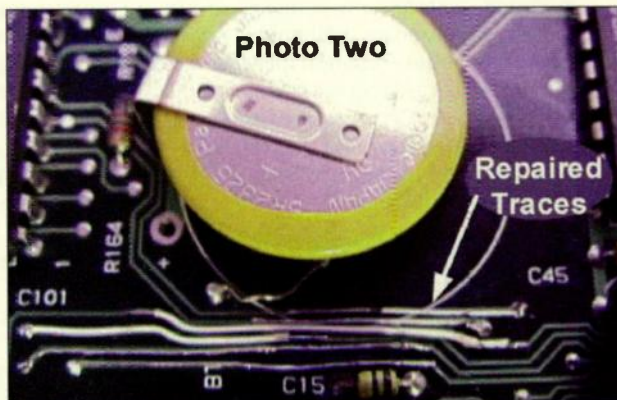
There is a new jam made from a genetically engineered fruit called a "label." But seriously...some tape jams are not the fault of the machine at all, but rather the user's failure to properly label the tape. Particularly with Hi-8 cassettes, labels should be on the spine as shown in photo 1. Unlike DAT and VHS tapes, the Hi-8 shell has an additional protective shield to surround the first three inches of tape waiting to be threaded. During the loading process, the shield will lift the label, which will then "catch" in the loading mechanism. Duh!

### E CLOCK ERROR

Nearly every device has a backup battery to store user and, for some tape machines, alignment parameters. When the

battery goes bad, Al S. Heimer moves in. The first clue that the battery is unhappy is the inability to store memory presets (the DA-

88 has two). In addition, an "E-Clock" error usually refers to a missing external Word or Video reference, but a leaky battery can eat circuit board traces, damaging the system



board and creating this message and a whole slew of strange symptoms.

Whether or not a problem is noticed, you should immediately check the battery. To do so, remove the DA-88's cover. There are three large Philips screws on each side and a rear-accessed smaller screw at the top middle of the machine. Under the cover, there may be a copper plate that must also be removed. The battery is about the size of a quarter on the left side of the system board (when the machine's face is positioned at your chest).

Photo 2 shows a Panasonic BR2325 replacing the original Sanyo CR2430. I chose the Panasonic part because the yellow band covers the seam around the circumference where the "plus" and "minus" plates meet an insulating ring. This is where gasses (and worse) escape. If this has happened, immediately clean any *schmutz* with a cotton swab soaked in acetone.

Suspect a machine claiming low head hours. Have the battery checked. These Lithium batteries should be 3 volts. (A leak doesn't necessarily affect the voltage, but it does



Photo 3-a



Photo 3-b



increase battery noise.) Since there are many older DA-88's in the field, take advantage of any excuse to take yours in for technical evaluation. Have the battery changed and the circuit board repaired (as shown, if needed) and ask the technician to make sure all the new mechanical updates are installed. (This includes a self-cleaning kit, new reel tables, slide cam, and, in some versions, the "cam and sector gear.")

**DA-88 FAN MOD**

The DA-88 has a fan to cool its linear power supply, while the DA-38 and DA-98 have a more efficient switching supply that requires no additional cooling. The stock DA-88 fan pulls air through the unit, from the sides as well as the tape insertion slot, which draws dirt into the mechanism.

While TASCAM has not yet implemented my fan mod, I feel it is essential. If you don't believe me, then believe photo 3-a (a new filter) and photo 3-b (a dirty filter with 800 hours of "play" time and untold hours of "on" time)! Better outside than in, don't cha think?

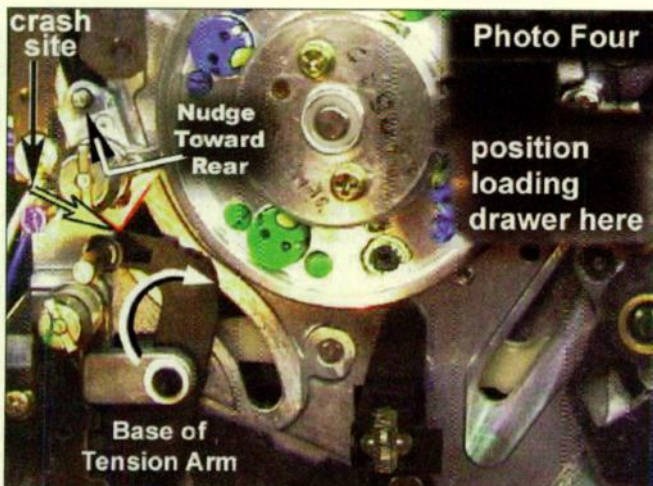
**REEL (TENSION) PROBLEMS**

Contaminated reel table clutches can cause an array of problems for a DA-88. The reel tables have been redesigned three times and all have a shorter life without the fan mod. A bad Supply Table Clutch will seriously reduce the life of the heads when Reverse Cue is used. A failing Take-Up Clutch will have erratic tension, putting a heavy strain on the capstan servo system and causing the machine to take longer to lock to itself, let alone another machine.

Dirt and bad clutches, combined with a typically high factory back-tension setting, can reduce head life to far short of the expected 1000 hours. The fan mod and the minimum tension setting — detailed at [www.tangible-technology.com](http://www.tangible-technology.com) — were previously detailed in this column. I believe attention to these simple details extends head life.

**PANASONIC FINALE**

Last year I discovered a Panasonic DAT recorder problem while teaching a DAT repair class at CTG in Atlanta, GA. This year, after making a point to check and replace the parts in question, I still had great difficulty with machines jamming. This was frustrating for my client and embarrassing for me, because the machines burned in over a weekend and tested fine. Thanks to Glenn at Coleman Audio, I rediscovered the back ten-



sion felt and lever, which must be replaced even if the performance seems normal.

Several defective parts can contribute to creating a tape-hungry machine. None are user-serviceable, but photo 4 details the one failure mode you can undo, at least enough to

retrieve the tape. When the Left Slant Block attempts to return the tape to the shell, the Black Plastic Tension Arm does not move out of the way fast enough. (The "crash site" is outlined in red.) Position the loading drawer as shown and buy some bamboo skewers (they make safe tools for nudging delicate DAT parts). With the skewers, move the slant block, and then the tension arm, in the directions indicated by the arrows.

I'm outta room! This article does not assume you "know it all," so if you need more info, visit [www.tangible-technology.com](http://www.tangible-technology.com) for the most extensive digital tape machine, self-help info online.

See ya next month for ADAT maintenance tips!

*Eddie Ciletti repairs tape machines for a living. (Does it show?)*

**DA-88 MAXI MIDI**

While on the subject of DA-88 communications, here's a tip from TASCAM's customer service department. When interfacing to the Spirit digital console — or similar MIDI remote control via MIDI Machine Control (MMC) — check these user options:

- On the rear of the SY-88 card, check that dipswitch 2 is in the up position for MIDI Machine Control. (The alternative setting is for Sony 9-pin/RS-422 control. For this option set dipswitch 2 down, the "off" position.)

NOTE: With all dipswitch options, the DA-88 must be re-powered in order for the new settings to take effect.

**Setting The MIDI ID Number And MIDI ID Offset**

The default DA-88 MIDI device assignment is ID-1. Manufacturers differ in the way they implement the MIDI device assignment range. TASCAM's IDs range from 1 to 128, while other products may choose to shift the range by "one," resulting in IDs that range from 0 to 127. If the latter is the case, you will need to "offset" the value. TASCAM's ID-1 would translate to another manufacturer's ID-0.

**Synchronization**

The DA-88 can easily be the master, outputting both MIDI timecode (MTC) or SMPTE timecode. This assumes you have an SY-88 card or MMC-88 adapter (this adapter converts the proprietary machine information from DB-15 connector to MTC and MMC).

DA-88 As Master...Setup (With SY-88)

- **Option 1:** Stripe the dedicated TC track with the desired frame rate (30 NDF for MIDI, typical).
- **Option 2:** Use the ABS to SMPTE option.
- The frame rate from the machine must match that of the receiving device.
- Once recorded, the frame rate of the recorded TC track cannot be changed without first being re-recorded.
- If converting ABS to SMPTE, the frame rate can be reconfigured.

DA-88 AS SLAVE?

The TASCAM DA-88 will only slave to SMPTE and not MTC unless you have a MIDI-to-SMPTE converter box such as the MOTU MIDI Timepiece (AV) or Digital Timepiece.



## INDUSTRY INSIDER

continued from page 48

excitement because the potential of so much technology is truly being fulfilled. MIDI has always been great, but VST 2.0 takes computer-controlled synthesizers to a new level. What's more, even low-cost computers have enough muscle to take advantage of today's plug-ins. CD burners work more reliably, digital interfacing is pretty much painless, and software is getting more aesthetic. All in all, delivering on the promises made earlier in the decade seems like a good way of closing it out.

*Craig Anderton is fine-tuning his next CD, Sexy World, which will also be available in ACID loop library format. He often plays live over in Europe; one of his tunes was remixed for the compilation Battery Park Cologne 3.0 on the Harvest label. He is also the author of Home Recording for Musicians, available from [www.musicbooksplus.com](http://www.musicbooksplus.com).*

## BONZAI BEAT

continued from page 56

amplifier that was designed for a bass — we used it on Lisa's record — it's made by a company called Road. It's great for single-coil guitars, like the Duosonic.

**Eric from the Bahamas wants to know if Lisa sings and plays guitar at the same time while recording.**

Loeb: Lately, I've been recording electric guitar direct with a vocal mic set up so that if I get a vocal we can use it.

**David from Boston wants to know what you think about music videos?**

Loeb: I like videos that aren't distracting from the music, and don't cost too much. Some videos cost more than it does to record an album. You can waste a lot of money, and if nobody plays it, you wish you would have used the money to record a whole new album.

**Zappa: Videos are — interesting. They often introduce me to new bands like N Sync.**

**Stephen from the Berklee School of Music wants to know if you plan a whole album with a theme in mind.**

Loeb: Well, I've found that in one period of time songs just fit together in some way. Writing, or cowriting, I have an idea of what they will sound like. If you work hard, the songs connect. But I don't consciously work for an album theme. I'm not trying to make *The Wall* or some giant concept album.

**Zappa: You're not?! I thought we were making the follow-up to that Styx record — *Mr. Roboto*.**

## 16 SWEET TIPS

continued from page 118

grooves after the fact. Once you have everything just as you want, you can re-sample the funkified groove.

### 11. USE MOSTLY MAXIMUM VELOCITY

For the most part, drums in beat music are about extremes; there is loud and soft. You might as well start loud, and make it soft later if you want.

### 12. TWO BAR LOOPS RULE

This is a testament to "call and response" blues lyrics. It is also like inhaling and exhaling a breath of air — beats cannot survive if they only inhale, because they need a second bar to exhale.

### 13. DIVIDE YOUR TIME: LOOPS OR TRACKS?

Time management can be helpful. Before you start to work, decide if you are going to concentrate on making and sampling new loops, or arranging tracks. Once you have many loops, then the tracks come together more quickly.

### 14. THE "MOVING BODY" GROOVE-O-METER

If you are working on a groove pattern and your body isn't moving, then the pattern sucks (or blows, depending on your outlook). Bottom line: If you don't lose at least 15 minutes being seduced by nothing but a loop's hypnotic dance power, then forget it.

### 15. LOSE THE MODULE, USE A SAMPLER

Most MIDI tone modules have horrible drum sounds — even some intended for the dance/remix market. You're better off sampling your friend's MIDI module and using layering, pitch changes, filtering, etc. to come up with something better. If you have an older, poor-quality sampler... great! Treasure it and keep it in good shape.

### 16. PIANO KEYS AREN'T DRUM PADS

Try to use hardware sequencers because they have pads instead of keys; programming drums on piano keys is about as much fun as playing piano on drums.

*Classically trained timpanist Frank Heiss has accepted the sampler as his personal savior. You can hear his beats on the Wizoo sample CD *LoFi Junkies, Vol. 2*, and on his latest CD under the *HearNow* name, *Bending Spoons* (EMI 7243 4 97151 2 7). He is currently on tour opening for *Sisters of Mercy*.*

## MARK ISHAM

continued from page 125

rector's signing off is in fact a true signing off — if the picture is locked, in other words, they're not going to change the picture — then the simplest thing is to record the electronics first. You've got your click; you've got your stable idea of what the score's about, and you take it and overdub the orchestra.

"Having said that, if you have a director who is constantly changing their mind; constantly re-cutting the picture, or you hear rumbly in the background that the studio's going to change the entire picture, then that's tricky, and sometimes you run the electronics live with the orchestra so you can edit at the time. That's more complex; I don't like doing it that way, because I like to take time recording electronics — it's my background as a programmer; I like a lot of effects and getting everything really fine-tuned.

"The other way, of course, is to just run electronics live with the orchestra, because once you've got the orchestra there, and you're paying whatever it turns out to be — \$10,000 an hour, or something, for a room with the orchestra and everything — directors pretty much have to make up their mind. If they don't sign off, then that's it, they've lost their chance! So once they've done that, then I can go back and redo the electronics if I have to — if we've done any editing on the actual scoring stage. Sometimes it ends up like that."

Whatever his chosen production path, Isham has a long-standing working relationship with orchestrator/conductor Ken Kugler; Isham supplies Kugler with MIDI files of his compositions — in an orchestral score they could have strings, percussion, harp, piano and woodwinds; Kugler transforms these into a score. For Isham, having a sampled "virtual" MIDI orchestra at his fingertips is a godsend — not least that Studio Vision Pro, his compositional/sequencing software of choice, permits constraint, as it were, such that he cannot play outside the various orchestral instruments' real-world ranges: "I'm sort of aware already," he jests, "but it's nice to have that built in — just to remind you, 'Excuse me, the bass clarinet doesn't have that note!'"

### TRUMPET CALL

Not that Isham has entirely forsaken his "synthetic" past — far from it, in fact. Even his beloved analog collection — now expanded, additionally incorporating an Oberheim Xpander and rare Moog Model 12, one of those "big modular Moogs" he once admired from afar — regularly gets a look-in: "I just did an entire film score that used the '2600," says Isham, with a hint of bravado. "I use the MPU101, an old Roland box, which is pretty clever at getting MIDI into control-voltage instruments."



And it's not just analog that gets Isham's creative juices flowing; an extensive selection of their more modern DSP-driven counterparts nestle happily alongside those "golden oldies" inextricably linked with a misty-eyed bygone era in American sonic history. Of his Korg Trinity Plus, Z1, Prophecy, Wavestation A/D and ubiquitous M1, Roland JD800 and MKS80 (with MPG80 programmer), and newly acquired, knob-laden Access Virus, the latter is currently proving most agreeable with the composer. It's that immediacy thing again, no doubt.

Lest we forget, in the acoustic world, it is as a trumpeter that Isham came to the attention of a dazzling variety of acts, many seeking to access his distinctive processed trumpet "sound," the background to which is simplicity itself: "Once again, I was just in my last year of school," Isham divulges; "Miles Davis' *Bitches Brew* and *In A Silent Way* came out, and there it was: the electric trumpet. Also, parallel to that, another trumpet player who was really deep into this was Don Ellis. He's sort of vanished from people's awareness, but at the time, for me, he was a tremendous influence, because he, along with Miles, really said, 'Yes, the trumpet can be an electrified instrument; it can partake in all the processing guitarists and keyboard players are getting into.' It was a tremendous new realm for the instrument, and, once again, it was great for me; I borrowed my guitar player friend's wah-wah pedal at the first opportunity and have been really experimenting ever since with the various things that one can do with an electric trumpet."

Therefore, not to make mention of Isham's impressive trumpet assortment seems rude — a luxury, perhaps, in the kindest collector's sense of the word, akin to, say, fellow film composer Hans Zimmer's penchant for pricey analog modular systems? Isham grins at the impromptu analogy: "Yeah, well, in the old days, when I was a session trumpet player, I didn't have the money to collect trumpets! Now I've got a little extra money, so I'm treating myself to a hobby of collecting horns — although I do buy them, more or less, with the idea that I will play them. I sort of rotate the horn I use. I'm carrying two horns on the road with me right now; a beautiful, old Conn from 1927 — it's just lovely. I keep that in the hotel! I have a Martin Committee Model that the Martin company made for me, and that's what I'm using onstage."

*Jonathan Miller is a British freelance writer living in...well, England. He specializes in the 'ancient art' of the high-tech music interview, and spoke with Mark Isham in London. Jonathan can be reached at jonathan.millermusicmedia@virgin.net.*

## KRK AUDITION

*continued from page 130*

balance. Moreover, the frequency balance stayed much the same regardless of the level at which I worked.

Numerous other engineers at the studio (Front Page Recorders) who used the V6's during the days I didn't work confirmed my feelings. Every single mixer that used them came by to talk about them, which tells me that my impressions were accurate.

The only thing even remotely questionable about the V6's was that they were a little strong in the upper midrange where the cymbals and hihat sit. This, however, is a trait that I've found to be almost a signature sound across the entire KRK line and easily compensated for.

Are the V6's the perfect wave of nearfield monitors? I don't know if that mythical product yet exists, but I do know that these monitors are close enough. At the price, the KRK V6's are very hard to beat.

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## RALPH SUTTON

*continued from page 60*

for certain styles of music. I grew up in a 60-cycle domain; I was born in Chicago, but we moved to the inner part of L.A. early on, right in South Central. And there's always low frequency going on, whether it's the bus going by, the airplane flying over, the jackhammer in the background. So there are certain frequencies we are exposed to for long durations of time, and, obviously I'm not a psychologist, but I think that has something to do with it. If you grow up in an inner city where this is going on all the time, that gives you a different disposition; there's music in that noise. When you hear construction noise and something falls down, there's your boom-boom right there. A different part of that noise is your snare. You can't necessarily go and capture that, but that's where a lot of the creativity comes from. I periodically ride my bike down to Venice [Beach, CA], and that's a totally different environment; there's these cats riding their bikes and on skateboards and rollerblades, so you have a different level of ambience.

I've tried to figure it out myself, where

this flavor comes from. When I was working with Motley Crüe, back in the **early days**, Nikki [Sixx] and Mick Mars **basically** said, "Ralph, make it sound black." That was the flavor. It wasn't them trying to convert me; it was us coming to a happy medium. And because we're in a techno-artistic field, there's really nothing wrong with that. It's just a perception, just somebody saying, "Put your little twist in the music."

**Let's talk a little about your mixing.**

The big question is, who's the feature? And who's accompanying the feature? Is it a piano, a guitar, a sax? Is it background vocals, *à la* Babyface? The Babyface sound is riding the background vocals up as if they were the lead. That's his sound: huge, quadrupled backgrounds, four on a side, so there are eight vocals on each note. Mixing is a sport for me. Whatever team I'm on, I need to know who the quarterback is. I need to know what the rules are, and the rules always have to be public and the goal has to be clear. There can be no chaos; I hate chaos. You have to have a clearly defined goal in mind before you even start the mix; you can't just let it be wild.

**However, isn't there something to be said for creating in the studio and letting things that occur shape where you're going?**

Within reason, but not with the mix. You've got to have a game plan for your mix; it can't be chaotic or haphazard; it has to be thought out and plotted. If you're not winning with your game plan, then you alter it, but you alter it very minutely. The bassist is like your lineman; if he played a few weak notes, it's like he missed a few blocks. So what do I do? I compress him and make his ass bigger. Your guitar, he's your running back. If he's not able to get there quick enough, you increase the release time on the compressor and get him there quicker.

**When you first start a mix, in what order do you bring faders up?**

I always start with the rhythm section — drums, bass, keyboards, and guitar. I don't bring in the vocals until I've got everything else where it needs to be. Another thing is that I mix very soft; I rarely listen loud. The feature is always supposed to be the feature. It's like setting up a fruit bowl, and the artist is the apple. He has to be seen, but he's still part of the bowl. Everything else is the fruit that accompanies that big red apple. That apple, it's supposed to be luscious and delicious, and the surroundings are supposed to make you just want that apple.

Sometimes I'll just start over; I'll get four or five hours into a mix and just say, f—k this, zero out the board, get my mind away from it for a little while, then come back in and start over. Get rid of all those ideas that weren't working. People sometimes try to make a dead horse run anyway; they take a bad idea and keep f—king with it until it becomes a super-bad idea!





# ACROSS THE BOARD

continued from page 162

ence with a single plug-in.

Rimage is a company that makes a thermal transfer 300 dpi CD printer. It was designed for the U.S. Government for MIL-SPEC labeling of CD-ROMs for data archival. I bought the monochrome version four years ago when they were "really" expensive. I like it better than the color ink jet printers because the ink does not fade, or smear when it gets wet. The Rimage printer is 12 times faster than an ink

jet, and the per-CD ink cost is about one tenth of the ink jet. It prints directly on the CD, so you don't have to use the stick-on labels. Have you ever put a CD with a label in a 40x CD-ROM drive and watched your vibrating computer walk across your desk like an out-of-balance washing machine? Rimage now has a full-color version of the Perfect Image CD printer. I've already sent mine in for upgrade to the full monty version.

## MIXING METAPHORS

Before I was so rudely interrupted by that stupid October issue, I was talking about the project I worked on in Cara-

cas and Cuba. I ended with some of the music on ADAT and some of the music on Sony 3348 digital 48-track tape. I ended up transferring everything digitally through a pair of Otari UFC-24 boxes into Pro Tools. I mixed all 36 songs completely in Pro Tools. All of the EQ and compression were plug-ins. I used plug-in reverbs and one external reverb, the TC Electronic M-3000. The M-3000 was fed digitally from the AES I/O on one of the ADAT Bridge interfaces. I wasn't crazy enough to try mixing with a mouse, so I used a 32-fader Digidesign Pro Control for the mixing controls.

Because of the tight schedule, I had to mix two or three songs per day. Because of the 100 percent reset ability of the Pro Tools environment, I was able to do the mixing a little differently than I normally would. I selected a bunch of songs that were similar in nature; some because of mood, others because of instrumentation. I would mix one song until I got tired of it, or thought that it was pretty close to being done, save the session, and go on to another song. I now had fresh material to work on, and it was easy to cover a lot of ground rather quickly. I would get the second song almost done, and then start a third one the same way. In one day, I would work on five or six songs like this, and then quit for the day. The next day I would recall each session and complete the mix. The total amount of time spent on each song was less than it would have been if I had stuck to one song until it was done. On the second day, I was listening to a song that was almost done. I had a fresh perspective and could easily catch mistakes that normally would have called for a remix at a later time.

A couple of songs had to be remixed anyway. One was because the background parts were changed and the other one because of an added flute part. Because everything was mixed in Pro Tools, all I had to do was recall the session, change the part, and print the new mix. No elaborate console recall time. No resetting of analog gear. I didn't even have to rent any more studio time. I did it out on the patio by my pool. Way cool!

## THAT'S ENOUGH

Well, I'm outta here for this month, I have to figure out what I want to include in my annual Christmas wish list. If there is anything that you think I should want, just send it to me. I promise I will enjoy it as much as you would have if you kept it.

EQ

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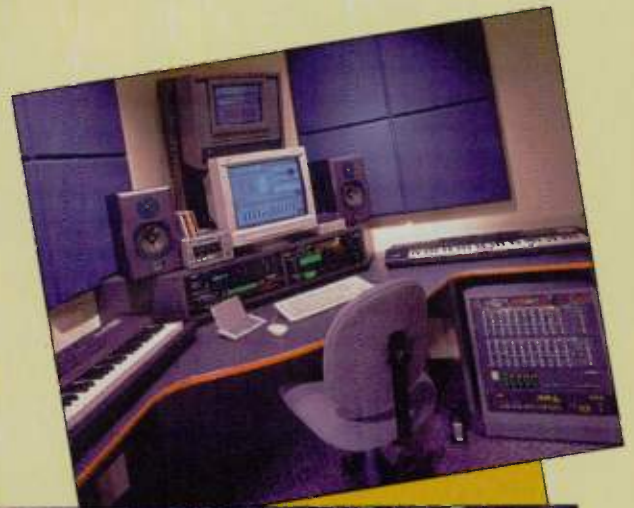
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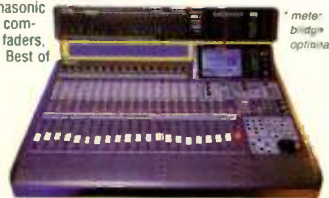
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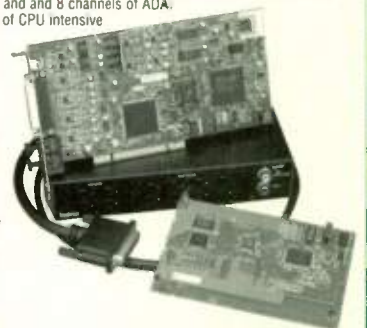
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## EFFECTS PROCESSING

### t.c. electronic

### M3000 Professional Reverb



Incorporating TC Electronic's new VSS-3 technology, the M3000 is a great sounding, versatile reverb that is easy to use. Combining ultimate control of early reflections with a transparent reverb tail, the art of reverberation is brought to a new level. Whether it's a phone booth, cave or concert hall, the M3000 delivers high-quality ambience.

#### FEATURES-

- VSS-3, VSS-3 Gate, C.O.R.E. & REV-3 reverbs as well as Delay, Pitch, EQ, Chorus, Flanger, Tremolo, Phaser, Expander, Gate, Compressor and De-Esser
- 300 high grade factory presets including Halls, Rooms, Plates, Ambience, Gated Reverbs, and more
- Up to 300 user presets in internal RAM and 300 more using an optional PC/MCIA card.
- Dual engine configuration featuring 24 bit A/D/D/A's.
- Connections include AES/EBU, Coaxial S/PDIF, Optical Tos-Link/ADAT & analog XLR I/O's, MIDI IN/OUT/THRU Clock Sync and External Control.

## Lexicon MPX1 Multi-Effects Processor



The MPX-1 is truly an outstanding multi-effects device. Using Lexicon's Lexchip, it offers outstanding reverb or ambience as well as a separate processor for effects for awesome power in the studio or on the road.

#### FEATURES-

- Intuitive user interface for easy editing, built-in help.
- Balanced Analog I/O (1/4" & XLR)
- 56 effect algorithms
- Digital Inputs & Outputs (S/PDIF @ 44.1KHz)
- 18 Bit A/D, 20 Bit D/A Converter, 32-bit processing
- >90dB of Dynamic Range
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## ANALOG TO DIGITAL CONVERTERS



### Rosetta 96k 24-bit Analog to Digital Converter

The high-end quality analog to digital solution for the project studio. With support for both professional and consumer digital formats you can now record your audio at a higher resolution and with greater detail than standard converters found on MDM's, DAT's and DAW's. Ideal for mastering or tracking.

- FEATURES-**
- 24-bit, 44.1-48, 88.2-96 kHz Sample Rate ( $\pm 10\%$ )
  - 116dB dynamic range (unweighted)
  - Improved UV22HR for 16 and 20-bit A/D conversion
- FRONT PANEL:**
- Power switch • Sample Rate (44.1, 48, 88.2, 96kHz) selector • 16-bit (UV22), 20-bit (UV22) and



- 24-bit resolution selector • S/PDIF-ADAT optical selector • Soft Limit on or off • 12-segment metering w/ over indicator & Meter Clear switch • Level trim
- REAR PANEL:**
- XLR balanced inputs • 2 x AES/EBU for 88.2/96kHz 2 channel path, Coaxial S/PDIF, switchable S/PDIF or ADAT optical outputs • Wordclock out

### lucid AD 9624 24-bit Analog to Digital Converter

Transparent analog to digital conversion designed to bring your music to the next level. XLR balanced inputs feed true 24-bit converters for revealing all the detail of the analog source. 16-bit masters can take advantage of the AD9624's noise shaping function which enhances clarity of low level signals.

- FEATURES-**
- 24-bit precision A/D conversion • Support for 32, 44.1, 48, 88.2 & 96kHz sample rates • Wordclock sync input • Selectable 16-bit noise shaping



- Simultaneous AES/EBU, coaxial and optical S/PDIF outputs • 20-segment LED meters w/ peak hold & clip indicators • **ALSO AVAILABLE:** DA9624 24-bit D/A converter

## DIGITAL MULTI-TRACK RECORDERS

### TASCAM

#### DA-88 Modular Digital Multitrack

The standard digital multitrack for post-production and winner of the Emmy award for technical excellence, the DA-88 delivers the best of Tascam's Hi-8 digital format. Its Shuttle/Jog wheel and track delay function allow for precise cueing and synchronization and the modular design allows for easy servicing and performance enhancements with third-party options.

- FEATURES-**
- 1:48 minutes record time on a single 120 min tape
  - Expandable up to 128 Tracks using 16 machines
  - User-definable track delay & crossfade
  - Shuttle & Jog capability
  - Auto punch with rehearsal



- SMPTE, MIDI and Sony 9-Pin sync capability
- Options include RC-828/898 Remote Controllers, IF-AE8/IF-88SD digital interfaces, MU-Series meter bridge, MMC-88 MIDI machine control interface, SY-88 Sync Card

#### DA-38 Digital Multitrack for Musicians

Designed especially for musicians, the DA-38 is an 8 track digital recorder that puts performance at an affordable price. It features an extremely fast transport, Hi-8 compatibility, rugged construction, ergonomic design and sync compatibility with DA-88s.



### ALESIS

#### ADAT M20 20-bit Digital Audio Recorder

The M20 represents Alesis commitment to meeting the high-standards of world-class audio engineers, producers, studio owners and high-end video and film post production studios. A new professional digital multi-track, the M20 records 20-bit for outstanding sound quality. Combined with a host of production features like SMPTE/EBU, the M20 is a powerful tool.

- FEATURES-**
- SVHS Recording format - up to 67 minutes recording
  - 18-XLR connections (9 in and 9 out) as well as a 56-pin ELCO connection • Digital I/O
  - Includes LRC remote and a digital cable.



- 24-bit, 64x oversampling recording, 20-bit, 128X oversampling playback

#### ADAT XT20 Digital Audio Recorder

The New ADAT-XT20 provides a new standard in audio quality for affordable professional recorders while remaining completely compatible with over 100,000 ADATs in use worldwide. The XT20 uses the latest ultra-high fidelity 20-bit oversampling digital converters for sonic excellence, it could change the world.

- FEATURES-**
- 10-point autolocate system
  - Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.
- ADAT OPTIONS-**
- **BRC** for all Adat (except M20) w/ 460 locate pts, sample/absolute time & bar and beat timing references, digital editing and transport control for up to 16 ADATs
  - **A13** 20-bit 8 channel analog - optical I/O interface



- Remote control
- Servo-balanced 56-pin ELCO connector
- Built-in electronic patchbay
- Copy/paste digital edits between machines.
- **CADI** remote control/autolocator for M20 w/ jog/shuttle & rj-45 ethernet connector for long distance cable runs
- **Adat/Edit** integrated PCI digital audio card and software for recording and editing on Mac & Windows computers

## CD RECORDERS



### CDR-850 CD Recorder

The new HHB CDR850 is one of the most comprehensive CD-R, CD-RW recorders available today. It delivers the outstanding sound quality that HHB is known at a lower price than previous models. Equipped with a complete range of analog and digital I/O and easy to use one touch recording modes make the CDR850 suitable for any audio environment no matter how sophisticated or demanding.



- CD-R, CD-RW compatible
- All functions accessible from front panel menu
- 4 one touch recording modes; 2 manual, 2 automatic
- Sample rate converter accepts any digital signal from 32kHz to 48kHz including varispeed
- Copies all CD, DAT, MD, DVD and DCC track starts
- Complete user control over SCMS
- Balanced XLR analog I/O, Unbalanced (RCA) phono analog I/O, AES/EBU digital input, coaxial & optical S/PDIF digital I/O

### marantz CDR 640 CD Recorder

Marantz' flagship CD recorder benefits from 10 years of CD-R experience. Designed without compromise aided with the help of professional end-users ensuring maximum flexibility and stability in the most rigorous studio environments.



- Features-**
- Balanced XLR Analog in/out • Analog RCA/Phono in/out • AES/EBU & S/PDIF in/out • Records on CDR and CDRW audio and data disks • High resolution 20 bit Sigma/Delta AD conversion • Full SCMS Copy bit manipulation • 0.5 dB accurate level metering • Variable Audio Delay (0-4sec): Offset your audio to compensate for late track ID's • Preset function stores personal settings

- Optional RD640 Wired remote control

## MICROBOARDS

### CopyWriter A2D CD Duplication System

The first CD to CD standalone duplicator with built-in Analog to Digital Conversion capability. Easy to use and powerful, the A2D has a 2.1GB internal hard drive and a SCSI port for direct connection to a Mac or PC. A perfect solution for audio, data and video applications.



- Features-**
- Interface includes Microphone in, Audio line in, Audio line out and external SCSI port
  - Supported Formats: CD DA, CD ROM mode 1 & 2, XA, CD Bridge, Photo CD, CD Extra, Multi Session, Mixed Mode, Karaoke, (optional)
  - Duplication Speed: 8X Read/ 4X Write
  - Windows 95, NT, 3.1, Mac OS and Unix compatible
  - Headphone output with level control

## STUDIO DAT-RECORDERS

### TASCAM

#### DA-45HR Master DAT Recorder

The new DA-45HR master DAT recorder provides true 24-bit resolution plus standard 16-bit recording capability for backward compatibility. This is the most versatile and great sounding DAT recorder available. With support for both major digital I/O protocols plus the ability to integrate the machine into virtually any analog environment, the DA-45HR is the ideal production tool for the audio professional.



- FEATURES-**
- Word Clock
  - 24-bit A/D and 20-bit D/A with dither
  - XLR balanced and RCA unbalanced analog I/O
  - AES/EBU and S/PDIF digital I/O
  - Word Sync In/Thru
  - Alphanumeric data entry for naming programs
  - Independent input level adjustment capability
  - Output trim for XLR balanced analog output
  - Optional RC-D45 Remote Controller

### Fostex

#### D-15 Pro Studio DAT Recorder

The new Fostex D-15 features built in 8Mbit of RAM for instant start and scrubbing as well as a host of new features aimed at audio post production and re-recording studio environments. Optional expansion boards can be added to include SMPTE and RS-422 compatibility, allowing the D-15 to grow as you do.

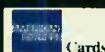


- FEATURES-**
- Hold the peak reading on the digital bargraphs with a choice of 5 different settings
  - Set cue levels and cue times
  - Supports all frame rates including 30df
  - Newly designed, 4-motor transport is faster and more efficient (120 minute tape shuttles in about 60 sec.)
  - Parallel interface • Front panel trim pots in addition to the level inputs

#### D-15TC & D-15TCR

The D-15TC comes with the addition of optional chase and sync capability installed. It also includes timecode reading and output. The D-15TCR comes with the further addition of an optional RS-422 port installed, adding timecode and serial control (Sony protocol except vari-speed)





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## MICROPHONES



### C4000B ELECTRET CONDENSER

This new mic from AKG is a multi polar pattern condenser microphone using a unique electret dual large diaphragm transducer. It is based on the AKG SolidTube design, except that the tube has been replaced by a transistorized impedance converter/preamp. The transformerless output stage offers the C4000B exceptional low frequency response.

#### FEATURES-

- Electret Dual Large Diaphragm Transducer (1st of its kind)
- Cardioid, hypercardioid & omnidirectional polar patterns • High Sensitivity
- Extremely low self-noise
- Bass cut filter & Pad switches
- Requires 12, 24 or 48 V phantom power
- Includes H-100 shockmount and wind/pop screen
- Frequency response 20Hz to 20kHz



### audio-technica AT4060

Combining premium 40 series engineering and vintage tube technology, the AT4060 delivers a versatile and competent studio microphone. Low-noise and high SPL capabilities make the AT4060 a premier vocal mic as well as strings, guitars and other demanding applications.

#### FEATURES-

- 20 - 20,000 Hz freq response
- Dual gold-sputtered large diaphragm elements
- Includes the AT8560 power supply, ATB447 shock mount, rack mount adapters and case.



### SHURE KSM-32

The new KSM32 side-address microphone features an extended frequency response for open, natural sound reproduction. Suitable for critical studio recording and live sound production, Shure steps up to the plate with another classic.

#### FEATURES-

- Class A, transformerless preamplifier circuitry for improved linearity across the full frequency range
- Exceptionally low self-noise and increased dynamic range necessary for highly critical studio recording.
- 15 dB attenuation switch for handling high SPLs.
- Switchable low-frequency filter to reduce vibration noise or to counteract proximity effect.
- Great for vocals, acoustic instruments, ensembles and overhead mixing of drums and percussion.
- SL model also features an elastic shock mount which greatly reduces external vibrations.



### BPM CR10

Hand-crafted in East Berlin, the BPM CR10 Studio Condenser Mic features a full frequency response for competition against the best of the best.

#### FEATURES-

- 1" Gold diaphragm
- Suitable for most guitar and vocal recording applications.
- Includes Custom Aluminum Road Case, XLR-cable, wind screen and elastic suspension.



## SAMPLING

# AKAI

### \$5000 & \$6000 Studio Samplers

Akai is proud to announce its next generation of samplers with the introduction of the S6000 and the S5000. Building upon Akai's legendary strengths, both machines feature up-to 128-voice polyphony and up-to 256 MB of RAM. They use the DOS disk format and .WAV files as the native sample format allowing standard PC .WAV files to be loaded directly for instant playback - even samples downloaded from the Internet into your PC may be used. And of course, both the S6000 and S5000 will read sounds from the S3000 library.

#### FEATURES-

- OS runs on easily upgradeable flash ROM.
- 2x MIDI In/Out/Thru ports for 32 MIDI channels
- Stereo digital I/O and up to 16 analog outputs.
- 2x SCSI ports standard
- Wordclock connection
- Optional ADAT interface provides 16 digital outs
- .WAV files as native sample format

#### S6000 ONLY FEATURES-

- Removable front panel display
- User Keys
- Audio inputs on both the front and rear panel allow you to wire the S6000 directly into a patchbay from the back and override this connection simply by plugging into the front.



## E-MU Systems, Inc.

### E4XT ULTRA Professional Sampler

The Emulator legacy continues with the new ULTRA series from E-mu. Based on the EIV samplers the new 32-bit RISC processing of the E4XT guarantees faster MIDI response, SCSI, DSP and sampling.

#### FEATURES-

- 128 voice polyphony
- 64mb RAM (exp. to 128)
- 3.2GB Hard Drive • Dual MIDI (32 channels)
- 24-bit effects processor • 8 bat. outs (exp to 16)
- Word Clock & AES/EBU I/O
- EOS 4.C software
- 9 CD ROMS over 2GB snds



## MIC PREAMPS



### Classic 80 Pentode Tube Mic Pre

Fronted by a low noise EF86 pentode tube and 2 additional triode tubes per channel gives this pre amp detail, openness and presence. Input and output level controls allows precise control of harmonic contribution of the tubes.

#### FEATURES-

- 2 Channel Mic Pre • Balanced Mic Ins w/48V Phantom Power • Dedicated 1/4" instrument input
- High & Low pass filters w/ 3 cut off frequencies (HPF - 50Hz, 100Hz or 150Hz) (LPF - 5kHz, 10kHz or 15kHz)
- Phase reverse on channel 2
- Drive & Peak LED's • Large rotary output faders
- Illuminated VU meters • 250V HT voltage rail



### dbx 586 Vacuum Tube Mic Pre

The DBX 586 Vacuum Tube Dual Mic Preamp uses hand selected and matched premium 12AU7 vacuum tubes ensuring ideal characteristics for a warm, distortion free signal path. Custom designed analog VU meters monitor tube level insert path or output levels well. Line/Instrument and mic inputs make the 586 versatile enough to use with virtually any input source.

#### FEATURES-

- Mic or line/Instrument inputs on each channel. +4/-10 operation.
- Drive control for a wide variety of great tube effects
- 3-Band EQ with sweepable frequency
- Optional TYPE IV Conversion System outputs
- Separate 1/4" insert send/return on each channel



### JOE MEEK VC1 Studio Channel

The Joe Meek Studio Channel offers three pieces of studio gear in one. It features a transformer coupled mic pre, compression and a professional enhancer together in a sleek 2U rackmount design!

#### FEATURES-

- 48V phantom power, Fully balanced operation
- Mic/Line input switch
- High pass filter for use with large diaphragm mics
- Extra XLR input on front makes for easy patching
- Compression In/Out & VU/Compression meter
- Enhancer In/Out switch and enhance indicator
- Internal power supply 115/230V AC



## MONITORS



### M6000/S Studio Monitors

The KRK M6000/S are designed for close-field monitoring. A smooth frequency response in a compact size make these units portable and efficient.

#### FEATURES-

- High power handling
- 62Hz - 20kHz, ±3dB
- Compact and portable
- Low distortion
- Smooth frequency response
- Custom Gray finish.



## Hafler TRM-6

### Bi-Amplified Studio Monitors

Offering honest, consistent sound from top to bottom, the TRM-6 bi-amplified studio monitors are the ideal reference monitors for any recording environment whether tracking, mixing or mastering. Supported by Hafler's legendary amplifier technology providing a more accurate sound field, in width, height and also depth.

#### FEATURES-

- 123 dB Peak
- Bi-amplified (50 W Lt, 33 W Rt) w/Crossover
- 45Hz - 21kHz Response
- Magnetically Shielded
- Electronically and Acoustically Matched



## MACKIE

### HR824

These new close-field monitors from Mackie have made a big stir. They sound great, they're affordable, they're internally bi-amped. "What's the catch?" Let us know if you find one.

#### FEATURES-

- 150W Bass amp, 100W Treble amp
- Full space, half space and quarter space placement compensation
- Frequency Response 39Hz to 22kHz, ±1.5dB



## TANNOY Reveal

The latest playback monitor from Tannoy, the Reveal has an extremely detailed, dynamic sound with a wide, flat frequency response.


#### FEATURES-

- 1" soft dome high frequency unit
- Long throw 6.5" bass driver
- Magnetic shielding for close use to video monitors
- Hard-wired, low-loss crossover
- Wide, flat frequency response
- Gold plated 5-way binding post connectors





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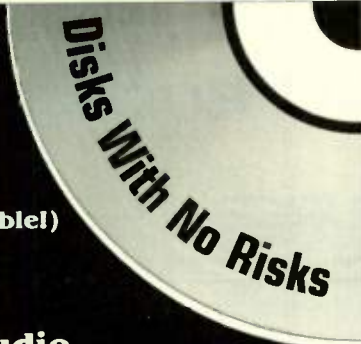
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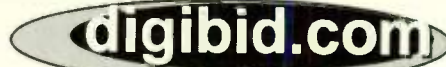
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# Recording audio with your Mac or PC?



**MUSIC TECHNOLOGY DIRECT – and the Best Value, Guaranteed!**

Configure the MOTU system that's just right for you!



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# No other system gives you all this

## 24-bit recording **With today's latest converters**

Just a few years ago, this level of audio quality would have cost you thousands per channel.

## 116 dB dynamic range **With our new 1224 analog interface**

The 1224 gives you stunning audio specs that rival today's most expensive interfaces.

## Balanced I/O **With the 1224's eight analog inputs and ten outputs**

All of the 1224's analog connectors are balanced +4 TRS or XLR for pro-grade I/O.

## Tons of ADAT Optical I/O **24 channels of ADAT optical expandable to 72**

The 2408 delivers all the ADAT optical you need for today's digital mixers, FX processors and other gear.

## Loads of Tascam digital I/O **24 channels of Tascam TDIF expandable to 72**

If you're in the Tascam world of digital I/O, no other system even comes close.

## S/PDIF and AES/EBU I/O **The new 308 gives you AES/EBU and two flavors of S/PDIF**

8 channels each of optical "TOSlink" S/PDIF; RCA "coax" S/PDIF and AES/EBU — all in 24-bit glory.



## Expansion **With the flexible PCI-324 card — the core of the system**

Connect up to three 1224, 2408 and 308 interfaces for as many as 72 inputs/outputs.

## Sample-accurate sync **With digital transfers between your Mac and MDM's**

Say goodbye to worrisome phase issues and other digital audio sync problems.



## Broad compatibility **With all major audio software for Mac and Windows**

Use your favorite audio software with your favorite native plug-ins.

## Audio format conversion **Up to 24 channels at a time**

Own the most flexible format converters out there — without paying extra!

## Sample-accurate software **with AudioDesk™, the workstation software for Mac OS**

Make sample-accurate transfers with ADATS. Edit tracks with sample-accuracy.

## Super-easy setup **with our step-by-step Setup Wizard**

You'll be up and running in no time.

## Industry buzz **Why is everyone is talking about the 2408?**

Keyboard Magazine says it best: "Is the 2408 the audio interface system we've all been waiting for?...the answer is yes."

## Price, price and price **Did we say price?**

A core 2408 system with 24 channels of input/output is only \$995. Add a 1224 24-bit analog expander for only \$995 — or a 308 for only \$695. Mix and match them any way you like. At these prices, you can own just the right combination.



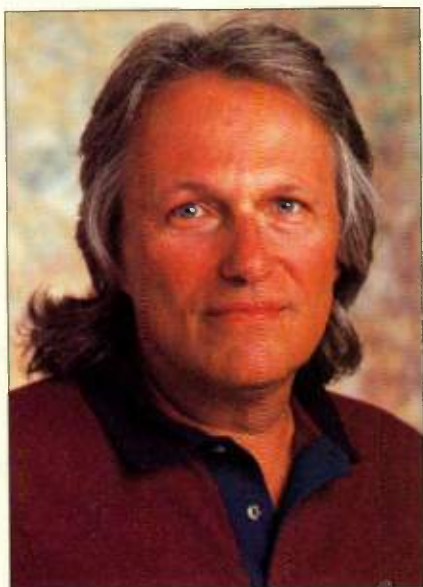
# MOTU 2408 / 1224 / 308 hard disk recording

CIRCLE 63 ON FREE INFO CARD

World Radio History



# The Three-Finger Salute



A look at the new Apple Macintosh G4, an AES wrap-up, and mixing my Cuban adventure

BY ROGER NICHOLS

I was reading a science fiction story by Larry Niven and Jerry Pournelle about an alien race called the Motie. They have two arms on the right side of their bodies, and one arm on the left side. The left arm has a hand with three long fingers. This is no doubt an evolutionary change from millions of years re-booting computers after they crash. Ctrl-Alt-Del or, for the Mac guys, Ctrl-Command-Pwr...the three-finger salute. I have tried the middle finger salute a few times, but the computer will only acknowledge the proper three-finger version.

## APPLE G4

The new Mac G4 computers are out now, and they are faster than a striped-ass ape. I could swear that I would see the words on the screen even before I finished typing them. Now *that* is fast. I was going to use one for Pro Tools, but it only has four PCI slots. One of the slots is already filled with the video card, and one of them is needed for the Adaptec SCSI controller, which only leaves two slots for Pro Tools cards. This means that, without an expansion chassis, the biggest system you could have is a 24Mix Plus system with 32 channels of I/O. This is the same drawback introduced a year ago with the G3 blue and white models. The new wrinkle is that the graphite and white G4 models no longer have an ADB port for external tablets and keyboards. This port is where the dongle is placed to allow authorization of Waves plug-ins. I have seen USB-to-ADB adapters, but I haven't heard from Waves whether or not these will work with the dongle.

Speaking of Pro Tools, the new completely revamped version 5.0 is almost out. That is the good news. But 5.0 will no longer support Power Mix. This is the bad news. Every single person I know who owns Pro Tools also owns a Mac G3 PowerBook for editing Pro Tools files while on the road. I have a bunch of 14 GB 2.5-inch hard drives in little external enclosures

that plug into the PCMCIA slot in the side of the G3 laptop. I dump my stuff onto the little drives and edit my brains out on airplane flights. When I return home, I just copy over the session document, and the edits are automatically performed on the original audio. I don't even have to transfer the audio back from the PowerBook drives. I

thought that I could keep version 4.31 on the laptop, but Digidesign says that you can't open a 5.0 session in 4.31. There is a "Save As" function, but if it works as good as Track Transfer, we are going to be in big trouble.

## AES RECAP

I was walking around the New York 1999 AES show with my mouth hanging open. And that was before I even saw any audio gear. Kind of Loud Technologies displayed the UREI 1176LN limiter that we all know and love. They are being re-manufactured to the same specs as the original versions. Some of the parts used in the 1176 were no longer being made, so Kind of Loud bought the assembly facility and started manufacturing the original parts. Cool. Kind of Loud produces the

Surround Pan Pro plug-in for Pro Tools. They also showed a 5.1 surround reverb plug-in. That's right, a reverb with multiple taps into the reverb field to get a cohesive surround ambi-

*continued on page 144*

*The new Mac G4 computers are out now, and they are faster than a striped-ass ape. I could swear that I would see the words on the screen even before I finished typing them. Now that is fast.*



# This Mic Is Anything But Flat...



## The Neumann M 147 Tube

For years, vintage Neumann tube mics, such as the venerable U 47, have been high-priced, highly prized commodities. Why, when advances have created mics with near-perfect, virtually transparent reproduction, have producers and engineers travelled to the ends of the earth in search of these vintage relics? Because of the way they sound (especially the way the sound sits in the mix).

Enter the M 147 Tube.

Using the same capsule as the classic U 47 and its smaller cousin the U 47 FET, the M 147 Tube microphone brings a warmth, presence and detail to vocals that is simply unattainable from any other mic being produced today, regardless of how much it looks like a Neumann. The fact is, there is really only one way to get that classic sound you seek. Fortunately, it's priced well within your reach.

...That's Why The Pros Love It.



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WEB: WWW.NEUMANNUSA.COM

*Neumann – The Choice of Those Who Can Hear The Difference*

## What The Professionals Are Saying About The Neumann M 147 Tube:

"So far, I'm thrilled to pieces with the Neumann M 147 Tube. I don't think there's any instrument that I wouldn't try them on. Whatever instrument I used them for, I was very impressed with the sound. I wish I had about five or six of them!"

- **Al Schmitt,**  
as quoted in *EQ*,  
March 1999

"I would recommend the M 147 highly for rock, rap, pop, jazz or blues vocals; drum room and/or kick drum miking; all tube and solid-state instrument amplifiers; nylon string guitar; and low-volume or indistinct sound sources that need some extra presence, and for any type of digital recording. In short, I like the M 147 a lot -- so much so that I bought one."

- **Myles Boisen,**  
Electronic Musician,  
August 1999

"The particular kind of presence it adds is really unique and desirable, and it's really not available from any other mic or easily obtainable with an equalizer. Typically, condenser mics that have a forward character are really just brittle and edgy, and the M 147 is completely different from that."

- **Monte McGuire,**  
Recording,  
July 1999

"I asked the singer on my session which mic she preferred and, when presented with a finite budget, her pick (and mine) was the M 147. Classic Neumann sound, tube electronics, the U 47 legacy, and a price that won't savage your bank account. Gotta love it!"

- **Rick Chinn,**  
Audio Media,  
February 1999

"The M 147 proves again that however close the imitators get, there is no substitute for the genuine article. This is the real McCoy and although it cannot be called cheap, its simple approach means that it is far more accessible than a valve Neumann would normally be expected to be. Another classic in the making."

- **Dave Foister,**  
Studio Sound,  
February 1999

"It's my opinion that the tone of the Neumann would not require much EQing during mixdown; a decided advantage. Its high end would sit nicely in a mix, and its round but controlled low end would not have to be cut to provide room for other instruments."

- **Mitch Gallagher,**  
Keyboard Magazine,  
June 1999

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# How do you get

# 24

# analog inputs

into your  
**Mac or PC**  
for only **\$1495 ?**

## Introducing MOTU's 24i.

Record up to 24 analog inputs at once,  
then mix and master - all inside your computer.

- 24-bit hard disk recording system for Mac OS and Windows 95/98.
- 24 balanced inputs with 111 dB dynamic range.
- Expandable to 72 inputs - mix and match with other MOTU interfaces like the 2408, 1224 & 308.
- Stereo main outs in three formats (balanced analog, RCA S/PDIF, and optical S/PDIF).
- Compatible with all major Windows and Macintosh audio software applications.
- Available as a stand-alone system or as an expander for 2408, 1224 or 24i core systems.
- **24i expander (\$1195)** shown below plugs right into your 2408, 1224 or 24i core system and adds 24 balanced 24-bit analog inputs.
- **24i core system (\$1495)** includes PCI-324 card and AudioDesk, sample-accurate workstation software for Macintosh with recording, editing, mixing, and 32-bit effects processing.



**Main Out**

Phones

(Analog 1-2)

Volume

-1	●
-3	●
-6	●
-12	●
-24	●
-48	●
L R	

**Analog Input**

-1	●
-3	●
-6	●
-12	●
-24	●
-48	●
1 2 3 4 5 6 7 8	

**Analog Input**

-1	●
-3	●
-6	●
-12	●
-24	●
-48	●
9 10 11 12 13 14 15 16	

**Analog Input**

-1	●
-3	●
-6	●
-12	●
-24	●
-48	●
17 18 19 20 21 22 23 24	

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