Exclusive Shure KSM32 Review

PROFESSIONAL PROJECT RECORDING & SOUND

NOVEMBER • 1998

Al Kooper: exclusive excerpts from his all-new autobiography

Blue Ribbon **Nominations**

> **New Gear Reports:**

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Aardvark AARK 20/20 REAMP Interface

Tannoy Reveal Speakers Prism AD-124 &

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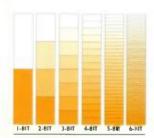
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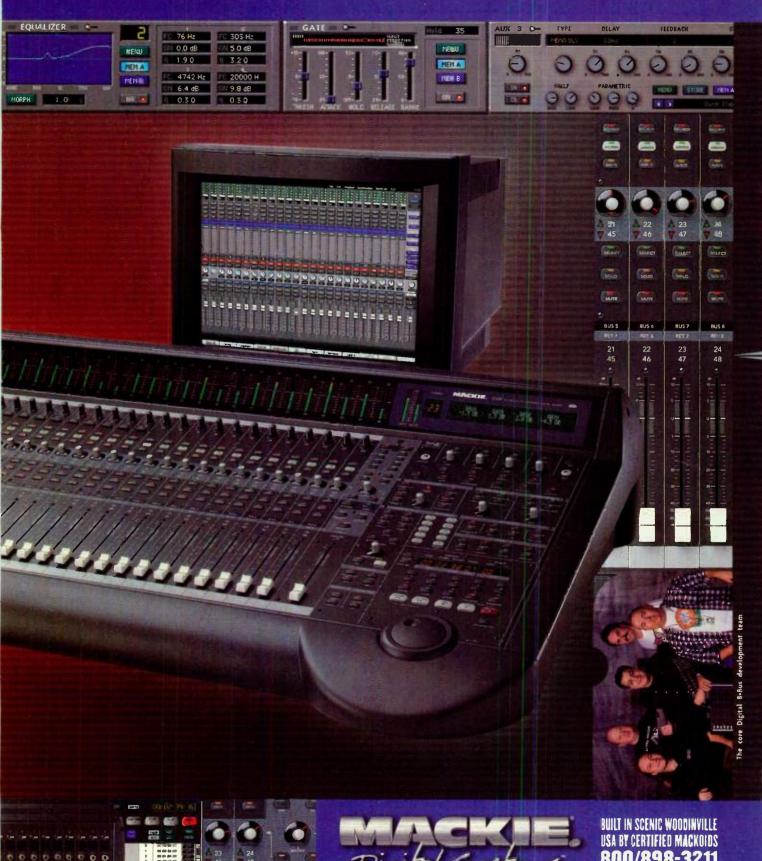
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PROFESSIONAL PROJECT RECORDING & SOUND VOLUME 9, ISSUE 11 NOVEMBER 1998





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Al Kooper photo by Michael Sullivan.

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FIRST LOOK: CREAMWARE PULSAR34

Old Process: Tape (slow...) New Process: Layla (instantaneous!)



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Micro-Mania At the **AES Convention**

Any AES Convention is bound to include great gear, and this year's show was no exception. Just flip to EQ's Blue Ribbon Award nominations (page 97), and you can see some of the innovative wares that were on display. There's certainly no question that the general level of audio technology has reached quite an impressive level. But just as impressive as all of the technical smoke and mirrors was the vast presence of things near and dear to my heart: microphones.

There were microphones everywhere at the AES — a breathtaking, gold-plated U87 at the Neumann booth, new tube and solid-state designs by Aspen Pittman of Groove Tube Electronics at the Alesis display, and even the R44C from Audio Engineering Associates, a working replica of the RCA 44BX designed to sound like the original. As with tape machines, consoles, and outboard gear, the construction and sound quality of microphones has been on the increase, while the selection of microphones available under \$1000 grows larger.

But why do we need so many mics?

Why, for example, would you need an SM57 if you had a Telefunken U47? A U47 is much more expensive so it must be better, right? It's not about "better." It's all about colors. A mic collection is like the colors of paint on an artist's palette, and it's easier to create your vision when you have access to all the colors you can imagine in your head. Could Monet have painted without red? Probably so, but his paintings certainly wouldn't have been so beautiful. Do you want to create your recordings with only blue, yellow, and red, or would you rather be able to render a thousand shades in between? I'd venture a guess that most of us would rather have access to all of those colors.

That is why it's such a wonderful thing to walk around the AES show floor and see so many microphones. Each one of them adds a new color to the audio palette, opening up our creative options. I can do with one recorder (or one type of recorder), one type of reverb (of course, I'd rather it be a high-end unit, and I'll take four, please), or even one pair of speakers, provided I trusted them enough. But one type of microphone? I don't know if I could live like that. Let's see... I always wanted a bunch of Neumann M49's, but somehow they wouldn't be right for those live "day-in-the-dirt" gigs I do across this country. Hmmm. How about a locker full of vintage ribbons? Too much worry in miking a kick drum and too heavy to carry around. No thanks, I don't want one color. I want all of them. In pairs - kinda' like the Noah's Ark-thing. Pairs of M49's, C12's (and a C24 for good measure), RCA 77DX's, Shure SM57's and SM58's, beyerdynamic M88's and M201's, Sennheiser MD421's, Lawson L47's, KM84's, Sony C48's, B&K 4003's, Earthworks TC30K's, and while you're at it don't forget an EV RE20 and that really cool Peavey Tube mic. I want all of them so I can record with color. I don't want to record in black and white. It's too boring.

Lucky for us, microphones proliferated at the AES like bugs in the springtime. There were solid-state mics, condenser mics, tube mics, ribbon mics, skinny mics, fat mics, stereo mics, at least one 5.1 mic, handsome mics, and ugly mics, too. I'm not sure if there's such a thing as a bad microphone, unless it's a poorly made microphone. Almost every microphone sounds good in one application or another. And though we may not use every mic on every session, they're in our arsenal for a lifetime of recording, waiting for the right session to come along (tell that to your spouse — it's a great way to justify the purchase). As long as manufacturers keep making microphones, we have options. It's all good!

-Steve "Woody" La Cerra



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REEL WORLD

Rich Blakin's article on setting tape-bias [Sept. '98] was by far the most useful article for me I have ever read in EQ. Breaking it down step by step ("recipe style") made it both practical and easy to follow. All I can say is: I WANT MORE! Please make him a regular monthly columnist. Analog reel-toreel maintenance is "mysterious black art" to us cats under 30. I would like for him to be our monthly reel-to-reel instructor.

> Super Fly via Internet

SOUND CARD CLARIFICATION

Thank you for Eric Bell's excellent coverage of the [EMU-Ensoniq's] Audio Production Studio in the Windows Sound Card Shootout (Sept. '98). He did a great job; I can truly empathize with someone who has had to configure (and re-configure) a system with the number of cards he had to deal with! Keep up the great work! As there is much confusion these days about software vs. hardware synthesis, I would like the opportunity to clarify a point regarding the paragraph on "Synthesis." The APS does not use the CPU for the sound synthesis or effects as stated in the article. These are done by the EMU10K1 processor, with the APS using system RAM only for the storage of sounds. As the APS has 64 hardware based-voices, we do not use "software synthesis" to generate them.

Again, keep up the great work! Denis Labrecque, APS Product Manager EMU-Ensonia

SOUNDS OF THE TIMES

Thanks for publishing Bob Katz's article in the September EQ. I have been a professional recording engineer for long enough to remember when compression was typically only applied to vocals and the occasional bass track. I believe that, in a few more years, we will recognize mixes from the mid '90s by their overcompression, the same way we recognize mixes from the mid-'80s by their overuse of "gated" reverb. And, in the same way, they will seem dated. But what excess will we be enamored of then?

> Garv Mankin via Internet

MANUAL LABOR

This is just a thank you for the editorial entitled "A Good Manual Is Hard to Find" [Sept. '98]. I just recently purchased a harddisk recording system. While the card had a manual for installation and settings guides, the included software for multitracking had only "Help" menus and online Web site manuals that were hard to access and limited to certain topics only.

In using this system, I found the included manual helpful with problems associated with making the card function well. However, the software use has been, at best, a trial-and-error. frustrating, and, at times, gratifying experience. I think the use of an enclosed CD-R with use of all the software is an excellent idea for those of us with an old-school need for a manual, not just online help.

I've only been working with a computer for less than a year, and not terribly "computer literate," thus finding working with help texts written by computer pros a little intimidating. I will not name the company, but I will tell you that when I did contact their support people, they were very friendly and helpful, and for that I'm grateful.

If a company wants to make big points with us consumers, the support texts and Help menus should be written by people who use the programs, not the ones who wrote the programs.

These thoughts are only my opinion I know, but I felt the Sept. issue really struck home after spending the last week and a half fighting software and trying to download all the info I thought should have been included. Please make more pleas for including the CD-R info. That way all the computer geeks at these companies can still be providing support in "cyber-style" way, and we who are lagging behind a little can get the full benefit of their otherwise wonderful products.

> Jerry Turner via Internet

PC VIEW

Why are you guys scolding Al Kooper regarding his introductory paragraph in



the September issue? Seems he hit it right on the head. And unless I missed something, I counted six references to Macs in the whole issue. Three in the Product Views section, and three in ads (not counting the classifieds). I guess I, along with Mr. Kooper, have wrongfully assumed a standard for platform names: PC=Windows and Mac=Mac. Ooops! Silly us. And as far as Macs getting their fair share of coverage, nope. At least they don't here in balmy North Dakota. Whenever I tell people I own a Mac, the first question I get here, without fail, is "Why?" Then I get a look sort of a disgust/pity look. Al, I'm not sure where your home base is, but let me tell you, it's worse here. Oh, well. We know better. And we know the difference. And like the bumper sticker says: "They'll take my Mac when they pry it out of my cold, dead fingers."

Taggart Snyder Williston, ND

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- ◆ Chorus/Flanger
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- ◆ Phaser
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- Pitch Shift
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ALTITUDE IS EVERYTHING

I have four JBL 18-inch/10-inch/2inch horn-loaded cabinets. For a big room, would it be better to stack one cabinet on top of the other (that is, two on each side of the stage) or just keep them all on the floor?

> Bill Gentry via Internet

Generally, altitude is everything in live sound work. If you can get your main speaker cabinets up above ear level, the horns won't blast the audience seated in front of the stage. Plus, the system will project to the rear of the room better since there's no one standing directly in front to block the high-frequency dispersion. So unless you have a stage (or speaker wings) that is at least 4 feet high, stacking your cabinets on top of each other is probably the best solution - especially if your room is longer than it is wide.

The only real trade-off to stacking is that two of the 18-inch speakers will be out of contact with the floor; thereby reducing the amount of bass energy that could be generated by a few decibels due to lack of room coupling. If, however, you've got enough bass to begin with, that shouldn't be a problem. Placing the cabinets side by side does allow you to splay them for better horizontal dispersion, which may be a better choice for rooms that are wider than they are deep. But your horns should always be above head level, no

> Mike Sokol Contributing Editor EQ magazine

DIAL 501 **FOR INFO**

matter what.

Could you please give me some general info on the Symetrix 501? In particular, what is the function of the stereo link jack? Do you have any suggestions for the stereo link's proper use? Finally, how might I procure a manual?

> Mr. Cyber via Internet

> > Snakes

Symetrix 501 is a single-channel compressor/limiter. It features an RMS-responding compressor and separate, peak-responding, brickwall limiter. You can use the two processors simultaneously for smooth, but effective dynamics control. Though the 501 is a single-channel unit, the stereo link jack on the rear panel offers the option of linking two units together for stereo operation. This feature is offered as a frontpanel control on most dual-channel compressors.

Use a 1/4-inch TRS (balanced) patchcord to connect the stereo link jack on two units and press the "Stereo Slave" button on one of the units. The controls on the non-stereo-slaved unit will now act as the controls for both units. In addition, the two units will now operate in unison and apply identical amounts of gain reduction during pro-

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For mixers with sin-

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points.

gram peaks. This is crucial if you want to avoid the sudden, momentary left-right balance shifts that an unlinked pair of compressor/limiters would cause as they applied gain reduction independently.

If you'd like a user's guide, contact us at 425-787-3222, or via e-mail at symetrix@symetrixaudio.com.

Steve Kawasaki Director of Sales & Marketing Symetrix, Inc.

CLEAN MACHINE

Late Sunday night, in a fit of panic, my ADAT XT extrapolation light is on full and the unit's "CAL PG" error message is up. I reset the number according to your page, however, I am still getting errors in the 3000-3500 range. The heads were cleaned about 50 hours ago, and at that time interpolation errors were below 20. It also doesn't seem to matter which tape I play - the original reference tape gives the same high error numbers as the project I am currently working on.

Do you have any ideas?

Yontz via Internet

Did vou clean the heads? Every so often a piece of tape comes along that will clog the heads. Sometimes this is because the tape has not been stored. at the head or tail. The exposed area (even though somewhat protected) collects a funk that can clog heads in a second. Then again, the tape may have come in contact with a dirty component in the machine's tape path or just be a bad batch of tape.

Eddie Ciletti EO magazine Manhattan Sound **Technicians** www.tangibletechnology.com

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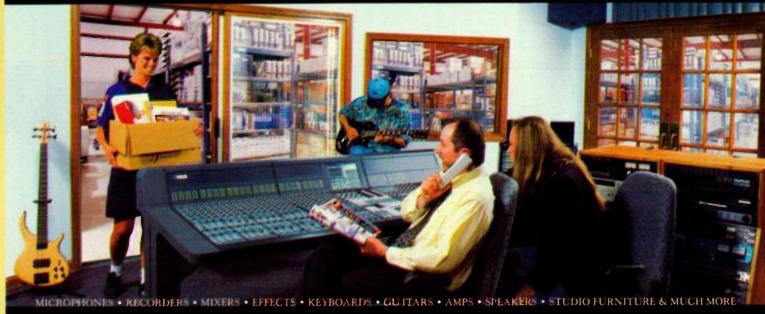
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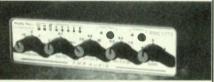
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EQ&A QUESTIONS & ANSWERS

KARAOKE KREATOR

I am trying to figure out how to remove the lyrics from a WAV file so it is only instrumental parts that are heard. Do you have any ideas or suggestions on how I can do this? Any help would be appreciated

Chris Sabato via Internet

Here's my understanding of the theory of how it works - but it only works well some of the time. If you have a stereo soundfile, traditionally the vocals will be mixed to dead center and the instruments will be panned by various amounts left and right. The exception is usually the bass, which is also mixed equally to both speakers. By using a polarity inverting matrix and a low-pass filter, anything that was mixed dead center and above around 200 Hz can be nulled out and removed. This can actually work quite well at removing center vocals from recordings that were panned this way originally and didn't have any stereo reverb added to the mix. But the stereo reverb is the clincher, since while you can remove the dry, centered vocals, the reverb will be left in the mix, making the extracted lead singer sounding like a ghost in a cavern.

The SAW Plus digital editing software has a built-in Center Channel Eliminator function that can be assigned on a track-by-track basis. On some songs it works great, while on others it doesn't work at all. It just depends on the original stereo mix. It's a nondestructive process, so it doesn't hurt to try, but I never guarantee the results of such processing ahead of time. You have to try it on a song-by-song basis.

SAW Plus is available from Innovative Quality Software. Call them at 702-435-9077 or 800-844-1554; or visit their Web site at www.IQSOFT.com.

Mike Sokol Contributing Editor EQ magazine jmsokol@intrepid.net Web: www.soundav.com



HIT 'EM HARD

I've noted that hitting the inputs of my ADATs too hard sounds "bad," yet, at the same time, we should hit them as hard as we dare to get maximum resolution — the best sound. So, I guess this means using limiters and

compression. Can you direct me to any articles that address strategies and tactics that deal with this "tightrope act?" Lee G.

via Internet

There are two paths to sonic "level insurance": more bits or more processing. Sure, you can pay more for better converters, but why smack 'em with so much level without "protection?"

If you want to avoid recording at 0 dB Full Scale (0 dBFS) on a 16-bit system, insert a peak limiter between the source and destination. Eight-channel limiters are available from several manufacturers (Rane, perhaps?). This is also the reason for the popularity of vintage Neve gear. With its single-ended Class A circuitry, a 1066 or 1073 module will gradually go into an asymmetrical distortion mode well before clipping, serving as a "peak limiter with harmonic enrichment."

There are three primary benefits of going 20-bit or 24-bit. There is more headroom; you can safely record 6 dB lower without compromising the signal. Low-level signals are more accurate; you don't have to think about dither until/unless the signal is squished into 16-bit mode for CD mastering. The imaging is more precise; ear-tickling psychoacoustic phenomena are more real (more like being there when a stereo pair of mics are used).

I think either of these are very practical options.

Eddie Ciletti Contributing Editor EQ magazine Manhattan Sound Technicians www.tangible-technology.com

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14

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Advanced Digital Mixer

Panasonic is taking digital further today with the DA7 digital mixer, an entirely new standard in quality, flexibility, affordability, ease-of use and value. 24-bit converters, 32 inputs, 8 buses, 32-bit processing, moving faders, instantaneous recall of all settings, surround sound mixing...nothing this fully featured has been this easy to use or affordable... and it's available NOW! Incredible sound quality, Internal 32-bit processing and 24-bit A/D and D/A converters give this mixer sound worthy of consoles costing several times its price.

Easy-to-use. The DA7 is one powerful mixer. If you know how to run a traditional mixer, you

already know how to run a
DA7, since it has a smart, userfriendly design. To access any of
the 32 channels, just press its
select button and all parameters for the
channel-EQ settings, bus and aux assign-

ments, and dynamics and delay settings come up on the

large backlit LCD screen. To access individual parameters, just touch the appropriate knob in the console's master section. This automatically calls up the sub-menu on the LCD screen and zooms in on the appropriate function. No more digging through menus or getting lost in functions; just adjust EQ, Pan/Assign, Dynamics/Delay, or Aux... and you're there.

The power to control. The EQ section offers 4 true overlapping parametric bands active on every channel (with the top and bottom bands switchable to low or high peak/shelving, or low pass, or high pass filters). Each Aux return also provides two bands of fully parametric EQ. The dynamics section offers variable attack/release times and levels for threshold and ratio on each channel, and delay is adjustable up to a maximum of 300ms. 50 Memories each are provided for

EQ. Dynamics and individual channel settings. In addition to full dynamic moving fader automation of 32,000 events, there are 50 "snapshot" or "scene" memories. Plus, a Macintosh and

windows software package (that greatly expands the capabilities of the DA7), will soon be available.

Surround sound at your command. You'll be mixing surround soon.

The DA7 is equipped to mix 5.1 channel today. The DA7 has 3

built-in panning modes, and all modes provide full dynamic control of panning, and can be copied,

stored, and transferred to any other channel. An optional MIDI joystick gives you yet a fourth method of surround control.

MIDI and more. The DA7 features 4 up/down/left/right cursor keys that can be switched to output MIDI Machine Control commands to MDMs, sequencers, or workstations. Data entry is done through the large parameter dial or an alphanumeric keypad. There's also an undo/redo

Take on the world. The rear panel sports 16 analog mic/line inputs

button, a solo-mode set, and a built-in Talkback mic.

(8 XLR with individual software-switched phantom power, and 8 with TRS); 16 channel inserts (pre-A/D); and 6 auxiliary send/return jacks (1,2 use S/PDIF; the rest use +4dB 1/4inch connectors). Along with the 2 digital and 4 analog Aux returns, the DA7 has 38 total inputs. Digital I/O, provided via XLR connectors switchable between AES/EBU and S/PDIF.

offer the master out signals and they can be assigned to inputs 15 and 16.

The DA7 rear panel also offers MIDI In and Out, word clock I/Os, both a 9-pin RS-422/485 serial port and PC port for Mac or Windows with software support for both, a 1/4 inch footswitch jack for controlling Talkback on/off or automatic punch in/out, and a D-15 subconnector for the optional meter

bridge. So, take your digital mixing further
today by going to the nearest
Panasonic dealer and auditioning the
DA7 for yourself!





For more information call: 1-800-777-1146 or visit our website at www.panasomic.com/proaudio

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Surround Sound

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Easy to use

Taking Digital Further

Panasonic
Broadcast & Digital Systems Company



HOME FOR DIGITAL BOARDS

aytona, Raxxess's latest addition to its studio furniture line, features an all-steel sub structure and ebony fleck-laminated surfaces with solid oak trim, and is designed for use with digital consoles. Standing 42 inches wide by 36 inches deep, the desktop has a built-in 10-space rack and compartment for CPU housing. Some other features of the Daytona desktop include a monitor bridge to facilitate proper viewing and hearing of video and audio monitors and floor levelors. For



dio monitors and floor levelers. For more information, contact Raxxess at 261 Buffalo Ave., Patterson, NJ 07503. Tel: 973-523-5105. Circle free lit. #101.

SIMPLY RED

ever let a musical idea slip away again. TASCAM has introduced its entry-level cassette multitrack recorder, the Porta 02 Ministudio, a unit primarily designed for personal recording. The unit's 2-track simultaneous record capability effects not only multitrack recording, but capabilities to capture live performances. The Porta 02 Ministudio features two mic/line input channels with linear faders, a 4-channel mixer with Level and Pan controls for each channel, a 4-track cassette recorder, a headphone monitor output with level control, Mono switch, and a master L-R Line output. Wearing a new red casing, the Porta 02 Ministudio also offers headphone monitor output, simplifying the check for phase discrepancies, and is available for \$199. For additional information, contact TASCAM, 7733 Telegraph Rd., Montebello, CA 90640. Tel: 213-726-0303. Circle free lit. #102.



DYNAMIC CONVERSIONS

ucid Technology's new DA9624 and AD9624 converters bridge the gap between analog and digital equipment, assured by 24-bit resolution for full dynamic range in both analog-to-digital and digital-to-analog signal paths. Both of convenient 1U half rack size, the converters offer stereo 96 kHz conversion for maximum sampling bandwidth and accept input via XLR connectors. For more information, contact Lucid Technology, 14026 35th Ava West Lucyce



tact Lucid Technology, 14926 35th Ave. West, Lynwood, WA 98037. Tel: 425-787-3222. Web: www.lucidtechnology.com. Circle free lit. #107.







YOUR JAMMIN' ME

he Jam Session package, a hardware and software solution, includes a PlayWrite 4080 4X write/8X read CD-recordable drive from Microboards, Jam and Toast audio premastering software from Adaptec, and the Peak LE software from BIAS. The features included in the Jam Session package allow the user to

record, edit, and process digital audio files. The package is designed for the Macintosh platform. The Jam Session bundle will be sold for an MSRP of \$749. For more information, contact Microboards Technology, 1480 Park Rd., Ste. B, Chanhassen, MN 55317. Tel: 612-470-1848. Web: www.microboards.com. Circle free lit. #108.

A ROSETTA BY ANY OTHER NAME...

pogee's new Rosetta AD is a high-quality, 2-channel 44.1/48 kHz sampling analog-to-digital converter. Appropriate for project studio applications, Apogee's Rosetta AD is a 1U rack-mount unit and offers both consumer and professional analog input levels that can be both balanced or unbalanced. The Rosetta AD also offers two AES/EBU outputs in addition to ADAT, TDIF, and S/PDIF interfaces and functions as

the front end for a computer-based DAW, a DAT or digital multitrack machine, and the output of an analog console. For more information, contact Apogee Electronics, 3145 Donald Douglas Loop South, Santa Monica, CA 90405. Tel: 310-915-1000. Web: www.apogeedigital.com. Circle free lit. #109.



TRENDS/ANALYSIS

It seems as though not a day goes by without the news of yet another merger, acquisition, or strategic alliance. As business becomes more and more global in nature, the need to respond to changing market conditions quickly and correctly is an ever-pressing issue that no company can escape. We've seen it with BankAmerica/NationsBank, MCI/Worldcom, Chrysler/Daimler Benz, and countless other corporations.

The music and professional audio industry, while minuscule compared to the aforementioned corporations, is by no means any different. In recent months, the companies that we count on to provide the tools for our livelihood have begun to exhibit similar transformations. If we take a look around, we find EMU-Ensoniq, both owned by Creative Technologies, beginning to pool their resources. TASCAM/TimeLine formed a strategic alliance for the good of the MMR-Series. Avid and Digidesign tied the knot some time ago in an effort to further entrench their positions in random-access video and audio production. And this is only the beginning.

The news from the recent AES (Audio Engineering Society) show found Peavey and Crest, as well as Adaptec and Arboretum Systems dancing together. And perhaps the most widely touted announcement came from Alesis Corporation with the formation of their GT Electronics Division — a move that will certainly benefit Groove Tubes while making Alesis a highly competitive manufacturer of condenser microphones. Make no mistake about it — our industry is forever changed!

Is all this a positive trend? While the verdict is still out, I'm inclined to say "yes" — for the most part. As companies expand, there is a tendency to become somewhat more "distant" from a customer service perspective. This is certainly one of the negatives of dealing with any large organization, and all companies need to be sensitive to this issue. On the positive side, the pooling of resources, whether it be capital, intellectual, or marketing/distribution, frequently yields better and more innovative products — and who doesn't want better tools?

We all have our own particular strengths and weaknesses. Companies are no different. Some firms have incredible manufacturing capability, while others show their strength in software design — put them together on a project, and who knows what incredible product may result! As I walked the isles of the recent AES show, I found many new products to lust for, equipment junkie that I am.

Whether your current interest lies in a new mixer, recorder, sampler, microphone, or whatever, the choices available to you now are so wide and varied compared to where we were just a few short years ago, that I can't help but feel fortunate for the incredible array of product offerings that now exists in our industry. Choice, no matter what we may be looking for, is undeniably the greatest asset for the consumer. That choice is in many ways a direct result of the partnerships going on all around us. There will, inevitably, be growing pains along the way, but the benefits can be substantial.

—Roger Maycock



Cook with the right ingredients.

Here are 200 of the tastiest presets you'll ever find in a multi-effects processor. Many are written by top recording engineers

Roger Nichols, Snuffy Walden, Joe Chiccarelli, Tom Jung and Michael Bernard. These guys have worked with everybody

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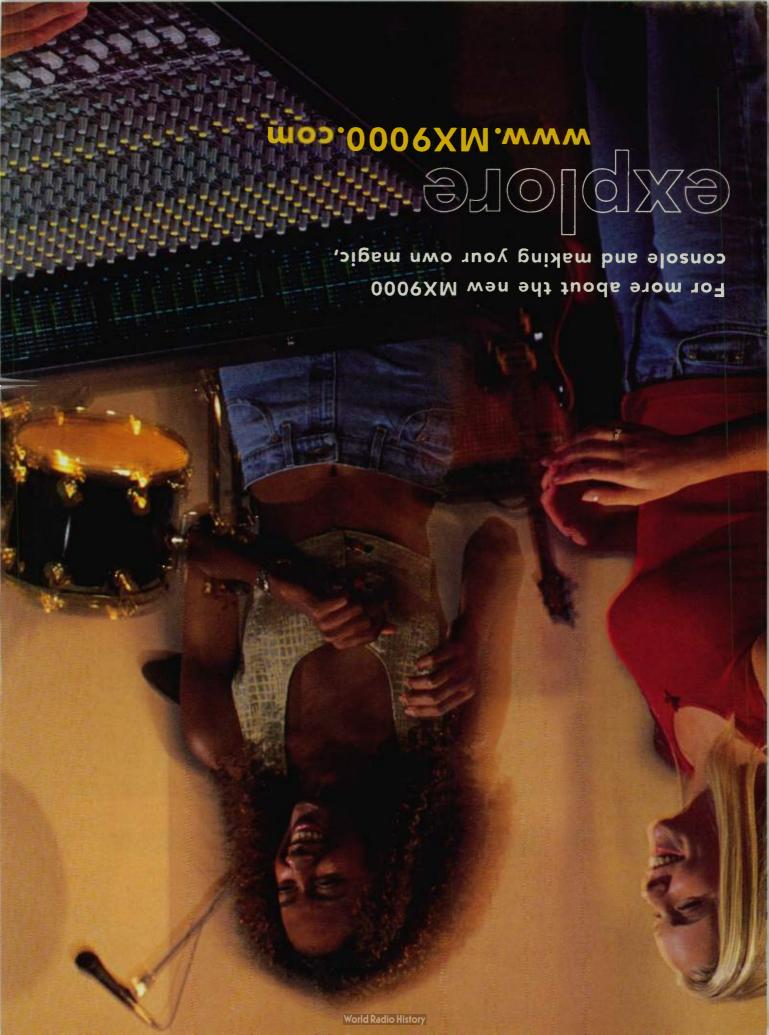


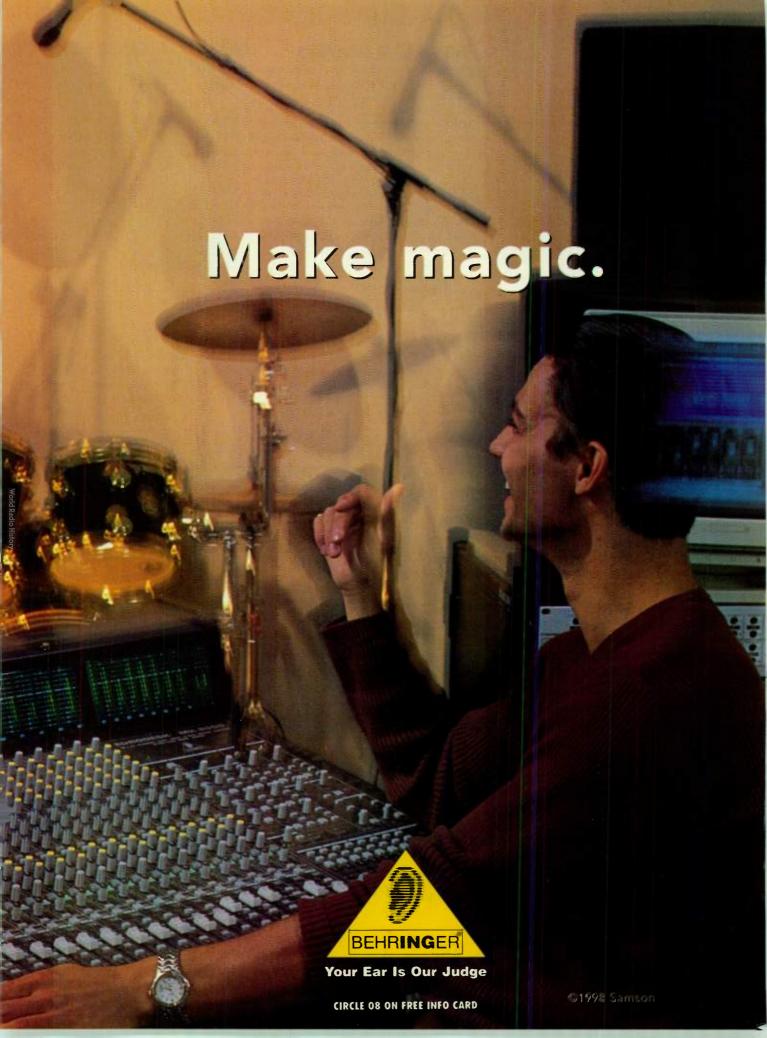
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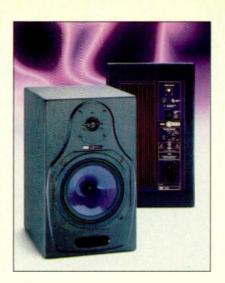






CIRCULAR SOUND

HB Communications introduces the Circle 5 studio monitors. Available in both active and passive versions, the Circle 5 delivers low coloration. which is achieved by an 8-inch (200mm) bass driver that employs a synthetic polymer cone. The cone thickness varies across its diameter, which results in less distortion in the lower frequencies. The monitors also include fluid-cooled, soft-dome tweeters. The active version is powered by a 2-channel amplifier pack delivering 120 watts RMS to the bass driver and 60 watts RMS to the tweeter. For more information, contact HHB Communications, 626 Santa Monica Blvd., Ste. 110, Santa Monica, CA 90401. Tel: 310-319-1111. Circle EO free lit. #110.



LOTS OF LUX

he Soundelux U97 multipattern FET condenser microphone features four pattern capabilities: omni. hypercardioid, figure-eight, and cardioid. The U97 Microphone is small. modeled after a combination of previous Soundelux designs and some vintage European styles. Like other Soundelux products, the U97 is hand-crafted from state-of-the-art technology. For more infermation, contact Soundelux Enter-

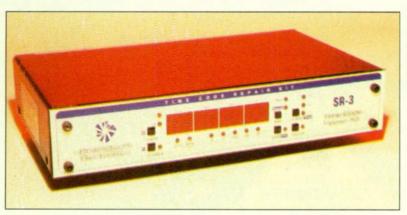
tainment Group, 7080 Hollywood Blvd., Ste. 1100, Hollywood, CA 90028. Tel: 213-603-3200. Web site: www.soundelux.com. Circle free lit. #111.

MILLENNIA MERGING

illennia Media's new product, the NSEQ-2, is a stereo parametric equalizer with pure Class A Twin Topology. Equipped with gold relays, connectors, and switches, silver/Teflon power wiring, and Mogami OFC audio wiring, the NSEQ-2 merges pure Class A vacuum tube and pure Class A solid-state circuit topologies. Mil-



lennia achieves greater sonic integrity in its NSEQ-2 by having designed the equalizer with only one amplifier stage, which is optimized as input buffer and output driver. The NSEQ-2 is transformerless and sports illuminated pushbutton switches, hand-machined aluminum knobs, and extruded face plate. The NSEQ-2 is available at \$2995. For more information about the NSEQ-2, contact Millennia Media, Inc., 4200 Day Spring Ct., Placerville, CA 95667-9500. Tel: 530-647-0750. Web: www.mil-media.com. Circle free lit. #112.



BRAINSTORMING SOLUTIONS

rainstorm's new rack-mount SR-3R time-code repair kit is a timecode regenerator that identifies and repairs faulty timecode. The SR-3R is a solution provider for common synchronization problems. The SR-3R's functions and features include drop-out repairs, jitter reduction, auto video phase correction, auto drop flag correction, timecode reader, video phase analyzer, and timecode generator. The SR-3R is available for \$699. For more information, contact Brainstorm, 1155 N. La Brea Ave., W. Hollywood, CA 90038. Tel: 213-845-1155. Circle free lit. #113.



DA-45HR The 24-bit Master \$2,149*



DA-60MKII 4-head Time Code Master \$6 999



DA-30MKII The Studio DAT Master \$1,399*



DA-20MKII
Project Studio DAT Master
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For the facts on the first family of DAT and the entire line of TASCAM professional audia products visit: www.tascam.com or call TASCAM FaxBask at 800+827+2268.

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CIRCLE 83 ON FREE INFO CARD



DIRECT DEPOSITOR

he John Hardy Company has released the new AMB Tube-Buffered Direct-Injection Box, a unit that extracts all the musical details of a musical interface without degrading the sound. The AMB Tube DI is equipped with a vacuum tube input stage. A Jensen JT-DB-E transformer is responsible for the low impedance, balanced output from the unit that flows to the mic preamp input of a console. For more details, contact The John Hardy Company, P.O. Box AA631, Evanston, IL 60204. Tel: 847-864-8060. Circle free lit. #114.

TALKING 'BOUT MY GENERATOR

ool Stuff Labs has introduced Generator X, the new plug-in for TDM and AudioSuite-capable workstations. Generator X is designed to provide accurate, definitive metering. Providing



a 24-bit signal generator without leaving the TDM environment, Generator X brings sines, square waves, triangles, sawtooths, impulses, and several types of noise directly to the user's fingertips. Generator X is available only online. Visit their Web site at www.coolstufflabs.com for demo software and purchase information or contact them for further information at Cool Stuff Labs, Inc., 536 Vera Ave., Redwood City, CA 94061. Tel: 650-366-8648. Circle free lit. #115.

COPY TRACKS

ew from Microboards Technology, Inc. is the DSR8800, an eight-bay CD-R duplicator. Hosting seven CD-R drives and one 12X CD-ROM drive, the DSR8800 is a single-tower configuration with a built-in upgrade for DVD duplication. Features of the DSR8800 include track extraction to support audio



applications, three Versatile Media Interface Channels, and direct SCSI Interface capability. Able to function in a "master/slave" mode, the DSR8800 can be arranged with up to three seven-drive slave units. In another mode, when the DSR8800 is configured as a DVD duplicator, each VMI slot card supports two external DVD-recorders. An advantage of the direct SCSI interface is the capacity to record directly from a PC to the "target" writers in the DSR. This capacity creates an element of self-containment to the duplicator, making external CD recorders obsolete for the user. The duplicator is priced at \$7995 and will be available for shipping from MTI's U.S. headquarters. For further information, contact Microboards Technology, 1480 Park Rd., Ste. B, Chanhassen, MN, 55317. Tel: 612-470-1848. Web: www.microboards.com. Circle free lit. #116.

26

"When A \$2,000 System Sounds As Good As A \$50,000 System, I'd Say They Got It Right."

William Wittman, Engineer/Producer

The First Fully Integrated 5.1 Monitoring System

The All-New JBL LSR Monitors are, quite literally, just that. Highlighted by a long list of performance-tailored components and customer-inspired features, they're like no other systems on the market today. The entire line, including the LSR32 3-way, 28P 2-way and 12P Subwoofer, is a technical triumph; resulting in new standards and performance levels for a rapidly emerging multi-channel recording industry.

Performance-Tailored Components

Revolutionary transducer designs, optimized network topologies and innovative materials are some of the reasons why the LSR line is being hailed as 'the world's most advanced monitor'. JBL's all-new *Differential Drive®* woofer permanently dispels the notion that better linearity, higher power handling and greater dynamic accuracy are somehow an unobtainable, evil triangle. *Dynamic braking* produces truly accurate bass at higher SPL's with maximum reliability. Composite materials, including *Carbon Fiber* in the woofer as well as *Titanium* and *Kevlar®* in the high and mid frequency components, insures performance that is always optimally maintained.

Not Just A Better Spec... A Better Monitoring System

While all companies boast about their specifications, JBL went one step further. To guarantee that every component of the LSR family worked together for optimal performance, LSR development employed JBL's unique 'system-engineered' design philosophy. Simply put: the entire line was researched and refined as one, with an overall performance goal in sight. What this means to you is a monitor and subwoofer that work together as a system; delivering stunningly uniform and accurate performance in both stereo and multi-channel applications.



LSR 32 12" 3-way mid-field monitor with rotatable Mid/High Elements.



LSR 28P 8" 2-way close field monitor with bi-amplification and active filtering.



LSR 12P 12" Active Subwoofer with Bass Management System.

Carbon Fiber Composite Cone

Dual Top Plate

Dynamic Brake Co

Neodymium Magnet

Aluminum Diecast

Dual Drive Colls

Diecast Frame





M A Harman International Company

To find out more about the revolutionary LSR Monitors, visit JBL Professional at www.jblpro.com

Wagener's World

Metal master Michael
Wagener creates his
dream studio in the
country

STUDIO NAME: WireWorld LOCATION: Mt. Juliet, TN

KEY CREW: Michael Wagener, owner/pro-

ducer/engineer

PROJECTS RECORDED: (Since September 1996): Outrage, Coma, Accept, Prunella Scales, Testament, Wolf Hoffman, Muriel Anderson, Impellitteri, Mary Griffin, 54, Badi Assad, Jim Roberts, Skid Row, Michael Clay Myers, Sister Moon, Stir, Linda Regan, Ozone Monday, Small Craft Sighting, Sebastian Bach, and O.C.D.

CREDITS: Some of the artists Michael Wagener has worked with include Accept, Alice Cooper, Black Sabbath, Dokken, Extreme, Great White, Janet

Jackson, Krokus, Megadeth, Metallica, Mötley Crüe, Outrage, Ozzy Osbourne, Plasmatics, Poison, Prunella Scales, Queen, Raven, Saigon Kick, Sass Jordan, Skid Row, Steve Jones, Stryper, Testament, Warrant, White Lion, Wolf Hoffman, and X.

CONSOLES: Yamaha 02R [2] with Version 2 software; Spirit Protracker; Rane SM26; Mackie 1604 [2] and Mackie 1202

RECORDERS: TASCAM DA-88 [6] and 302 cassette deck; Studer 741 CD recorder; AKAI DD-1000 optical disc recorder/editor with AKAI 650 [2] optical disc drives; Revox A-77 1/4-inch analog 2-track; Technics 1500 1/4-inch analog 2-track

MONITORS: Genelec 1031A; Tannoy Classic, SRM 10B, and PBM 6.5; Infinity 2001 and R-1

AMPLIFIERS: Bedini 813; Yamaha A100a; Behringer HA903 headphone amp

COMPUTERS & SOFTWARE: Apple G3 PowerMac w/Firewire for video editing, Quadra 950 with AudioMedia II card, Ouadra 840 AV w/Radius Video Vision

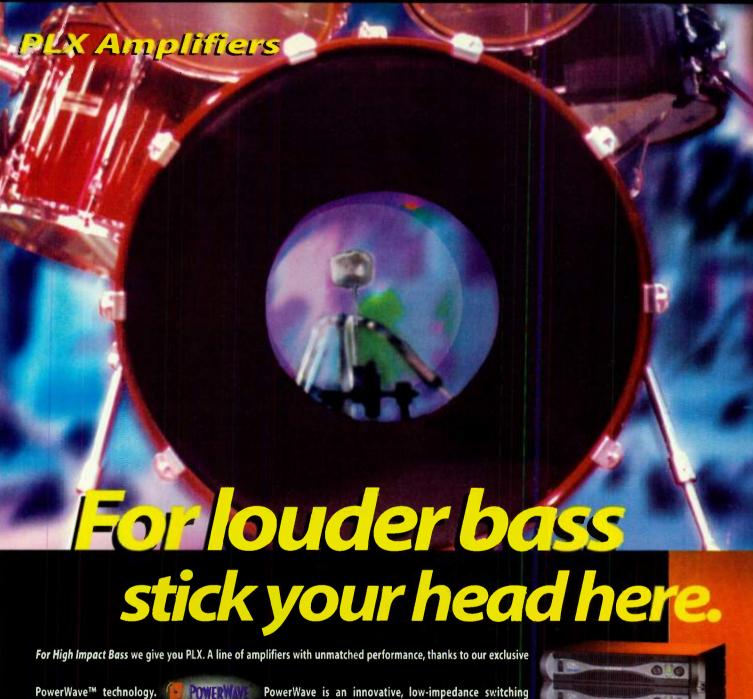
Editor, and Mac LC. Software includes Opcode StudioVision Pro; Galaxy; After Effects; Session; SampleCell; Passport MasterTracks; Emagic LogicAudio; Adobe Illustrator, Photoshop, and Premiere

VIDEO EQUIPMENT: Sony PVM 1354Q and PVM 8044Q video monitors, DSR-20 DVCam deck, SLV-R1000 S-VHS recorder editor, CVD-1000 Pro Hi-8 recorder/editor, and PCM-701ES A/D converter; Aiwa VHS for PCM recording; Canon XL-1 digital video camera TEST EQUIPMENT: AudioControl 1050 RTA; Tektronix WFM-90 waveform/vectorscope

DAT MACHINES: Panasonic SV-3700 [2] OUTBOARD GEAR: MIDIMAN Syncman Pro; Behringer Supressor, Edison, and Ultrafex II; Aardvark Aardsync; TC Electronic Finalizer+; John Hardy M1 4-channel mic pre [3]; Summit stereo tube mic pre, EQF 100, EQP 200, and C100; Groove Tubes MP1 mic pre; Vac Rac 4-channel mic pre; vintage API 4-channel mic pre; ADL 1000 compres-

continued on page 138







power supply that converts 60Hz AC to 115 kHz, which recharges the audio circuit's DC rails some 2000 times

faster than a conventional supply. The result — chest pounding bass, more headroom and consistant crisp,

clean sound. And because the PowerWave power supply is so stiff, PLX gives you more power at two ohms compared to a

Model	Watts per channel *		
PLX	2 Ω*	4 Ω	8Ω
1202	600	325	200
1602	800	500	300
2402	1200	700	425
3002	1500	900	550

conventional amp.



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CIRCLE 51 ON FREE INFO CARD



World Radio History

Altec 684A

The mic with the "Golden" diaphragm

MICROPHONE NAME: Altec 684A FROM THE COLLECTION OF: Will Edwards/Sprockets Music and Post (Miami, FL)

PRICE WHEN NEW: \$72 MSRP (1965)
YEAR OF MANUFACTURE: Early 1960s
TYPE OF MIC: Moving coil dynamic
POLAR PATTERN: Omnidirectional

FREQUENCY RESPONSE: 35 Hz to 20,000 Hz

(no tolerance stated)

OUTPUT IMPEDANCE: See notes

OUTPUT LEVEL: -55 dBm for a sound pressure of 10 dynes per square centimeter **HUM:** -120 dB, referenced to 10³ (cubed) Gauss

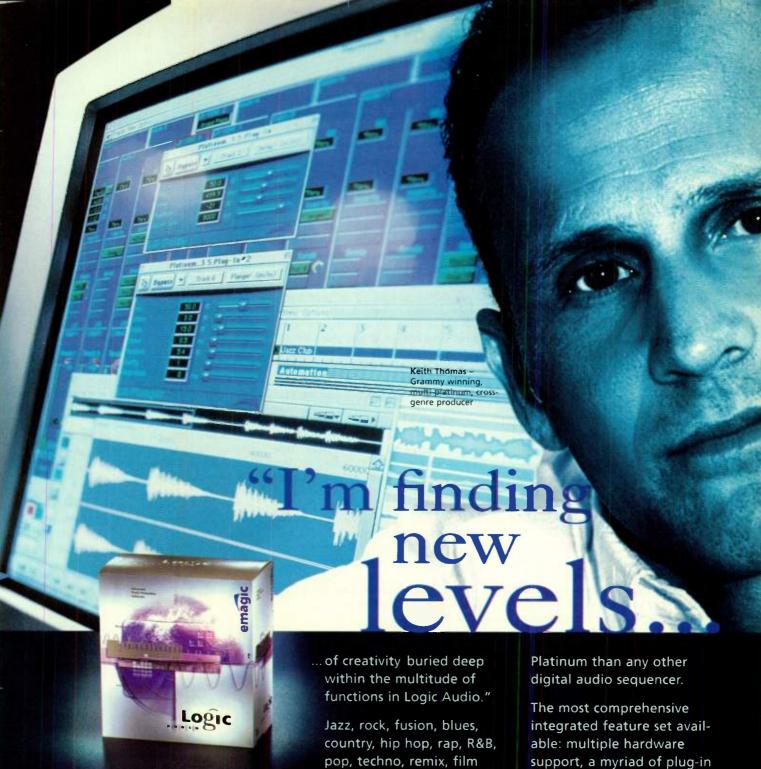
DIMENSIONS: 7.5 inches long x 1.5 inches maximum diameter

WEIGHT: 8 ounces

MIC NOTES: According to literature from Altec, the 684A microphone was designed to approximate the performance of Altec's 21D laboratory condenser microphone. The 684A employed Altec's "Golden" diaphragm, which was protected from dust, dirt, and other contamination by a Sintered Bronze Filter, which can be seen at the front edge of the mic. In an effort to avoid on-camera reflections during TV applications, the 684A was finished in dark green and black enamel, as shown here.

USER TIPS: Like many dynamic microphones of its day, output impedance of the Altec 684A may be modified. However, Altec offered three different impedance options as opposed to the usual two: 30/50 ohms, 150/250 ohms, and 20,000 ohms. A two-conductorplus-shield cable was provided with the 684A: the microphone end had a 5-pin Cannon connector while the other end had a standard 3-pin Cannon connector. Variations in microphone impedance were obtained by changing the pinout at the 5-pin end. Pin 1 was designated ground (for the shield), and pin 2 as common (the black conductor). The white lead could then be connected to pin 3 for 30/50 ohms, pin 4 for 150/250 ohms, or pin 5 for 20,000 ohms. Unbalanced operation was obtained by tying the black conductor with the shield to pin 1.





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CIRCLE 20 ON FREE INFO CARD

Inside Digidesign's Pro Tools

A new column dedicated to reporting on product features and applications that didn't make it into

BY DAVE LEBOLT, DIGIDESIGN

Welcome to EQ's first Tech Tips column. The purpose of this column is to let you in on those little secrets — you know, those hidden key commands, those hard-to-find features that can't be found in any manual anywhere. Or maybe they are in the manual, but they'll be better explained here. We'll also key you in to new applications for devices you may already own. To get the ball rolling, here are some tips on using Digidesign's Pro Tools.

1. Remember Those Shortcuts!

Pro Tools contains many shortcuts that make your work easier. Two important ones to remember: Many people ask how they can have the start time of an element on one track conveniently line up with another, or how they can quickly spot a region grabbed from the region list to their selection area in the Edit Window. Here's how:

- When you hold down the Control key, if you touch another region with the Grabber hand (on the same track or another track), the region will "pop to" current cursor location or the start point of the currently selected region. Holding down the Control key also works when dragging a region out of the Region List; it "spots to" the current cursor location or selected region start.
- Use the Option or Option-Shift key shortcuts. These can be extremely handy when routing or creating or removing instances of plug-ins on multiple channels. Holding down the Option key and changing a routing assignment or plug-in assignment will perform the change to all disk and aux

input mixer channel strips. Holding down the Shift key in addition to Option will make the changes only to *selected* mixer channel strips.

2. Use Solo Safe for Aux Input "Submasters" and Effects Returns

- Let's say you've created a submaster using a stereo aux input in Pro Tools, and you've routed all of your background vocals to the sub so that you can apply common EQ or compression to all of them at once. If you "solo safe" the submaster by Command-clicking on the Solo button, it will grey out. Then, each time you solo a background vocal track, the submaster will still be "on," and you won't have to solo it as well to hear your vocal elements.
- The same function applies to effects returns. Many high-end consoles offer a solo safe function (also called solo isolate), which allows you to hear a vocal or other mix element solo'd "in place" with any and all effects still active (reverb, delays, etc.). Just Command-click on the Solo button on your reverb (or other effects) returns to hear them in addition to the mix element you're soloing.

3. Create "Dynamic Snapshots" for Your Automation Moves

Snapshots in automation systems let the user create a fixed setting for one or more parameters and record it as single "event." Many people don't realize how easy it can be to create snapshots of levels, pan, sends, mutes, and plug-in-parameter automation at any point on any track within Pro Tools. What makes it even more powerful than a fixed "snapshot" is that you can dynamically edit the levels you've created so that they can morph from one value to the other over time, or make other changes:

- In Pro Tools' Automation Enables Window, make sure that the desired automation type (level, pan, etc.) is write-enabled, and click on "Auto Suspend." This lets you freely adjust parameters and move around the Edit Window without faders or other control snapping their automated positions. Once you have found the settings you want to snapshot...
- Place your cursor on the track(s) where you want to record your snapshot
- Choose Edit>Write Automation to All Enabled Parameters
- Automation breakpoints are created for all of the automation parameters continued on page 159





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CIRCLE 59 ON FREE INFO CARD

World Radio History

Cream Ware Pulsar Studio Card

CreamWare's new card uses SHARC power to separate it from the rest

BY CRAIG ANDERTON

The trend with computers and the studio has been to integrate more and more functions into the computer: first MIDI data, then digital audio, then signal processing, mixing, signal routing, and, more recently, software synthesis. But raw audio processing horsepower has always limited the degree of integration. When the computer's CPU wasn't up to the task, companies used Motorola's 56000 series of digital signal processing chips to turbocharge the computer. Even today's high-speed processors aren't always enough, however, as those who have tried to load multiple DirectX plug-ins, then tweak them in real time have discovered.

Enter the Analog Devices SHARC, a

next-generation DSP chip that dramatically ups the ante for audio processing power. CreamWare has put four SHARCs on their Pulsar PCI card (Windows now, Mac later), and takes advantage of that power to "virtualize" an entire studio — not just selected parts.

Pulsar's main focus is as a companion to sequencers such as Cubase VST, Logic Audio, Cakewalk, Studio Vision Pro, etc., as the card can route and process digital audio and/or MIDI data. But sequencing is just one component of the "Pulsar studio." Other elements include:

I/O. Any studio has to interface with the outside world; Pulsar specializes in digital (20 audio I/O channels total - dual ADAT ins and outs, S/PDIF, and stereo analog, along with MIDI in and out). The analog converters are on the card, with 20 bits in and 24 bits out. ADAT I/O is on four standard TOSLINK connectors, while everything else breaks out from a 25-pin condensed Sub-D connector. Those wanting multiple channels of analog I/O will need to convert it into ADAT I/O from the converters in an ADAT. CreamWare A8 or A16 rack interfaces, Frontier Design Tango, etc. Note that Pulsar's 32-bit internal word length accepts 24-bit input (from S/PDIF and ADAT) and can run at 96 kHz. Interestingly, ADAT channel splitting for recording tracks at 96 kHz is scheduled as a free upgrade later this year.

However, this I/O is intended not just to get signals into and out of the board, but also to provide inserts for integrating older analog gear into Pulsar's virtual environment. This all happens through the digital mixer, so let's look at that next.

Digital Mixer. The 32-input mixer appears as eight mono channels (fig. 1),

with bank select for the other groups of eight channels. Each channel strip has trim, phase invert, four inserts (for software plug-ins or hardware effects routed through the I/O), four-stage parametric EQ with drawable curves, mute, solo, six mono aux sends (switchable pre/post), pan, fader, and bus assignment to any of 16 busses.

You can use this simply as a computer-controlled digital mixer, and automate using Pulsar's internal automation or external MIDI control (see later). But what's more intriguing is that you can bring various sources into the mixer, including Cubase ASIO I/O, other sound cards using multiple Windows MME drivers, effects returns from outboard gear, and also outputs from the internal software "analog" and sample playback synths. Speaking of which...

Sounds a la Software. Pulsar ships with five software synths: emulated Minimoog (which is as "real" as Re-Birth's TB-303/TR-808/909 combination), "Easy Synth" (a fat, 1-oscillator synth), "Blue Synth" (Prophet 5-type

continued on page 35



FIGURE 1



FIGURE 2

continued from page 34

analog sounds), 6-operator FM synth, and a full-blown modular synth with software patch cords (fig. 2). Each is capable of a varying number of voices. Some synths will be monophonic, while others will play up to 16 voices — although you can just drag in multiple synths for more voices, or record voices to hard disk then route them through the mixer while adding more voices.

These synths also illustrate why you have to think a little differently in Pulsar-land. The outputs tie directly to the mixer ins with software patch cords, and the MIDI connects internally as well. Granted, there's only one hardware MIDI port (mostly intended for sync purposes), but a lot of the MIDI routing, which can be on multiple ports, happens inside the computer for the virtual sound sources. If you need multiple ports to external gear, CreamWare recommends a MIDI interface (e.g., MOTU MIDI Express, Opcode Studio 64, etc.).

There's also an Akai S1000-compatible playback module. Load an Akai format CD-ROM or floppy disk into your computer's drive, read the sample into the player, and connect the output into the mixer via — you guessed it — software patch cords.

You can also create your own synths with SCOPE (see sidebar); in fact, the synths shipping with Pulsar were all created in SCOPE.

Plug-Ins. Pulsar does not follow any existing plug-in formats, which CreamWare claims is necessary to take full advantage of the SHARC processing. Pulsar ships with EQ, compressor, chorus, flanger, and vocoder (!); but, of

course, you're running a program that accepts, for example, DirectX or VST plugins, they can integrate with your system through that program. CreamWare is promising additional plugins, as well as third-party support.

Control.
There are two

main types of control. Pulsar can use virtual, on-screen controllers to send commands to internal processors or send MIDI controllers or sys ex strings out the external port. As with the synths, you can create your own "virtual" control panels using SCOPE. However, incoming MIDI data can control the synth, mixer, and ef-

controllers eventually, but existing controllers do the job for now.

More. For hard-disk recording, Pulsar is slated to integrate with the upcoming TripleDAT 3.0 update (of course, if your sequencer supports hard-disk recording, then TripleDAT is needed only if it has specific features you need). You can also run multiple Pulsar cards, connected by an S/TDM card-top "skybus."

Wrapping up. Pulsar anticipates a more digital age: it offers lots of digital I/O with analog as an option, as opposed to traditional cards that concentrate on analog I/O with digital as an option. Those who have a more traditional, analog-based studio with lots of mic outputs and such may not find Pulsar ideally suited; adding multiple, external A/D and D/A converters could make it less competitive than other interfaces that lack the "virtual studio" approach, but instead go heavy on analog I/O.

Nonetheless, Pulsar pioneers the next generation of interfaces that harness cuttingedge hardware to affordably "virtualize" the

SCOPE UPDATE

The premise of SCOPE, first covered in EG's April '98 issue, remains the same: provide quantities of software modules with which you can create your own customized instruments and systems. However, the hardware details have now been finalized. The basic SCOPE configuration comes with an 18 I/O "sandwich" add-on board (two ADAT Lightpipe interfaces and one S/PDIF). You can upgrade from Pulsar to SCOPE by buying SCOPE without the I/O board (which saves \$800), along with an additional board that includes 15 SHARCs (!) to do heavy-duty DSP.

One new feature is that it is now possible to create your own graphic interfaces for custom instruments, and even alter knob animations so that changing their settings sweeps through a color

fects controls. For example, you could program one Peavey PC1600 preset to change synth parameters, another preset to control mixer parameters, and another preset to control additional mixer parameters, while an additional preset could tie to the virtual controller feeding the virtual effects. CreamWare is planning to create specialized hardware

gradient, or changes color when boosted, or...you get the idea. The mixer, as well as other elements common with the Pulsar system, can also be customized in many ways that are not possible with Pulsar alone.

Although SCOPE can serve as a development system to create instruments for Pulsar, obviously instruments that use all the Pulsar board DSP plus additional DSP from the SCOPE board won't translate. Also, instruments translated to Pulsar are not customizable, as they are with SCOPE. SCOPE is a virtualized studio as well, but a more complete one that invites user customization to an unprecedented degree.

Watch for a full-length review of SCOPE in these pages upon its release, due in late 1998.

studio. State-of-the-art MIDI + hard-disk recorders have brought us tantalizingly close: Pulsar goes the rest of the way.

For more information, contact CreamWare, 446 Harrison Street, #32, Sumas, WA 98295. Tel: 800-899-1939. Web: www.creamware.com. Circle EQ free lit. #117.

Alesis Transducers

Alesis introduces new products for both the input and output ends of your signal chain

BY ROGER MAYCOCK

GT ELECTRONICS AM62 MICROPHONE

One of the biggest events of the recent AES Show was the formation of a new division at Alesis Corporation - GT Electronics. GT Electronics will focus its efforts on the development of equipment using classic analog technology. To further their efforts in this area, Alesis acquired the microphone, amplifier, and signal-processing technologies of Groove Tubes, originally founded by Aspen Pittman.

The first products from the new GT Electronics division are four large-diaphragm condenser studio microphones - the AM51, AM52, AM61, and AM62. These cardioid and multipattern microphones range in price from \$549 to \$1299, and employ either FET or tube preamplifiers.

The flagship model in this new product line is the AM62. This tube condenser microphone features an extralarge capsule that protects its ultra-thin 3-micron gold evaporated mylar diaphragm. This diaphragm is precisely tensioned to ensure an extremely close matching of capsule response, and interacts with the internal polarization voltage regulator to facilitate a matched response that is typically within one decibel between microphones.

The key element of the AM62 is the custom-designed, hand-selected, dualtriode GT5840M vacuum tube preamplifier. This military-spec component is designed to produce a warm, rich tone, broad frequency response, wide dynamic range, and an extremely low self-noise level. If you record with digital equipment, these qualities can make a big difference toward making digital sound its best.

The AM62 provides four switchable polar patterns: cardioid, omni, figure eight, and super-cardioid. This capability makes it ideal for a variety of recording applications, including vocal, acoustic instrument, drum, and amplifier cabinet miking. There's also a 9 dB/octave, 75 Hz high-pass filter that should be a significant help in reducing low-frequency background or vibration noise. Adding to its versatility, the AM62 incorporates a -10 dB attenuation pad designed to help the microphone handle high sound pressure levels.

The microphone weighs in at 1.5 lbs., measures out to 7.5 inches in length, and has a maximum diameter of 2 inches. Frequency response ranges from 20 Hz to 20 kHz ±1.5 dB. As with many high-caliber studio microphones, the AM62's package is comprehensive and includes the HM-1 hard mount, SM-1 shock mount, the PSM power supply, PSC-1 interconnect cable, and a power cable all of which are securely housed in a custom hard-shell case.

There's no escaping the fact that a good studio microphone is an essential ingredient in any professional recording environment. employing some innovative techniques in both its design and manufacturing, the AM62 is in every aspect a microphone that merits a close look for anyone interested in expanding or improving their studio mic arsenal.



Powered monitors have, in recent years, gained a new level of acceptance; and now, models from just about every major manufacturer have provided the musician and recording professional with an astounding choice. Not one to be left out of the feeding frenzy, Alesis has just announced their first powered monitor in the company's line of speaker products — the M1 Active biamplified reference monitor.

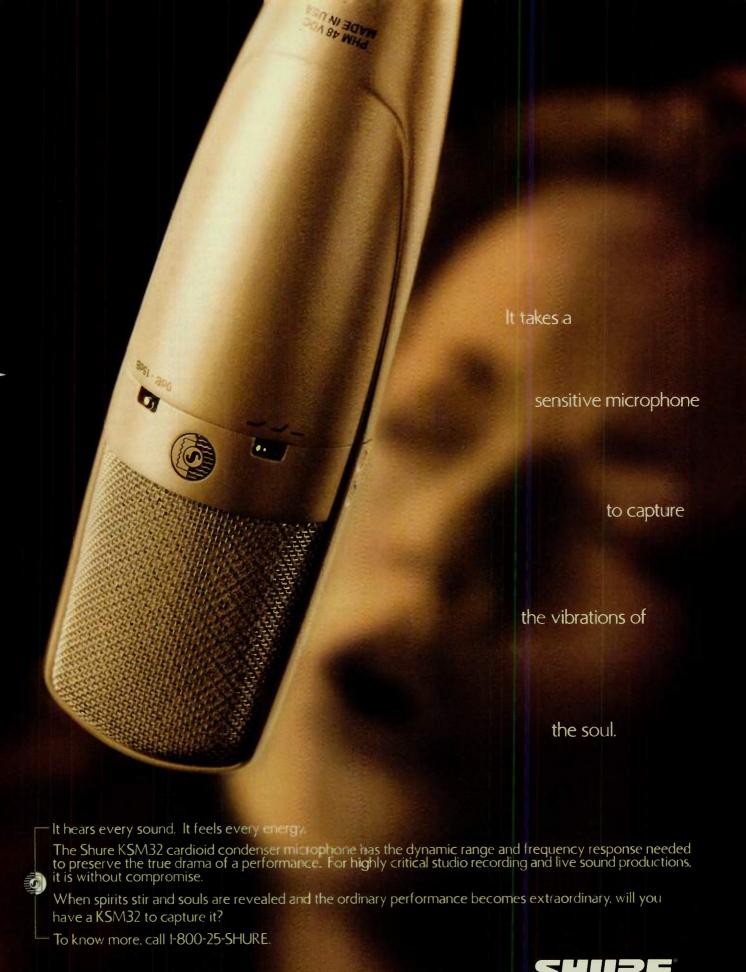
Designed to provide consistent performance under a variety of studio conditions and program material, the M1 Active features 8th order, 48 dB/octave

high- and low-pass electronic crossover filters coupled with customdesigned dual amplifiers. The M1 Active's crossover point was chosen at a low 1500 Hz so as to produce an extremely wide dispersion zone in addition to low midrange coloration. Timealignment circuitry in the tweeter

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World Radio History

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Opcode Vision DSP

The venerable MIDI sequencer releases a new addition to the line

BY ROGER MAYCOCK

Opcode's Vision has long been considered one of the leading MIDI sequencing environments for the Macintosh—and as sequencers began to integrate audio recording and editing into the equation, the Vision series of products quickly gained an equally prominent reputation among musicians and studio operators. Opcode recently released a new addition to the line, calling the product Vision DSP.

Positioned for either entry-level or professional use, Vision DSP is designed to provide the musician/composer with an extremely capable 16-or 24-bit audio/MIDI composition tool at a most affordable price point. Only Studio Vision Pro, with its support for Pro Toolsi24 and its MIDI-to-audio and audio-to-MIDI conversion capability, ranks higher in the company's offerings.

To run Vision DSP, your computer must be a PowerMac (603 or faster recommended) with Level 2 cache, System 7.6 or higher, a minimum of 32 MB RAM (the more the merrier), and a fast hard drive with defragmenting software for disk optimization. Opcode recommends an ASIO-compatible digital audio card (I'll explain this in the next paragraph), but you can at least "get started" with the Mac's internal sound capabilities.

Vision DSP includes support for Steinberg's VST realtime plug-in format. The Steinberg approach to plug-ins is rapidly becoming the industry standard, and, by implementing this, Vision DSP users benefit from an extensive range of audio plug-ins to supplement the substantial audio processing capabilities of the program itself. Similarly, the program supports a large number of audio cards through compatibility with Steinberg's ASIO (Audio Stream Input Output) architecture. Depending on one's needs, cards with up to 24 audio inputs and outputs are available, as are cards with support for S/PDIF or ADAT Lightpipe. If you prefer, Vision DSP can operate with the PowerMac's internal sound capability.

DSP FUNCTIONALITY

Real-time audio effects processing is undoubtedly one of Vision DSP's key strengths. The program is the first application to feature Opcode's new studio-quality parametric EQ, and its sonic performance is every bit the equal of,

if not superior to, many professional stand-alone units I've heard. The program's Acadia Audio System lets you choose from five different EQ types available to fill the four available bands (connected in series) per channel. Available EQs include fully parametric "peaking" EQ, high- and low-pass filtering, plus high- and low-pass shelving EQ.

The program's EQ Window is easy to understand. The display shows the type of EQ selected for each band and, as applicable, the Frequency, Gain, and Width sliders, along with an On/Off toggle. The EQ Window also provides a clear view of the EQ curve you've created. EQ settings can be saved and recalled as a template. EQ templates are recalled from the Template pop-up in the EQ Window.

Vision DSP includes a wealth of au-



HIGHER VISION: Opcode's new MIDI composition tool is easy to understand and use.



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H A Harman International Company

dio processors — all of which sounded pretty damn good to me. The program includes reverbs, choruses, vocoder, echo, ring modulator, filters, and limiters. Carried over from Studio Vision Pro, you'll find TruTone pitch shifting (for retaining the vocal character across gradual tempo changes), Adjust Audio Tempo (for retaining the pitch through a gradual tempo change), Time Scale com-

pression and expansion, and customizable audio crossfades. Effects can be run in parallel or in series and tracks can be routed anywhere you like. When you consider the fact that you're not adding any noise to the signal by way of cables and patchbays, you begin to wonder why you keep all those signal processors hangin' around.

The program has facilities for managing four sends per channel to the busses — each capable of four effects. This provides upwards of 16 effects per channel without any secondary bussing and makes Vision DSP well-suited to internal submixing. Be advised, however, that this sort of thing can be quite taxing on the CPU.

As you work with the audio console, Vision DSP provides the ability to

name mixer channels, busses, inputs, and outputs. No matter how complicated your mix becomes, keeping track of it all won't be an issue.

RECORDING AND MANIPULATING AUDIO

Recording audio couldn't be easier, as the program follows the tried-and-true conventions of using a traditional tape recorder. In essence, you select a track, set your input level, hit Record, and start feeding your signal. Digital audio is handled like MIDI data, so it really doesn't feel any different than using a sequencer for keyboard or percussion programming. The only difference lies in the type of audio card you happen to be using and what protocol is employed — S/PDIF, ADAT Lightpipe, analog input, etc.

Vision DSP imports just about every imaginable audio file format one can thing of — making it very easy to import sound effects and place them wherever

they are needed. For this article, I had no difficulty importing a standard MIDI file for my music bed, and then importing a voiceover in WAV format. Once my components were in Vision DSP, I was able to slide the voiceover around until it sat where I wanted it. Using effects on the dialog was an equally intuitive process as described earlier.

Recording

audio couldn't

be easier.

as the

program

follows the

tried-and-true

conventions

of using a

traditional

tape recorder.

ALL THAT MIDI STUFF

Vision DSP offers all the MIDI editing power you've come to expect in a high-end sequencer program. The Overview Edit window provides a quick means of arranging your music - with full dragand-drop functionality for changing pitch, position, or duration, depending on where you grab the selection. Segments can be looped, copied, or "snapped" to the nearest beat. The Graphic Edit display lets you inspect and manipulate data for audio, MIDI, and MIDI controller data (the Strip Chart) all within the same window and, hence, greatly increases your ability to work quickly. Currently, no other similar program offers this capability.

For those of you who grew up on something like

Roland's MC-500 sequencer, you'll be right at home with the List View window where you can see each event by position, duration, type, channel, velocity, etc. For the traditional composer, MIDI tracks can be displayed as standard music notation with a single click — and you can still grab and drag any note to edit it.

AUTOMATING YOUR MIX

The ability to accurately and consistently recall and "perform" your music mix is perhaps the most important aspect of using a program like Vision DSP. The program's moving fader consoles make it easy to control individual track level, pan, muting, and effects, as well as any MIDI controller function such as filter sweeps for both audio and MIDI within the same console — another unique aspect of the program. Vision DSP lets you perform offline edits so that you can meticulously fine-tune fad-

er moves that couldn't possibly be achieved in real time. And, by the way, it looks really cool!

QUICKTIME SUPPORT

On top of everything else, Vision DSP offers extensive support for Apple's Quick-Time multimedia audio/video format. You can locate to any position throughout the QuickTime movie and the program follows. Similarly, if you locate anywhere in your Vision DSP project, the QuickTime movie follows along like a lost puppy! You can also extract the audio from a Quick-Time movie, edit it, and export a completely synchronized new movie — something no other sequencer I know of can do. This type of capability makes the program ideal for composers who score to picture or for multimedia games.

AND IN THE END ...

The Vision DSP package is well organized and complete. It consists of an Audio Reference Manual, MIDI Reference Manual, a Manual Supplement, a Galaxy and Galaxy Plus (patch librarian and editor) Manual, an OMS (Open Music System) Manual for configuring your entire setup, a Quick Start Guide, a Shortcuts Reference Card, and, last but certainly not least, the software — which is actually a collection of programs.

Much to my surprise, I discovered that in addition to Vision DSP and the Galaxy patch librarian programs, the package includes Peak SE sample editing software from BIAS (Berkeley Integrated Audio Software), fully functional versions of SoundApp 2.4.3 (a utility sound editor), and the Hyperprism audio plug-in from Arboretum Systems, plus a visual audio interpreter that displays animated graphics sync'd to sound called MacThugha. There's still more, but, hey, I can't spill all the beans here.

The documentation is well written and makes sense (imagine that!), and the Quick Guide and Shortcuts Reference make getting started relatively easy. Combined with a wealth of features, real-time everything, and good documentation, Opcode's Vision DSP is an extremely capable program that deserves your attention.

For more information, contact Opcode Systems, 3950 Fabian Way #100, Palo Alto, CA 94303. Tel: 650-856-3333. Web: www.opcode.com. Circle EQ free lit. #118.





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Pro Tools 24 MIXplus:

Check out this sample Pro Tools 24 MIXplus setup:

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- 2 TC reverbs
- 10 delay-based effects
- 5 sends (1 stereo, 4 mono) on all disk tracks
- 48x32x2 mixer

All running simultaneously and in real-time!





For more information, or to schedule a free demo, call 1.800.333.2137, code 413. To learn more about Pro Tools software capabilities, ask for a free video. Already own Pro Tools? Call about our special Pro Tools 24 MIX exchange offers!

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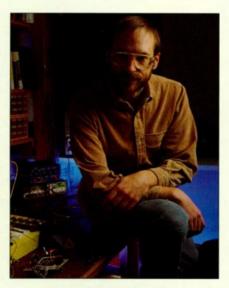


A division of

CIRCLE 17 ON FREE INFO CARD

The Insider: AES and the Crystal Ball

A look at the products and trends revealed at the 1998 AES Convention



BY CRAIG ANDERTON

Part of the fun of going to AES, aside from being able to check out the latest gear and claim the expenses as a tax deduction, is trying to figure out which trends are going to dominate the industry's future. Of course, every manufacturer wants you to think that they are introducing the products that will change the world - but for every ADAT, there's an Elcaset (and if you don't remember what that was, I rest my case). So what did we learn from AES this year in San Francisco, aside from the fact that the Bay Area is a better place to hold a convention than Los Angeles? Here's the

Twenty-four bits is "in," even if it's mostly for marketing reasons. Twentyfour-bit converters don't deliver anywhere near the theoretical maximum dynamic range of 144 dB; the reality is more like 18 or 19 "real" bits, or around 105-115 dB of dynamic range. This is because the precision required to render those Least Significant Bits accurately is beyond our current technology - it's sort of like saying, "My cassette tape recorder has a dynamic range of 100 dB,

it's just that the lower 40 dB is hiss." For most applications, a well-designed 20bit converter gives roughly equivalent performance. But there's a mystique surrounding 24-bit operation, coupled with the tendency to think that "more is better," so expect to see 24-bit I/O proliferate in the months ahead.

Is 96 kHz the next sampling rate standard? Even though more software and hardware accommodates 96 kHz sampling rates, can you really hear the difference? I agree with EQ's Hector La Torre that much depends on the program material, and there's no doubt that 96 kHz/24 bits sounds better than 44.1 kHz/16 bits. However, remember that you'll now need about 34.5 MB per minute of stereo audio to store 24 bits at 96 kHz, as opposed to 11.5 MB/minute for 16 bits at 48 kHz. (Thankfully, hard drives continue to get bigger and cheaper.)

But there's also the question of compatibility. If you have a digital mixer running at 96 kHz and want to feed in ADATs running at 48 kHz, computer I/O at 96 kHz, and CD players running at 44.1 kHz, who wins? (Answer: Samplerate converter manufacturers.) Still, the quest to improve digital audio is worthwhile, and despite rumblings that we really need a 192 kHz sampling rate. it seems 96 kHz with 24 bits should hold us for a while. And it makes manufacturers happy, because they get to sell us a whole new set of A/D and D/A converters.

MO kicks Jaz butt. Yamaha created a major buzz with their D24, an 8-track recorder built around 650 MB magnetooptical storage for \$2995. You get a robust medium, removable media, and easy upgradability to 1.3 GB MO drives. The current model delivers 19 minutes of continuous 8-track music, but that figure is somewhat misleading - silence can be reclaimed to increase the available track-minutes, so for an application like spotting FX for film, you can stretch the time much further. Best feature: you can spill beer on an MO cartridge and it

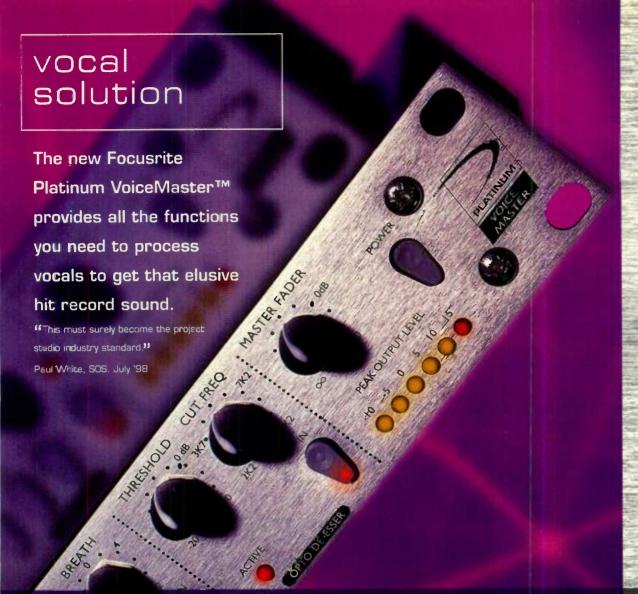
Computers show incremental improvements. The erosion of the Mac user base has not only slammed on the brakes, but may even be reversing.

Credit for this goes to the super-fast G3 chip, Steve Jobs for giving the impression that Apple has a direction again, product line simplification, and the perception that Apple will be more responsive than Microsoft to the needs of audio and video people in order to retain its core constituency. If nothing else, those various Mac drivers promised for PCI cards at the last NAMM are now appearing.

Meanwhile, on the Windows side, installation issues are becoming far less problematic, at least according to several software manufacturers that find their tech support lines not quite as overloaded as before. And Windows 98 — despite early negative reactions — is becoming viable as updated drivers and fixes appear. Overall, it seems the industry is looking to NT to truly solve Windows' issues, but it will be a while before NT enjoys the same degree of support as Windows 95/98 (it's worth noting, however, that the highly influential Digidesign has voted for NT now). By the time Windows NT 5.0 shakes loose, effectively putting the final nail in DOS's coffin, the industry should be ready.

USB: Coming soon to a computer near you. Plug and unplug peripherals while programs are running? Add a digital audio interface without rebooting? Like most hardware elements relating to computers, USB (Universal Serial Bus) has had some growing pains. But when it works, it really works - as demonstrated by Opcode's DATPort, a nifty little digital audio USB S/PDIF interface for under \$200. The demonstrator purposely did everything he could to screw it up, and it still worked. USB also accelerates the trend toward crossplatform hardware, which is a welcome trend for those of us who maintain twocomputer families.

Reverb just got a lot better. TC Electronic introduced the M3000 reverb, which they claim represents the culmination of new, fundamental research into reverb. Whatever they did, the proof is in the listening: tails with no periodicity or flutter (and don't need modulation to sound good), early reflections that are far more realistic and complex than expected, and a



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smooth transparency. Meanwhile, Sony was showing the DRE-S777 convolution-based reverb box. While pricey (around \$10,000 for a fully tricked-out version), it also looked very promising. Regular readers of this column know that I find digital reverb no match for the real thing, but at \$2499 the M3000 comes the closest yet to reality for those on a budget.

You can't keep a good idea down. Making a comeback: the legendary Mac digital recording program Deck has been acquired by BIAS systems. Better yet, updates are in the works, starting with ASIO and VST compatibility. Also back from the dead: FM synthesis. Yamaha's FS1R is a nifty little rack box that combines the best of "classic" FM synthesis and some new twists, such as vocal-like formant synthesis that does singing, looping, and percussion. Okay, so it's hard to describe in print, but it's truly nifty - and just in time for the upcoming FM synth revival. Meanwhile, the analog-revivalvia-digital-technology continues unabated, with CreamWare's Pulsar system [see the First Look on page 34] and Seer Systems' latest version of Reality leading an ever-increasing pack. Plug-ins are also reviving everything from ring modulators to phase shifters to vocoders to way-cool fuzz boxes. With Cakewalk taking over Metro, Arboretum introducing a completely new Mac MIDI sequencer, and high-tech champions Alesis folding Groove Tubes technology into the GT Electronics mic line, what's old is indeed new again — only better.

Digital mixing's fait accompli. Analog mixers are going the way of analog tape decks. Whether mixing inside a computer or using a control surface, digital mixing is happening in a big way. EMU-Ensoniq's modular Mantis system is particularly impressive, offering a build-as-you-go philosophy. It seems we've seen this story before: high-end digital units appear at a high price, analog holds down the mid and low-end, digital prices come down, analog becomes the province of budget setups only, then, finally, digital takes over altogether.

Everybody loves moving faders. People just can't seem to get enough of

the magic of watching faders move. Not only are these showing up in digital mixers, but also in controller boxes — CM AUTOmation showed the Motor Mix, a MIDI control surface for \$995 that provides eight moving faders along with a variety of assignable knobs and buttons. Very cool. And speaking of faders, even though they weren't moving, it seemed just about everybody had a Peavey PC1600 in their booth controlling something. Apparently people are pretty much resigned to the fact that mixing with a mouse is about as much fun as going to the dentist.

You're surrounded. Surround sound gets the Hype of the Year award. Will it take off? There's a lot of interest on the supply end, but, so far, demand remains soft. The reason why becomes obvious when you attend a surround demo: "Sit right here...no, two inches over to the right...now tilt your head at a 5.7-degree angle...okay, shift your body slightly counter-clockwise...there!" I can just see the arguments this will cause in a family of four as everyone fights over the

continued on page 134



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Al Kooper



When columnists collide: the Bonzai Beat rests on Kooper's Kouch

BY MR. BONZAL

Bonzai: So your book, Backstage Passes and Backstabbing Bastards [Billboard Books], is out. Does this mean you'll never work again?

Kooper: No. That happened around 1989. The book had nothing to do with it. My window of opportunity in the music business finally shut and I began to get on with my life. I always vowed I would bow out gracefully. It's a good thing to do. Otherwise you're out there with a flannel shirt and Speedos onstage at age 60 - not nice!

The book was one of those things I always wanted to do but didn't have time for in my former life. Like teaching, discjockeying, enjoying each day - ya know

- things like that which I get to do now. What?! Have you stopped writing and recording?

Well, actually I have not stopped writing or recording - I write a song and then head down to my basement setup (Subterranean Homesick Studios) and make a one-man MIDI demo. I would say, over the last 15 years, I have a backlog of about 60 good "new" songs, all demo'd. An album of the best 15 of those would be quite good, I imagine, but I would want to re-record them with human musicians. You know, MIDI is for people with no friends! I have to thank Stephen Webber for that line.

OK, if you could hire anyone, who would be in your new super group?

I'm already in a so-called "supergroup," The Rekooperators: Jimmy Vivino, Anton Fig, Mike Merritt, and

Paul Griffin, I don't know who's better than them. We're recording a live album this fall that'll probably come out next spring or summer.

Suspect: Al Kooper Occupation: Musician, Producer, Komposer, Author, Kurmudgeon

Birthplace: Brooklyn, NY

Residence: Boston, MA Vehicle: '92 red Toyota Celica with 16K miles. "Now what does that tell ya?"

Identifying Marks: Marky-Mark, Mark Twain, Mark McGwire, Marco Polo, etc.

Diet Highlights: Diet Snapple Peach Ice Tea and Sugar Free Fudgsicles.

Pet Peeve: People who simultaneously fart and whistle in elevators. "You know who you are!"

Photos: Kooper's home, Los Angeles,

Notes: The Kooper touch sweeps across decades of American music, from his snappy beginnings with The Royal Teens, co-writing the #1 1965 hit "This Diamond Ring," to his organ work with Bob Dylan on Highway 61 Revisited and Blonde On Blonde, his super session with Mike Bloomfield and Stephen Stills, founding Blood, Sweat & Tears, producing Lynyrd Skynyrd, cutting tracks with The Rolling Stones and Jimi Hendrix, scoring the Crime Story TV series, and currently pontificating as a professor at Berklee College in Boston.

Excluding you, who is the greatest producer working on the planet today?

The problem is the word "working." You've eliminated Brian Wilson and George Martin with that one word. I like Freddy Mollin (Jimmy Webb, Barry Mann) and Thom Bell (Spinners, Stylistics). If you could produce any artist in the world, who would it be?

I like Son Volt, The Honeydogs, Lucinda Williams, and Kings X. I'd be happy to come out of retirement for any of them.

Is Al short for something?

Al is short for Alan, which Alan Parsons wears so well.

Boy, didn't your ears stick out when you were a teenager? Believe me, long hair saved me.

What's the difference between The Blues Project and Blood, Sweat and



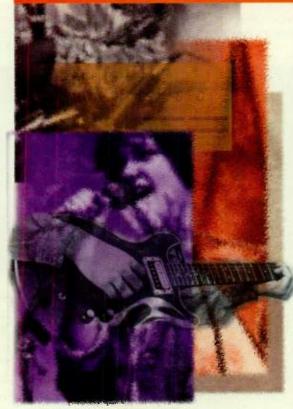




AL KOOPER PHOTOS BY MR

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The Blues Project was very punky for their time; a very punky band at its best. BS&T was a more polished pop music band, with a plethora of influences.

At the age of 15 you were in The Royal Teens...

Age 14, but who's counting. It was good for me, and gave me focus. I knew what I wanted to do, and I got right down to work.

By 1964, you had penned the classic "This Diamond Ring"...

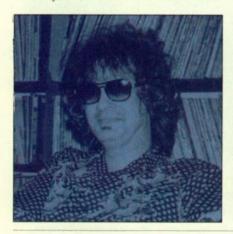
Actually, it was written in 1962. I share

credit with two others, and the record has almost hit the 2-million airplay mark. It pays for the cases of Diet Snapple.

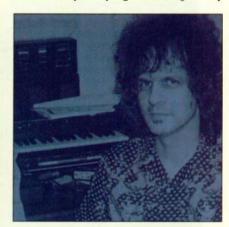
In your opinion, why did your performance with Bob Dylan and Mike Bloomfield at the Newport Folk Festival in 1965 cause such an uproar? I think my fly was open.

You played piano, French horn, and organ on "You Can't Always Get What You Want." Was there anything unusual at that Stones session?

The thing I remember most was the dinner break. They had a van bring in everything under the sun - lamb chops, curry, salads, soups. It was the most elaborate studio meal I ever had in my life, and I was very impressed. Even Dylan didn't go further than cheeseburgers. It was a very nice session, and I have Nicky Hopkins to thank because I was in England and he was in the United States. I think they called me because he wasn't there. I miss him. He was a great one. What were you trying to accomplish by

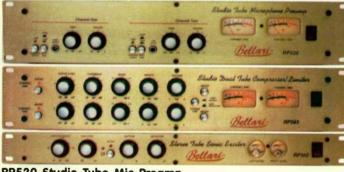






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writing your autobiography?

Well, admittedly, it's a bizarre story, but there is so much revisionism out there that I also wanted to clear the air. I've read in other books and magazines a lot of things that took place when I was actually in the room that are just bald-faced lies. I just wanted to set the record straight once and for all and also let younger people see what it was like to live in the '50s and '60s.

Sometimes it's even like Kurosawa's Rashomon — you can have two people in the same room and they see two different

things happen. That's how it is for Bobby Colomby, Steve Katz, and I. They really believe they came up with the concept for Blood Sweat & Tears and then asked me to be in their band. What can I say? Then you have to leave it up to the reader. I guess it really doesn't matter anymore. anyway - does it? So...there's two separate legacies of BS&T - Child Is Father to the Man and "Spinning Wheel." People can decide which one they prefer...

If you could go back in time before the birth of recording, what would you like to hear? The music they played at the Marquis DeSade's parties.

Do you know any interesting business tricks?

Yeah - don't cheat people. Do you still have an ulcer? Oh, yeah.

Do you still have insomnia?

Yes, and it's properly documented -Stephen King dedicated his book, Insomnia, to me. Now I can also add diabetes to the mix. It just keeps getting more and more interesting. Maybe Dave Barry will dedicate Dave Barry's Diabetes to me. Who knows?

Who do you think you were in a past life? A duck in Bulgaria

What old saying do you hate the most? You have to learn the rules before you can break them.

Who is the most amazing artist you've ever worked with?

Norman Rockwell. Played a mean canvas. What is your basic project studio equipment package?

A TASCAM console, a DA-88 and two 38's, Electro-Voice monitors and power amp, lotsa Korg synths, and Audio-Technica mics.

Have you ever witnessed a miracle? Yeah - my career.

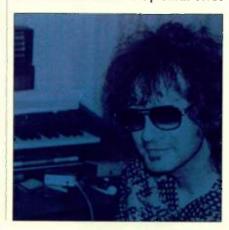
Do you have any business advice for musicians?

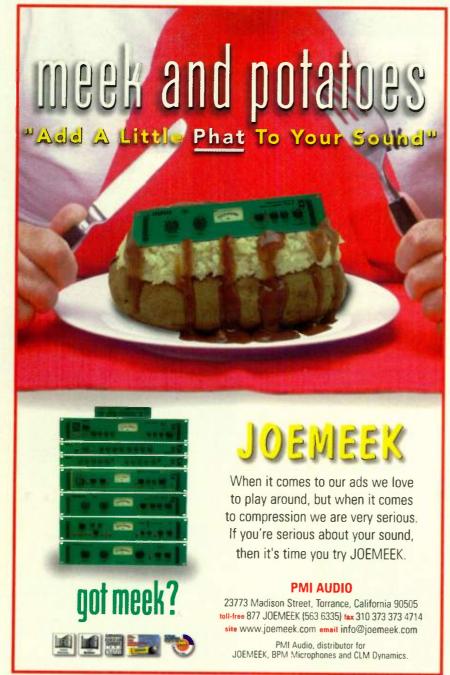
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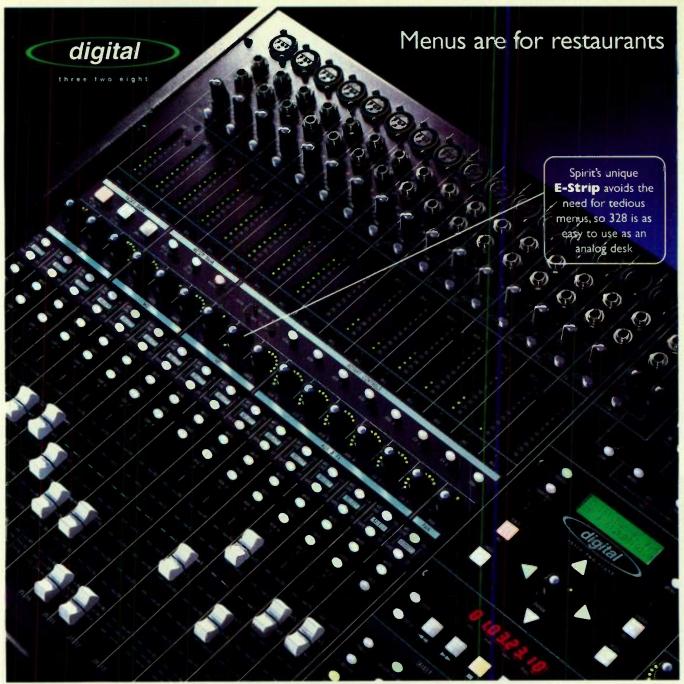
What do you listen to while you're driving? The sound of my road rage. The worst drivers are in Boston. But also I make mix tapes for the car. I try and come up with music I won't get sick of 'cause I always forget to change the tape in the car. It's a very difficult challenge. I once had a cassette that lasted six months.

Sounds like you're finally settling down. Did you buy a house?

Well, I bought a house in Nashville in 1990 and sold it for a handsome profit in '97. So







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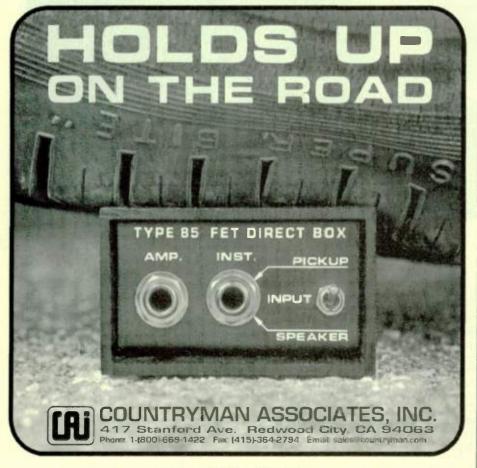
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CIRCLE 16 ON FREE INFO CARD

I bought a house in Boston and subsequently found out that right next door to me is a halfway house for mental patients. That'll keep the re-sale value down. They don't complain about the loud music, however. And it's still like being in a band. What music would you like played at your funeral?

The version of Also Sprach Zarathustra by the Portsmouth Sinfonia. It's a community orchestra in England where there are no musical pre-regs for joining. A car mechanic who's never picked up an instrument can play violin in that group. They actually have three albums out. Hilarious stuff.

What would you like Santa to bring you this year?

Claudia Schiffer without David Copperfield.

Where would you like to see your career take you in the next ten years?

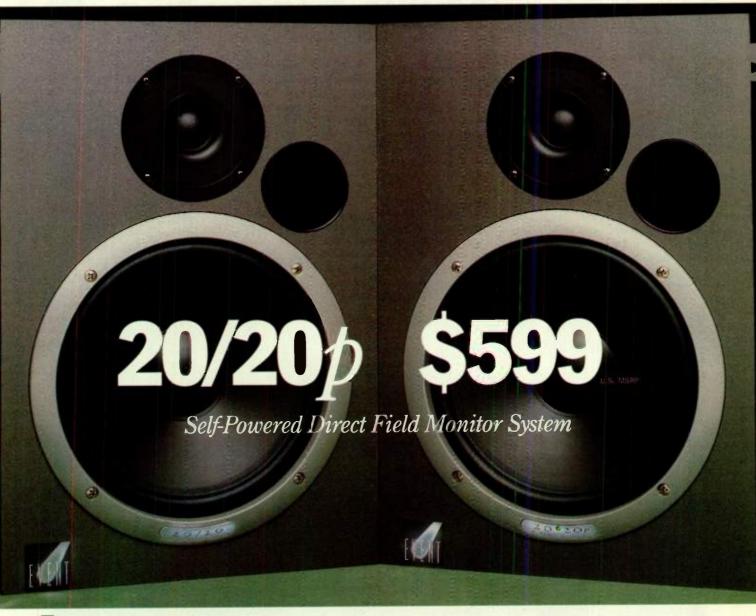
Well, I really enjoy teaching. It's giving something back and that's a good thing to do at my age. I teach part time - three classes a week, two days a week. It leaves me room for other things. I enjoy playing and recording with The Rekooperators, but I have a really good solo album in me that I would like to get out. It's something I hope I can realize in the next couple of years. If no company is interested, I'll throw it out on the 'Net and see if anyone bites. So I'll keep teaching, playing a handful of yearly gigs, writing and recording, and picking out the most interesting of the recording gigs I get offered each year. And let's not forget my column in EQ. That is a blast. I feel like the Andy Rooney of project studios!

What was the biggest mistake of your life? Jeeze, there's so many...turning down appearing at the original Woodstock is a good one, though. Doing this interview? There's just so many of them....

Can't get enough Al? Then be sure to check out the feature starting on page 70.



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CIRCLE 29 ON FREE INFO CARD

Anatomy of a Studio Renovation, Pt I

How to up the ante significantly while working with a pre-existing studio

BY STEVE LA CERRA

As a producer and engineer, that Michael Sosna has spent quite a bit of time in recording studios. In addition to working with a variety of artists, session musicians, and vocalists, he's worked on more than 1200 on-air projects, including award-winning national and international television spots. Michael's company, Manhasset Bay Associates,

Inc., a member of the SOS Enterprises Group, has evolved over eighteen years, acquiring vintage equipment as well as serving as a beta test site for soon-to-be-released studio gear from high-end audio manufacturers. With all that experience under his belt, Mike recently embarked upon designing his latest studio, SOS Productions. Mike had a very specific and unique concept of how the studio would be configured and operated. My mission was to connect all this stuff and make it work.

GROUND ZERO

Before examining any of the equipment requirements or technical details of the studio, it's important to understand Mike's vision. The studio is based around three Yamaha 02R's that would be linked together for seamless operation, so they could be thought of (and worked on) as if they were one largeformat digital console. In order to obtain the elegant look of a coherent console, Mike contacted Todd Beeten of Sound Construction & Supply, Inc. (Nashville, TN) and ordered a custom oak console that integrates the three 02R's, while also providing a monitor bridge. In addition, Todd designed three matching six-foot racks and a beautiful MIDI workstation.

Equally important to Mike's vision was the ability of the room to be used for transfers between various digital formats such as 16-bit, 20-bit, and 24-bit word lengths. Every step of the way to-



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TOTOS BY JEFFHEY TAYLOR

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STUDIO CONSTRUCTION

inputs 17A through 24A, the second set as 17B through 24B, and the set from the last console as 17C through 24C (this makes another half-row). These would also be color-coded on the patchbay labels to match the inserts and line inputs.

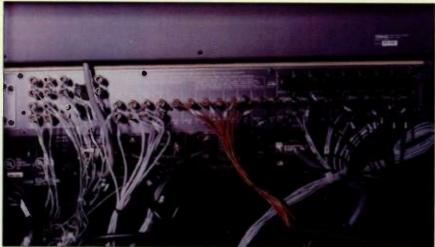
The remainder of the patchbay was laid out mostly for Mike's working preferences and design goals. One of the more interesting aspects was that we normalled the analog outputs from the Digidesign 888/24's to the inputs of the 24-track machine, facilitating 20- and 24-bit A/D and D/A transfer capability to and from all formats. Synth outputs from the MIDI workstation are normalled to 02R analog line inputs 1 through 24, while the outputs of the MX-80 are normalled to 02R line inputs 25 through 48. Because of the fact that more than 15 reverb and echo units were installed, none of them were normalled to the 02R's - they all must be patched.

In addition to these analog normals, a lot of hard-wired digital connections were made, many by the in-

stallation of 12 expansion cards in the 02R's (five ADAT cards, three AES/EBU cards, and four cascade cards). As mentioned previously, each 02R has a cascade card installed so that bussing and aux sends between the three consoles may be digitally linked (one of the consoles has two such cards). As a result, turning up send one on channel two

dumps the signal via cascade from console #1 to the master console, which then routes the signal to an outboard processor. (This is a simplification. For more detail you can consult the 02R user's manual.) A total of five ADAT cards were installed, each with optical, digital audio I/O to and from the XT20's

continued on page 144



DOWN TO THE WIRE: The back of the "Master" 02R.



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Sync'ing Feeling

Sync Sound's Ken Hahn offers tips for mixing television broadcasts

BY BOBBY OWSINSKI

Few people know TV sound the way Ken Hahn knows it. From the beginning of the television post revolution, Hahn's New York-based Sync Sound has led the way in television sound innovation and the industry's entry into the digital world. Along the way, Ken has mixed everything from PeeWee's Playhouse to concerts by Billy Joel, Pearl Jam, and a host of others, while

picking up a slew of awards in the process (four Emmys, a CAS award, 13 ITS Monitor awards). Ken shared some of his expertise here in an excerpt from my upcoming book, Mixdown.

EQ: How long does it take you to do a typical mix?

Ken Hahn: It depends. We do a couple of series here where we get a couple of days to mix for a half-hour show, which ends up being about 20-something minutes of actual programming. A day to do it and a day for people to see it and to do some changes. It ends up being about 16 to 20 hours. and that's for a show that's "together." You can do it in less, and you can certainly do it in more. News-style shows get less time and music shows get more, but I guess the answer [to how much time it takes] is "never enough."

So essentially you have a lot of elements that you have to pull together...

Yeah, it can be as big as a major film mix; 30, 40, 50, 100 tracks, depending on what's going on. The average viewer now doesn't know the difference between watching Mission Impossible on HBO and

Homicide [on NBC]. They know one's a movie and they know one's a TV show, but when they're watching on a little TV, they expect the same production value for either. With that number of elements, from where do you start building your mix? Most television and film is narrative in nature, whether there is a narration voiceover track that's telling the story or the dialog is. Dialog is premium, so most people start by making sure you can hear all the words. It's common practice here (Sync Sound) to do a pass mixing the dialog, making sure that, if nothing else played in the scene, the dialogue would still be seamless.

When you turn on the TV, the reality is that you set the level by the volume of the dialog. You gotta make sure all the words are in front and everything else is sort of window dressing. Music plays a huge role in it, too. What's been nice in the last few years is stereo television, which has only been around since MTV. Stereo music is a nice pad for things.

Do you take advantage of stereo for anything else?

Usually stereo ambiences like birds, winds, traffic. You can get into a lot of trouble by panning effects too much. In film mixing, at least you know that it's gonna be played in a fairly large room that has pretty good speakers. When it comes to TV, the listening areas run the gamut from people laying in bed listening with headsets all the way on up to home theaters. So you have to err on the side of safety, which means put all the dialog in



IN SYNC: Ken Hahn tells how he puts all the elements of a postproduction mix together.



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the middle and spread your music as much as you want left and right. If, though, you start panning footsteps, for example, it can really get weird. That's because if you're looking at a 15-inch TV while you mix and you pan footsteps from left to right, then the panning will be all wrong if the viewer happens to be watching on a 30-inch projection TV.

What are you using as monitor speakers? For a small reference speaker we use the staple of the industry — the Auratone. Most of our stuff, however, is mixed on bookshelf speakers. We've used the KRKs a lot for the last five years. That's pretty much what we've determined to be like an average stereo speaker, yet it also relates to your average TV. We've done a tremendous amount of listening to various kinds of TVs with built-in speakers and found that the KRKs translate very well from those speakers.

What is your monitoring level?

I personally monitor about as low as most people would accept. I tend to go that way because inevitably, if you get it sounding good at a low level, it just sounds that much better at higher levels. It sort of forces you to do a lot more manual gain riding at low level because otherwise stuff just doesn't poke through. I'm sort of doing my own form of manual compression, and I've found that usually works better than the other way around. Speaking of compression, how much do you use? Do you compress a lot of elements? I've done various things through the years. What's kinda cool about the Logic (AMS/Neve Logic 2 console) that we have, which has an all-digital signal path, is it gives me multiple opportunities to control the gain. I do a little bit at almost each signal path, but I do it a number of times, some limiting, some compression, so that it's pretty well controlled by the time it leaves here. Unfortunately, it's really frustrating to pop from ABC to HBO to ESPN and get radically different levels.

Speaking of which, how much does everything change from what you hear in the studio to once it finally hits air?

It really depends on the network. It's incredible what sometimes happens to stuff on the air. It just flabbergasts my clients and me. We've delivered to anybody and everybody, so we pretty much have an idea

what you should do at our place before it gets to them so it will sound like you wanted it to sound like in the first place. You have to sort of put this curve on what you're monitoring so that you know that it'll sound fine on Viacom, for instance. I got a pretty good idea what HBO, NBC, etc., do to our stuff, so you have to process the mix with that in mind.

When you're remixing a live concert, which is mostly music, how are you approaching the mix? Where are you starting? It's usually vocals again. I make sure that those are perfect so that it becomes an element that you can add things around. I always clean up the tracks as much as I can because inevitably you want to get rid of rumble and thumps and noises, creaks, mic hits, etc. Then I always start with bass and rhythm.

It sounds repetitive, but the vocal's where the story is. The vocal's so integral to the music because that's where you're focused; so it has to be as perfect as it can be. It can't be sibilant, tubby, too bright, or too dull. It has to be properly processed so that it becomes another element that you have complete control over. A guitar track, for in-

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stance, will probably be pretty consistent for the most part, but vocals inevitably are less controlled. The person may be on or off mic. They may be sibilant in some places, and they may pop in other places. If you don't eliminate all those technical problems so that you can concentrate on the balance, you can really get bogged down.

It becomes even more critical in a production dialog track where you've got, say, three people cut between different scenes and each sounds slightly different with slightly different room tone and different levels. Let's say you have a woman who speaks in a whisper with a guy who mumbles and another guy who yells. Well, if you don't level that out properly, you can't balance sound effects and music against it. I think that's the art of TV mixing. That's what makes the difference between people who really mix television and film for a living and anybody else. If you look at a film mix, there are three mixers, and the dialog mixer is considered the lead mixer.

And you're cleaning those things up via automation?

Absolutely. Automated filters and just fader moves. That's one of the reasons why we got the console we did. It's completely dynamically automated, so you can roll in a high-pass filter, zip it in and out, and the pop's gone. You can ride the EQ as you're trying to cover two people with a boom mic. If one is tubby and one is bright, you just literally ride the EQ through the scene until you get it right, so that it plays as close and consistent as possible. It wasn't that I was looking to get a digital console. I was looking to get a dynamically automated console, and it happened that you got one with the other.

Are you staying in the digital domain the whole time?

Absolutely. I'll tell you, once you hear it this way it's hard to go back to analog. What's different about television and film, as opposed to music mixing, is the number of generations that a particular track of audio may travel.

Let's say you recorded a location production soundtrack. It gets transferred to some medium and gets lined up with the picture. It now gets put into a workstation, and then it probably goes back to tape of some kind. That individual track now gets premixed to a dialogue track. So far we're talking like four generations already. Then it gets mixed into probably a final mix. That's five passes. Then it gets laid back to videotape. That's six passes — which is probably minimal for your average show. Most of them would go even more generations than that. With analog, there are just

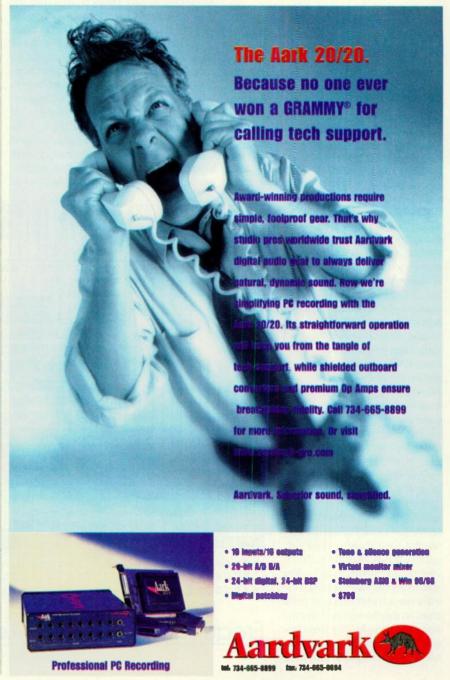
too many possibilities for phase errors, EQ problems, bias problems, noise-reduction units being incompatible — which is especially noticeable when you mix for stereo. It gets unbelievable. I've just found that the difference between analog and digital is like night and day.

Do you sweeten the audience tracks much?

Yes. I tend to make concerts sound as live as possible. I usually use a lot of the audience mics. I feel like the audience becomes another member of the band. The band is playing off of each other as much as they're playing off of the audience, so let's hear the audience.

How do you deal with effects? Is it at the request of the act?

I always try to become familiar with the material before I get to the mix. That way I know if there are any specific effects that are really important to the songs or to the artist. Also, a lot of people print an effects track that you can either use or get the idea from. But other than that, it's to taste. Luckily for me, people like my tastes.



The Art of Equalization

The basics of equalizers — what they are and how to use them properly

BY MIKE SOKOL

Why are there so many types of equalizers and just what do you use them for? Also, why do they vary so much in price? After all, you can pay anywhere from \$200 to \$2000 (and up) for a dual 1/3-octave equalizer.

Here's an overview on the basic types and the applications they're typically used in. But first, let's set a few definitions so we're on the same wavelength (pun intended).

Equalizers are everywhere. Most home

stereos have at least a 2-band EQ (bass and treble). Many channel strips on mixing consoles have three or more bands of EQ (low, midrange, and high). And if you're using any sort of crossover in your speaker system, be it passive or active, it's acting as an equalizer for the frequencies being routed to a particular speaker driver. Of course, while all equalizers affect things like feedback and instrument timbre, some are better at certain things than others.

Most EQs can be grouped into two distinct types: fixedband and parametric. Fixed-band equalizers normally use a vertical slider for each frequency band that gives you a mechanical graphic-like display of what each band is doing (hence the name "graphic" EQ). They come in various flavors from 5 bands to 31 bands and more. Parametric EOs usually have three or four adjustable bands, each of which can vary the frequency, bandwidth, and boost/cut. Many mixing consoles use a combination of both types on the channel strip. For instance, you might have fixed frequency low and high bands, plus one or two sweepable mid-range controls. Sometimes there are narrow or wide bandwidth switches (a.k.a. "Q"), and occasionally a real variable "Q" control. You get what you pay for, but you can always patch in a real equalizer for problem inputs such as kick drum or stand-up bass.

FIXED BAND 1/3-OCTAVE AND OCTAVE EQUALIZERS

All equalizers have closer control over the bass frequencies than the highs. This has to do with the way that the human ear responds to sound (which, of course, includes music). Since western musical instruments are generally tuned in a 12-note logarithmic scale, the frequency of a sound doubles each time you go up one octave. Look at the piano vs. frequency diagram (fig. 1). Notice that "A" is at 440 Hz (musically called pitch) in the middle of the keyboard. Go up an octave and it's at 880 Hz. Go up one more and it rises to 1760 Hz. The inverse also happens, with the octaves directly below 440 going to 220, 110,

and 55 Hz. An octave equalizer usually has 10 bands of adjustment, each one affecting a single octave of sound. A 1/3-octave equalizer has 31 bands, each one splitting an octave into three areas of adjustment. There are also 2/3-octave equalizers with 15 bands that split the difference, and 1/6-octave equalizers with up to 60 bands of adjustment, but these are pretty rare birds.

PARAMETRIC EQUALIZERS

A parametric equalizer does the same basic thing as a graphic EQ, but via different types of controls. Usually there are three or four bands, each of which can be moved to a problem frequency that needs to be fixed. Think of it as a graphic equalizer where you can actually pull the slider sideways up and down the spectrum until you get to the frequency you want to affect. You can also vary how wide your slider is so that it can be made wide enough to affect several octaves of sound (for general sweetening or tonal fix-

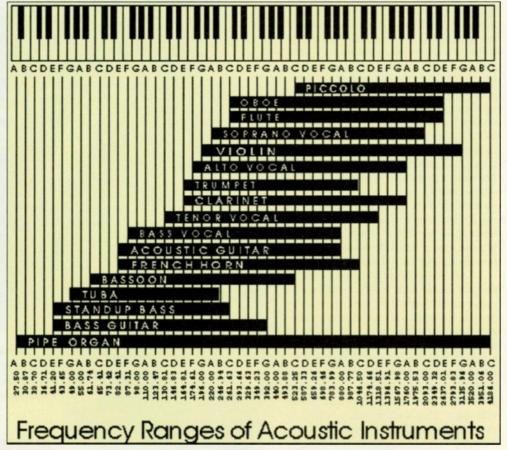


FIGURE 1

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TECHNIQUES

es) or narrow enough to excise out a narrow feedback problem without messing with the rest of the program material.

- Boost/Cut: The controls can be either sliders or rotary type, but their effect is the same. In centered position, there should be no effect on the frequencies within that band, but as you apply boost or cut, frequencies that fall within the band (be it 1/3- or 1-octave of bandwidth) will be made louder or softer. Typically the adjustment will be plus (boost) or minus (cut) 12 to 15 decibels.
- Low-Cut And High-Cut Filters: These are extra equalizer controls that allow you to cut everything below or above the set frequency. For instance, in monitor applications, many floor wedges won't be happy trying to produce bass guitar notes. So setting the low-cut filter to 80 Hz will attenuate all the problematic bass energy while letting the rest go through unaffected. The high-cut filter is not so common, but can be useful when there are super high sounds that could come from improperly adjusted RF mics or synthesizers. This energy tends to burn out homs and tweeters without any apparent cause. (Yes, you can get a Minimoog filter oscillator up to 30 kHz or so, and it will burn out your studio monitors if you have a powerful enough amplifier...I know from experience.)

WHERE DO THEY GO?

Traditionally, 1/3-octave equalizers are used before the power amplifiers to control how the speakers interact with the room. They're also the EQ of choice for all FOH and stage monitor applications. Properly inserted in the output strip of a monitor board, an EO allows you to use a cue wedge to hear what each musician's mix sounds like, including any corrective equalization you've added. For FOH use, EQs normally go after the output of the board and before any final compression and electronic crossovers. Parametric equalizers are usually inserted in the individual channel strips to get complete control over each instrument. For instance, I really like them for the snare channel since you can easily sweep the body of the snare sound exactly where you want it with the simple turn of a knob.

THE BASICS

The next time you have a few minutes, patch in the program material of your choice and put on a set of headphones. Now try all the EQ controls and note how each effects the sound of the playback. Many engineers — new and seasoned — aren't intimately familiar with their equalizers. Now's the time to make a date and "be the EQ." Your clients and audiences will thank you for it.

The Stasium Stamp

Getting hands-on with producer-engineer Ed Stasium

BY BOBBY OWSINSKI

Ed Stasium is a producer-engineer widely known for working on some of the best guitar albums in recent memory (including my favorites by the Smithereens, Living Color, and Mick Jagger). It may, therefore, surprise some to discover the total breadth of his work. From Marshall Crenshaw to Talking Heads to Soul Asylum to Motorhead to Julian Cope to The Ramones to even Ben Vereen, Ed has put his singular, indelible stamp on their records.

In an excerpt from my upcoming book Mixdown, Ed lets us in on his mixing technique, as well as some tidbits about mixing Gladys Knight's radio standard, "Midnight Train to Georgia."

EQ: Do you have a specific approach when you sit down to mix?

Ed Stasium: Unlike some other people who are specifically mixers, I've been fortunate in the fact that everything I produce I've been able to follow through on it with the mix. I'm a "hands-on" kind of producer-engineer

I put the vocals up first and then bring in the bass and drums. I bring up the whole kit at the same time and tweak it, but I'm not one to work on the kick drum sound for two hours. Also, I've recorded everything, so I know what's there and don't have to mess around much with anything.

How long does it usually take?

I would say maybe between six and ten hours. I don't use a lot of effects. I use an EMT plate and a slap tape, but everything that you hear on the mix is basically like what's on the multitrack. I consider my technique very old school. I don't use a lot of digital reverb. If I use any kind of outboard gear, it's a Pultec or a LA2A or LA4A or a Fairchild or even a Cooper Time Cube - that type of thing. I do use Drawmer gates on the reverb returns, just to keep them quiet.

Do you have an approach to using EQ? Do you find any frequencies that you always seem to be coming back to, like on a kick drum?

No. I approach it pretty haphazardly. I don't have any rules really. I just sort of move the knobs. I'd actually rather move the mic around and find whatever sounds good instead of resorting to extreme EO.

Do you have a specific approach to panning?

My mixes are kind of mono, but not really. I pan tom-toms, but not to ex-



HAZARD-OUS MATERIAL: Ed Stasium (back row, center) at A&M Studio D with members of Biohazard and friends.

tremes - usually between 10 and 2 o'clock. Usually I have the drums in the middle, vocals in the middle, solos in the middle. I do pan out the guitars, though. If there's one guitar player, I'll do a lot of double tracking and have those split out on the sides. But if there're two guitar players, I'll just have one guy over on the left, one guy on the right. And if there is any double tracking on any of those, I'll split them a little bit, but I never go really wide with that.

Do you use a lot of compressors?

I like compression. I think of compression as my friend. What I do a lot is take a snare drum and go through an LA2, just totally compress it, and then crank up the output so it's totally distorted and edge it in a little bit behind the actual drum. You don't notice the distortion on the track, but it adds a lot of tone in the snare, especially when it goes [makes an exploding sound]. Something I've done for the last 20 years is to always split the kick drum and snare drum on a mult and take the second output into a Pultec into a dbx 160VU and into a Drawmer 201 gate. Then I overemphasize the EQ and compression on that track and use it in combination with the original track.

How about effects? You say you don't use many, but you obviously use some. Do you get your mix up first and then add everything, or add effects as you go? As I go, I usually have a couple of EMT140's to use. I always have a slap tape going on that I put in time with the tempo of the song.

Is the slap for an individual track or is it specifically for pre-delay for the chambers? It's usually on vocals. I always have a little bit of a slap on the vocals and I might send some of that slap return to a chamber as well.

Do you have monitors that you take with you?

I have these little Aiwa speakers that I bought in 1983 in Atlanta. I always get my balances on those. I really like to listen at very low levels. Sometimes I try to have a pair of old JBL 4311's, 4312's, or 4310's because I still have the home version L100's in my house. And then there's always the Yamaha's [NS10] hanging around.

Do you have any listening tricks, like going out in your car?

I carry around this little stereo system with me. It has these Advent wedges called "Powered Partners" that are A/V speakers. I have a little road case for them, and I bring them with me when I stay in hotels out of town. I do all my listening, even when I go home at night, on

Have you noticed any changes over the years in the way things are done, or the way you do things?

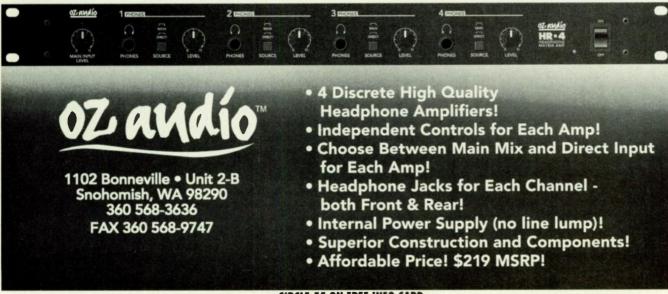
Yeah, especially with the onset of computers. I do a lot more riding of things, especially the vocal, and doing little different effects changes. It makes life easier in a way, but then it makes life more complicated because you can do so much more.

It depends again on what you're doing. The Living Colour records were very complicated. We had a lot of different effects on the verse, different effects on the vocal, that kind of great stuff. When I mixed "Midnight Train To Georgia" back when I first started, we did that on a little 16-input, 16-track in somebody's

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basement in New Jersey. The drums were all on one track and you just made sure you got the vocals right.

I remember the tracks were really packed on that song, so I just brought things in gradually. We started off with the piano, added the guitar, then the Hammond. But now, I'm riding every snare drum hit to make sure it cuts through, every little guitar nuance, little cymbal things, and the kick in certain places. I'll be riding everything.

"Midnight Train" sounds so clean!

That was a great console — a Langevin. I don't know whatever happened to it. NOTE: Some Langevin electronics can still be had from Manley Laboratories, Inc.; tel: 909-627-4256; Web: www.manleylabs.com] I don't know where it came from, but it was in Tony Camillo's basement studio in New Jersey that we recorded that stuff on. The vocals were done in Detroit. I'm sure the drums were only on one track or two tracks at most. The Pips were double tracked. You know, Gladys is right up in the front. We didn't use many effects on that because we didn't have any effects. It was a little basement studio and all we had was a live concrete chamber the size of a closet with a speaker in there and a couple of microphones. That was the reverb on that record.

I used the same thing at [the former] Power Station studios. I was mixing the third Ramones record, which was actually the first thing mixed at Power Station, while we were still building the place. We had an Eventide 910 Harmonizer™, a couple of Kepex's, and no reverb at all. What we used for reverb on that whole record was the stairwell.

How many mixes [of one song] do you usually do?

I'll do a vocal up. Sometimes I do guitars up. It depends on what players are in the room. If the drummer's in the room, he'll say, "Hey, can I have more snare drum?" I'll say, "Oh yeah, we'll do an extra mix with more drums in it." And if the guitar player's in the room, he'll say, "I need to hear the guitars a little more." I'll say, "Okay, we'll put the guitars up," but I always use the real mix anyway. Just kidding everybody! [Laughs] It doesn't matter. You get so critical when you're mixing, and when it comes down to it, it's the darn song anyway. As long as the vocal's up there, it will sound pretty good. You won't even notice the little things a month later.



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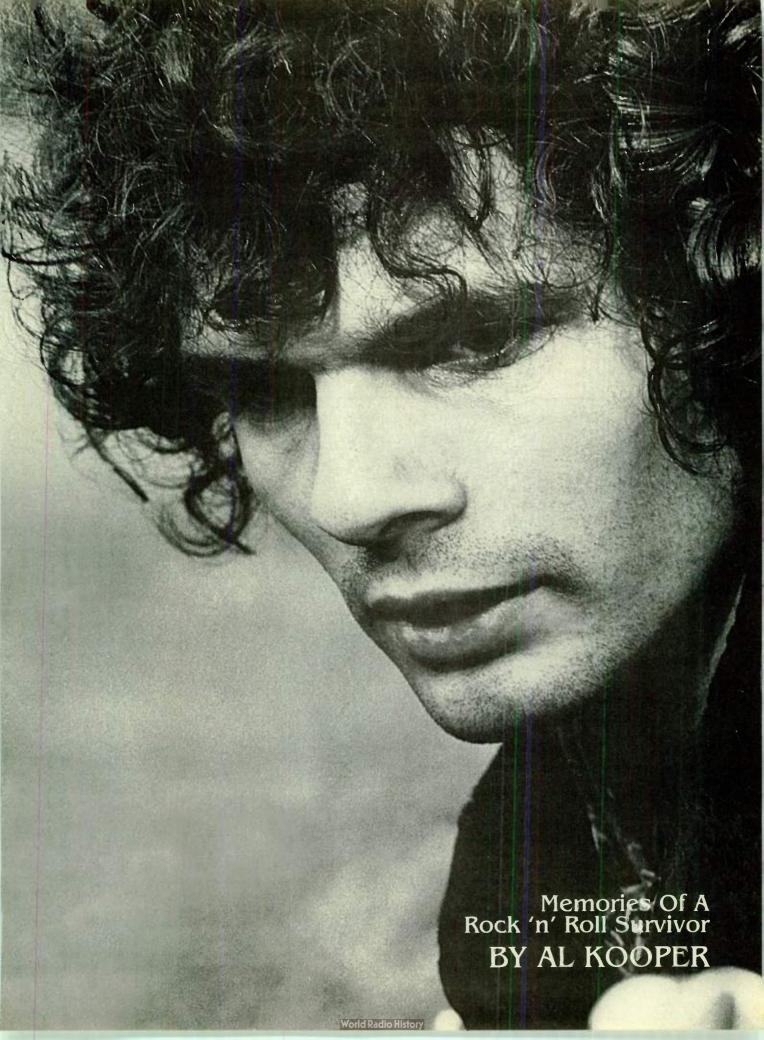
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Backstabbing Bastards

World Padio History



Backstage Backstabbing Basses Bastards

Al Kooper, musician/producer extraordinaire (and EQ columnist), wrote a "premature" autobiography in 1977, and now he's given it another try with the release of his new book, Backstage Passes & Backstabbing Bastards (Billboard Books]. And about time, too: the first edition has been going for hundreds on the rock 'n' roll book collectors' market, and there's another event-filled couple of decades to be accounted for. This is a man who lives for music and seems to attract outrageous and often hilarious experiences in the process. His tales are both wonderfully crazed and technically fascinating for anyone who has spent any time in the music business. It is hard

to do justice to a 300-page book covering 40 years of sex, drugs, and rock 'n' roll in a few excerpts, but we've picked a few gems that focus more on the recording side of the experience, starting when Al was 19 years old, already playing rock 'n' roll for seven years, trying (no, dying) to break into the recording business BMR (before multitrack recording) in 1963:

My next foray into the business world was an out-and-out Kooper scam — the work of a desperate, clever lad. I'd mastered the basics of a few instruments, and while I wasn't exactly the picture of grace on any of them, through the magical process of overdubbing

(recording in tandem from one mono machine to another) I could turn out a record all by myself. This was a cheap way to make demos of the songs I wrote; they were acceptable as long as you didn't actually listen to them.

Backed by an extensive catalog of limited skills, I convinced Ray Rand, the owner of Adelphi Studios at 1650 [Broadway, in New York City] to donate space in his stockroom for my use as an office. The scheme was that I would solicit publishers to hire me for the purpose of producing their song demos. For a package price of \$90 a song, I'd give them a vocalist and a full rhythm section playing an arrangement, with all the studio time provided for. This was quite a bargain, as long as nobody got wise to the fact that this one scrawny kid was playing everything, and poorly at that.

So, in January of 1963, with a hundred business cards and printed statements to prove that I was serious, Ko-op productions came into being. Also included in my arrangement with Ray Rand was responsibility for sweeping the studio floor at day's end. This task earned me the title "apprentice engineer."

At first, I did a lot of sweeping. When the boss went home, however, the engineers would loosen up and occasionally impart a few tricks of their trade. In this way, I picked up an introduction to the art of engineering, and promptly used that knowledge to make demos of my current songs, exhausting countless hours of studio time that somehow never showed up in the log books. There were no multitrack machines at Adelphi in those days - I bounced the genesis of each song back and forth between two mono machines, sometimes eight times (!), retarding the sound quality and mix with each regeneration. I had no choice at the time.

Overcoming the signal-to-noise ratio of life has always been Kooper's specialty, and it wasn't long [1965] before he had chanced on the company of Tom Wilson, Bob Dylan's producer, and a career was born...

Wilson felt comfortable enough to invite me to watch an electric Dylan session because he knew I was a big Bob fan. He had no conception of my limitless am-



Al in a reflective mood.



Since its founding in 1984, From the original MG1212 12-track recorder/mixer, to the breakthrough A-DAM digital multitrack, to the DR4/8/16 professional disk recorders and the DD family of audio post-production tools. each Akai recording product has established new levels of performance and value.

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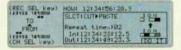
Easy Editing

Ever wonder how people managed to write anything before word processors? Well, after experiencing non-linear editing on the DPS12, you'll wonder the same thing about audio. Insert, Delete, Erase, Copy or Move sections of single- or multi-track audio from anywhere to anywhere within your project. This is stuff you just can't do with tape.

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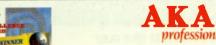
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could almost make sense of.

afford meant settling for almost enough tracks to



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CIRCLE 02 ON FREE INFO CARD

Backstage Backstabbing Bastards

bition, however. There was no way in hell I was going to visit a Bob Dylan session and just sit there pretending to be some reporter from Sing Out! magazine! I was committed to play on it. I stayed up all night preceding the session, naively running down all seven of my guitar licks over and over again. Despite my noodling at the piano, I was primarily a guitar player at the time, and, having gotten a fair amount of session work under my belt, I had developed quite an inflated opinion of my dexterity on said instrument.

The session was called for two o'clock the next afternoon at Columbia Studios, which were at 799 Seventh Avenue, between West 52nd and West 53rd Streets. Taking no chances, I arrived an hour early and well enough ahead of the crowd to establish my cover. I walked into the studio with my guitar case, unpacked, tuned up, plugged in, and sat there trying my hardest to look like I belonged. The other musicians booked on

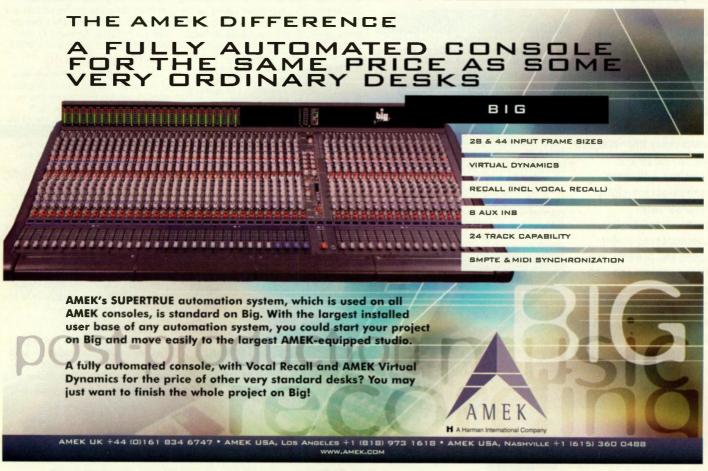
the session (all people I knew from other sessions around town) slowly filtered in and gave no indication that anything was amiss. For all they knew, I could have received the same call they'd gotten. Tom Wilson hadn't arrived as yet, and he was the only one who could really blow the whistle on my little charade. I was prepared to tell him I had misunderstood him, and thought he had asked me to play on the session. All bases covered. What balls!

Suddenly Dylan exploded through the doorway with this bizarre-looking guy carrying a Fender Telecaster guitar without a case. It was weird, because it was storming outside and the guitar was all wet from the rain. But the guy just shuffled over into the corner, wiped it off with a rag, plugged in, and commenced to play some of the most incredible guitar I'd ever heard. And he was just warming up! That's all the Seven Lick Kid had to hear; I was in over my head. I embarrassedly unplugged,

packed up, went into the control room, and sat there pretending to be a reporter from *Sing Out!* magazine.

Tom Wilson then made his entrance — too late, thank God to catch my little act of bravado. All was lost, but I wanted to know the identity of the dragonslayer, so I asked Tom who the guitar player was: "Oh, some friend of Dylan's from Chicago named Mike Bloomfield. I never heard him, but Bloomfield says he can play the tunes, and Dylan says he's the best."

The band quickly got down to business. They weren't too far into this long song Dylan had written before it was decided that the organ player's part would be better suited to piano. The sight of an empty seat in the studio stirred my juices once again; it didn't matter that I knew next to nothing about playing the organ. At this time, I was ninety percent ambition, and ten percent talent! In a flash I was all over Tom Wilson, telling him that I had a great organ part for the



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Backstage Backstabbing Passes Bastards

song and please (oh God, please) could I have a shot at it. "Hey," he said, "you don't even play the organ."

"Yeah, I do, and I got a good part to play in this song," I shot back, all the while racing my mind in overdrive to think of anything I could play at all. Al-

ready adept at wading through my bullshit, Tom said, "I don't want to embarrass you, Al, I mean...," and he was then distracted by some other studio obligation. Claiming victory by virtue of not having received a direct "no," I walked into the studio and sat down at the organ.

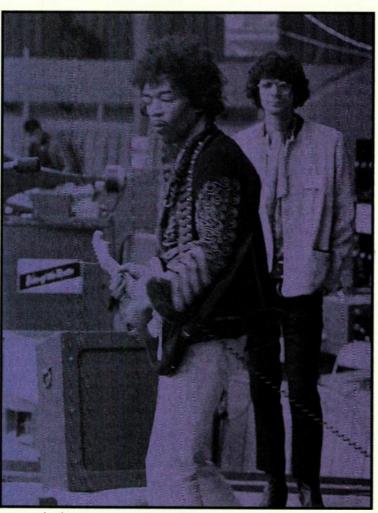
Me and the organ: It's difficult to power up a Hammond organ. It takes three separate moves, I later learned. If the organist (Paul Griffin) hadn't left the damn thing turned on, my career as an organ player would have ended right then and there. I figured out as best I could how to bluff my way through the song while the rest of the band rehearsed one little section. Then Wilson returned and said. "Man. what are you doin' out there?" All I could do was laugh nervously. On the Highway 61 Interactive CD-ROM, you can actually hear this moment taking place. Wilson was a gentleman, however. He let it go.

Imagine this: There is no music to read. The song is

over five minutes long, the band is so loud that I can't even hear the organ, and I'm not familiar with the instrument to begin with. But the tape is rolling, and that is Bob-fucking-Dylan over there singing, so this had better be me sitting here playing something. The best I could manage was to play hesitantly by sight, feeling my way through the changes like a little kid fumbling in the dark for the light switch. After six min-

utes they'd gotten the first complete take of the day, and everyone adjourned to the control room to hear it played back.

Thirty seconds into the second verse of the playback, Dylan motioned toward Tom Wilson. "Turn the organ



Assistant stage manager Kooper watches Jimi Hendrix soundcheck prior to his performance at Monterey Pop '67.

up." he ordered. "Hey, man," Tom said, "that cat's not an organ player." *Thanks, Tom.* But Dylan wasn't buying it: "Hey, now don't tell me who's an organ player and who's not. Just turn the organ up." He actually liked what he heard!

If you listen to it today, you can hear how I waited until the chord was played by the rest of the band, before committing myself to play in the verses. I'm always an eighth note behind every-

one else, making sure of the chord before touching the keys. Could you imagine if they had to have stopped the take because of *me*?

At the conclusion of the playback, the entire booth applauded the soon-tobe-classic "Like A Rolling Stone," and

> Dylan acknowledged the tribute by turning his back and wandering into the studio for a go at another tune. I sat, still dazed, behind my new instrument and filled in a chord every now and again. No other songs were gotten that day. Later, as everyone was filing out, Dylan asked for my phone number which was like Claudia Schiffer asking for the key to your hotel room - and invited me back to play the next day. Elated, I walked out into the street realizing that I had actually lived out my fantasy of the night before, although not quite exactly as I had planned it.

One might say, here, "the rest is history...," but it was just the beginning. Kooper had bluffed his way to stardom, and the ball had only just begun rolling. His subsequent starry apprenticeship as Dylan's sideman was an education in recording,

especially when Dylan & Kooper went south to

record with Nashville's creme-de-lacreme:

Charlie McCoy blew my mind several times that trip, but my fondest memory was when we were recording "You Go Your Way and I'll Go Mine." There was a little figure after each chorus that he wanted to put in on the trumpet, but Dylan was not fond of overdubbing. It was a nice lick, too. Simple, but nice. Now Charlie was already playing bass on

the tune. So we started recording, and when that section came up, he picked up a trumpet in his right hand and played the part while he kept the bass going with his left hand without missing a lick in either hand. Dylan stopped in the middle of the take and just stared at him in awe. It's on the record with no overdubbing two takes later; bass and trumpet! This guy is everything great you ever heard about him. That's him playing the lead acoustic guitar on "Desolation Row" on Highway 61 Revisited, as well. If it makes music, he can play it.

A signature of Kooper's career was keeping multiple balls in the air, and while he was basking in Dylan-associated fame, he joined The Blues Project with, among others, guitarist Danny Kalb:

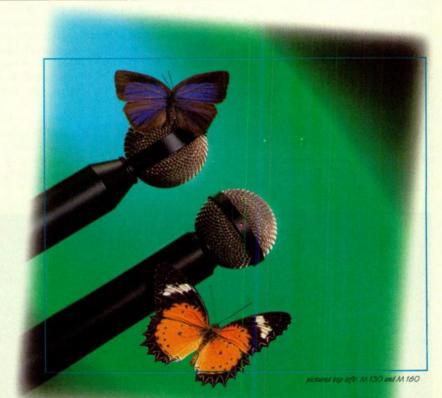
The time came to complete Projection, our second album, and to get it out as soon as possible. Pressure again. It was always rush time when we were supposed to record. In those days ('66) the artists did not have anywhere near the control they do today. They had no say in what studio was used, had no concept of the stereo mixing processes, and were seldom consulted regarding the cover art. Sometimes (as with the Byrds on "Mr. Tambourine Man") they didn't even play on their own records. We just played and prayed. At least we got to play on our records (maybe that's what our problem was).

We used to get the spare time The Animals weren't using. Verve would call us the day before and say, "OK, tomorrow from one to six you're at Regent Studios and we need to get three tracks cut." Tom Wilson would be there. Since he produced both us and the Animals, I'm sure he didn't know who was gonna walk in the door at one o'clock; he just sat there and ground 'em out. They'd set us up and we'd play our little hearts out. Three takes a tune was all we were allowed, due to time restrictions. But we didn't know any better. I was always amazed when I heard other records that we were so precise; I thought everyone made records the way we did.

One day we were recording "Two Trains Running," which was ten minutes long and one of our live cornerstones. There were many tempo changes and subtleties in it. We were halfway through it and no one could even see anyone else 'cause they had all these partitions and isolation screens up, yet we were playing it better than we ever had. Danny

was singing it live and doing an incredible job and I was ecstatic. We got to a real quiet spot in the song and suddenly Danny's saying, "Stop the tape. Hold it. I can't go on!" We put down our instruments and looked at each other. I could see in everyone's eyes that, yes, everyone thought it was the best we'd ever played it.

Not Danny. I guess the isolation and the fact that he was having trouble hearing his guitar and keeping it in tune threw him. So we took a break for awhile and then started from the beginning again. And we lost that whole take. Nowadays, they would keep it and have us start where it broke down, finish it, and splice it all together; we could have been heroes, but it was not to be on that day in 1966. So we were playing it again and all of a sudden magic happened: We got to the same spot, a place where the band just stops cold for four beats. One of Danny's strings slipped a half-tone out of tune, and he used that space to play a riff incorporating the



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CIRCLE 91 ON FREE INFO CARD

Backstage Backstabbing Basses Bastards

necessary tuning back up of the string. Clever. We all kept going and finished the take. When we played it back, the one lick was so incredible that it warranted keeping that take for the album.

Seizing the moment and improvising on the environment have been a theme in this amazing life, in and out of the studio, yielding recording secrets you would never think to look to the pages of EQ to find. Of course, we're talking about the "sphincterphone"...

Elektra Records West, under the direction of one David Anderle, had opened a secluded recording ranch on the Feather River in Northern California so that embryonic talents could have a relaxed environment in which to record and then, the script goes, think kindly enough of Elektra to sign with the company if the corporate faces smiled on their tapes. Sandy Konikoff was the drummer in the ranch band. One night,

bongos or congas were desperately desired for a particular song they were recording, but none were to be had, and it would've taken days to have anything shipped to their far-flung location. In a spectacular effort to please, Sandy took a pencil-thin snare drum microphone and inserted it into himself anally, beating out the required rhythm on his belly, after the engineer had jacked up the level and added appropriate echo. Not having been present on this historic occasion, I can offer only second-hand information, but I'm told Sandy didn't miss a beat. That was the birth of the sphincterphone. I've heard of putting your ass on the line for a gig, but Sandy, you're ridiculous!

The improvisation continued after Kooper moved on to found Blood, Sweat & Tears. Looking for laughs, literally, drummer Bobby Columby was put on the line...

As the album neared completion, we brought in a string section to spice up some of the songs and put the backup on my solo song. We decided to have an overture on the record, and John and I wrote a satiric medley based on themes from all of the songs. I'm not sure, but I think we had the first rock record with an overture. It was certainly the first with an underture. We recorded the overture and it sounded legit, which was far from our intentions. John asked Bobby, who had this ridiculous laugh, to laugh all the way through the tune (1 minute and 32 seconds), so people would know for sure that we weren't serious. Bobby went in, started laughing, and discovered that it's not as easy as it might sound. His peculiar laugh was very high intensity, and he could only get about 15 seconds on tape at a time. So we kept backtracking until, about an hour later, we had a complete track of Bobby's insane laughter.

After laughing hysterically for over an hour, he walked into the control room out of breath. His face was sort of an iridescent green color as he sat down on the couch. We listened to the playback, and everyone was howling along with his laugh track. As the playback ended, Bobby leaned over and threw up, then fell asleep on the couch for the rest of the night. He had OD'd on laughter. Probably the first such casualty in recording history.

Booted from BS&T by a band conspiracy, Kooper bluffed his way into an A&R job at Columbia Records. However, as he sat in his new office, he realized he had no one to produce!

One day, an absurdly simple solution popped into my cranium. Why not get a bunch of proven rock players into the studio and just jam in a relaxed atmosphere? This modus operandi was a staple of jazz recording, and maybe it could lend a bit of respectability to the rock genre. Columbia would pay for it (hopefully) and I could finish up my post-grad record producing course. Possibly the result would sell enough to pay for itself. I decided to call Mike Bloomfield in San Francisco and find out what he was doing.

I got him on the phone and it turned out he was not doing much of



Al and Danny Kalb take instruction from Chuck Berry circa 1965.



Listening to "Like A Rolling Stone." From left to right: Roy Halee (engineer), Tom Wilson (producer), Pete Duryea (assistant engineer, standing), Albert Grossman, Artie Mogul, Dylan, Vinie Fusco (partially obscured), Sandy Speiser (foreground), and Al.

anything. "Why don't we go in the studio," I proposed, "and just jam? I don't think your best playing is on tape yet, and this might just be the best way to get it there. Columbia will pay for it and release it and...ya know...big deal."

"Okay," he said, "let's just do it in California."

We picked the sidemen (I chose bassist Harvey Brooks, Mike's recent bandmate from The Flag and my boyhood buddy; Bloomers chose Eddie Hoh, The Mamas and the Papas' drummer, known as Fast Eddie) and set the dates. I got all the proper permissions, filed all the correct paperwork, and away I went.

Jim Marshall and Linda Ronstadt

PHOTO FROM THE AL KOOPER COLLECTION

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CIRCLE 13 ON FREE INFO CARD

Backstage Backstabbing Basses Bastards

came down to visit, and Jim snapped away on his Nikon, documenting the evening on film, while Ronstadt quietly sat in the corner watching. There was a real comfortable feeling to the preceedings, and while listening to one of the playbacks I noted that I had gotten the best recorded Blooomfield and, after all, that was the whole point of this exercise. We piled into the renta car and made it back to our palatial surroundings, crashing mightily with dreams of finishing the album the next night.

What happened next is one of those

quirks of fate you can't explain, but you never question in retrospect. The phone started jangling at 9:00 AM, and it was some friend of Bloomfield's asking if he'd made the plane 'cause she was



Al recording the Tubes' debut album at the Record Plant, Studio B, Los Angeles, 1975.

waiting at the airport to pick him up.

"Huh? Michael's fast asleep in the next...Hold on," I said, doing a gymnastic hurdle outta bed into the next bedroom to find...an envelope? And, inside: "Dear Alan, Couldn't sleep...went home...Sorry."

Shit!

Raced back to the phone.

Nobody there.

I got half an album, studio time, and musicians booked, and this putz can't sleep in the \$750-a-month dungeon with the heated pool???

My first corporate hassle.
"Well, Clive (Davis, thenprez of Columbia Records) of
course I'm aware of the costs,
but he couldn't sleep. I mean,
haven't you ever had insomnia?"

No way that was gonna work.

It was 9:15 in the morning and my mind and ulcers were havin' a foot race for the finish line. I was actually on the verge of packin' it in myself, but a cooler part of me fortunately prevailed. I methodically made out a list of all the guitar players I knew who lived on the West Coast. At noon, I started callin' 'em — Randy California, Steve Miller, Steve Stills, Jerry Garcia. By



Al and Charles Calello work on the score for the TV series *Crime Story* at The Slammer in North Hollywood, 1987.

PHOTO FROM THE AL KOOPER COLLECTION.

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Backstage Backstabbing Passes Bastards





TOP: Al at the Third Street Record Plant with Chris Stone and producers Tom Werman and Bill Szymczyk.

BOTTOM: Recording Somewhere in England at George Harrison's project studio circa 1980. From left to right: George, Ringo, Barbara Bach, and Al.

5:00 PM I had a confirm on one player and left it at that. Once again, fate stepped in to save my ass, this time in the persona of Steve Stills, also unemployed by the breakup of his band. Buffalo Springfield.

At seven that evening, Steve, Harvey, Eddie, and yours truly sat down at our instruments and stared at each other.

Now what?

One of the songs I wanted to do was inspired by an English album I had recently acquired. It featured the performance of a spectacular young organist named Brian Auger and a trendy jazz singer named Julie (Jools) Driscoll. The album contained their version of Dylan's "This Wheel's on Fire," which was a top single in Europe, and a rambling version of Donovan's "Season of the Witch" that I had heard coming out of every shop on Kings Road when I had recently visited London. I thought it would be nice for us to do it, 'cause it provided a lot of room for improvisation

and everyone already had the basics of the song down. We did two takes straight off, and the version we kept was edited from the two. Since this was the first big-time record I'd ever produced. I was kinda green in some areas. Editing was one of them. During "Season of the Witch" there are a few edits between takes 1 and 2. The problem is that the two takes were different tempos. I didn't care. I just hacked away and got the bad parts out and the good bits in. So at every edit point the tempo changes. Either you hear those edits or you think we were musicians so attuned to each other that we sped up and slowed down

perfectly together. Not!

I left for New York a day later with the tapes and continued working on the album there. I put on all my vocals, added some horns for variety, and mixed it slowly and deliberately. After all, this was my debut as a producer, and I wanted it to be as competent as possible. I played it for the big boys at CBS and they thought it was okay enough to release. Bruce Lundvall, a kindly V.P. (later to become president of Blue Note Records) named the collection Super Session. Six weeks later, it was in the stores.

Considering the relative infamy of Bloomfield, Stills, and myself, I didn't delude myself that the album was going straight up to number one or anything. It was merely something for me to do while I learned my new craft. I was back in L.A. the day it was released, and ambled into Tower Records to see the initial reaction. I swear they were sailin' 'em over the counter like Beatle records!

In a matter of weeks, it was in the Top 20 and finally peaked at number 11. But that was plenty. This was a first for me. It only cost \$13,000 to make, and soon it was a gold album (for sales exceeding 450,000). I found this particularly ironic. All my life I'd busted my ass to make hit records. Now me and these two other goons went into the studio for two nights, screwed around for a few hours, and boom, a best-seller.

Kooper had found himself — he went on to produce Lynyrd Skynyrd, The Tubes, Rick Nelson, B.B. King, the list goes on still today, along with a number of milestone solo albums along the way, and then into the world of film and TV score composing [The Landlord, Crime Story!. Not that his sideman days are over, with recording gigs on some very familiar cuts by the Rolling Stones, George Harrison, Ringo Starr, Tom Petty, Trisha Yearwood, and many more.

For anyone aspiring to a career in the recording business, Kooper's life is a feast of exemplary experience in and out of the studio. And that's just the rock 'n' roll part. We left out the sex and drugs of which, along with countless pop star tales, there is an overabundance in this side-splitting autobiography. But for that, you'll just have to read the book And, based on what you just read, it wouldn't be right if we didn't let Al have the last word ...

After years of coming up against the music business machine, I had had enough. In 1990, I retired to Nashville to pursue watching satellite television and tornados. I decided I didn't want to be one of those guys that retired at a ripe old age and then spent only two years of relaxing before slipping resignedly into the ground. So for seven years I did basically nothing and got all that out of my system. I was now ready to do more work, but not full-time in the music-biz. I decided to give something back and teach music. I selected the best music school in the country, The Berklee College of Music in Boston, and signed on parttime and impulsively bought a house there. Coincidentally, at about the same time, Five Towns College in Lawn Guy Land awarded me an honorary Doctorate Of Music. So it was Doctor Kooper who first walked those hallowed halls of Berklee in September of 1997.

Well, I'm still there and getting better at it each semester. Now I'm looking to do things I put off, like teaching, while I wriggled in the music-biz snake-pit. Disc-jockeying, book-writing, rhapsodizing curmudgeonly in the pages of EQ magazine, maybe a TV talk-show, who knows what's next? But if I get hit by a truck tomorrow, I've already had a great life and I don't have a regret in the world (that is, except that my dog Daisy, would need a new loving home!).

Excerpts are from the book Backstage Passes and Backstabbing Bastards by Al Kooper [Billboard Books/©1998].





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Akira Jimbo (1) Japan's premier drummer with Glenn Noyes.



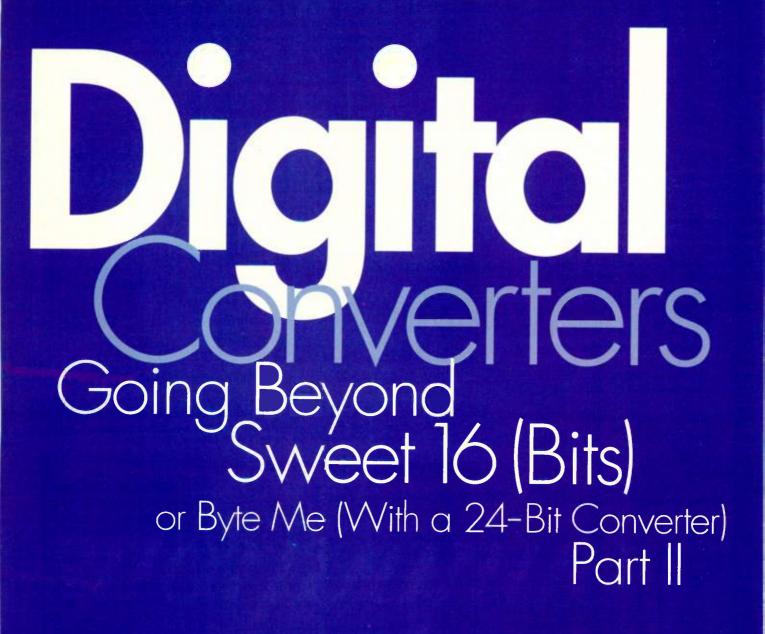
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The second part of EQ's report on professional converters features reviews of four more digital converters

BY MIKE SOKOL

never thought I'd hear it from a manufacturer. During Craig Anderron's workshop on digital media at the San Francisco AES show last month I heard an engineering rep admit that one of the reasons for releasing a 24-bit by 96-kHz A/D-D/A converter was simply to sell more product. That admission hinted that there might not be as much of a sonic improvement as one might think by simply looking at the specs. But since every other manufacturer is currently promoting converiers with 24-bit resolution and 96-kHz sample rates instead of the current 20-bit by 48-kHz crop, then the consumer might assume that 24 bits must be better than 20 bits. And, by the same logic, that 96 kHz must be audibly superior to 48 kHz. If swe're to believe all the hype, then the "old" 16-bit/48-kHz stuff will go the way of the 78-RPM Victrola by the end of the year. So whom do you believe?

Well, just about all of the contributing editors and writers at EQ have their own studios of one sort or another. And the same advertising and economic forces that affect your facility — be it modest or mondo — drive us. So in the coming months we will be listening to and helping you pick the proper digital gear to maximize the performance of your studio without driving you to the poorhouse. So rest assured that we will do our best to let you know what we consider to be important, and what's the emperor's new clothes.

That said, in the interest of science, it's time for a little audio math. I know some of you don't want to know anything about what goes on under the hood, but we all need to understand the basic math of digital audio so that when confronted with descriptions of new technology, we aren't sold any snake oil. Therefore, I've developed a way to make sure you consume this entire article, including the carrots and math.

I've grown up with computers, and have worked on and programmed them for over 20 years. I used to do binary to nex to decimal conversions in my head as a party trick for drinks. (Yeah some party, right?) Well, now that the nerds rule the earth, I think i's safe to come out of the closet and show you a virtual programming trick I've developed.

In order to demonstrate, I've moved the math to the sidebor, where you will be subliminally directed to go before returning to the rest of the article. Therefore, don't be afra d if you involuntarily go there for a quick peek. I've included a new virtual-basic cace embedded in the text so that your eyes and brain will automatically follow a predetermined path through the magazine. The new video driver for your optic nerves was automatically loaded when you first opened up this magazine, and a DLL for the Virtual Basic subset inserted in your subconscious. (Sort of like plug-and-play for your brain.)

At the end of this article you may be directed to fill out the Reader Service cards...or not...or maybe go to some advertiser's page. Pretty cool stuff, yes? And no, I don't see how this could be confused with Bill Gates's monopoly problem, so don't go talking to the authorities.

50 TO SIDEBRR_LINE_OF





MANUFACTURER: MIDIMAN, 45 East Saint Joseph Street, Arcadia, CA 91006-2861. Tel: 626-445-2842. Web: www.midi-

FEATURES: Stereo A/D-D/A conversion with 20-bit resolution; 48 kHz, 44.1 kHz, 32 kHz, and external sample rates (locks to any external S/PDIF clock); XLR and TRS analog jacks; S/PDIF and AES/EBU digital ports.

PRICE: \$399.95

CIRCLE EQ FREE LIT. #: 131

Prism AD-124 And Dream DA-1

As I noted last month in Part I, there are some applications that require the utmost in dependability and integrity. When the cost of a single failure can exceed the price of a piece of equipment, you had better buy the most rugged gear you can afford. It's what I call industrial-strength mentality. (It's why you can run a Peterbilt truck for a million miles before you overhaul the motor.) For analog-to-digital and digital-to-analog converters that can mean spending 10 times what a prosumer piece of gear might cost you. It may not be worth the investment for your application, but if you're doing a network television gig or own a CD mastering house, then you just have to spend the bucks and get something that will never let you down.

The AD-124 and Dream DA-1 fit into the above category. These are true industrial-strength converters that together cost the price of a small car. And, as such, they have all the options you might require in order to interface them into a video or network production suite.

The AD-124 is a single-rack unit with XLR balanced inputs and outputs, both A-D and D-D modes with auto-dither mode, and DRE

(Dynamic Range Enhancement) for going to 16-bit media while retaining some of the benefits of 20- or 24-bit encoding. Word clock, AES, S/PDIF, and TOSlink optical external sync paths are also included. The signal-to-noise ratio is rated at -122 dB, Aweighted, which is better than theoretical 20-bit resolution will allow.

The Dream DA-1 digital-to-analog converter has a seven-input selector, and will accept signals from a variety of S/PDIF, AES3, or CP340

(optical consumer) sources with any word length up to 24 bits. Special attention has been paid to incoming clock jitter with a rejection of 60 dB at 500 Hz.

Once you get to this level of machinery it's difficult to give a purely subjective sonic opinion. So I linked the outputs of the AD-124 to the inputs of the DA-1 and tried to make it misbehave with a variety of ultrasonic-rich signals, poor cable connections, and general mayhem. But it just sat there and sounded exactly like a wire, which is exactly what you'd expect it to do.

I never could get it to do anything uncomplimentary or misbehave in any way. I did pop the top on the DA-1 for a look inside (yes, I'm curious about construction practices) and found it neatly filled with mil-spec components and a pair of what appeared to be heavy-duty multi-layer circuit boards. A rather large toroid transformer and power supply provide the juice. The connectors were industrial-duty, and didn't push down directly on the circuit board, which can cause stress failure and eventual intermittent operation. So I would expect the AD-124 and DA-1 to sound exactly the same, year-in and year-out.

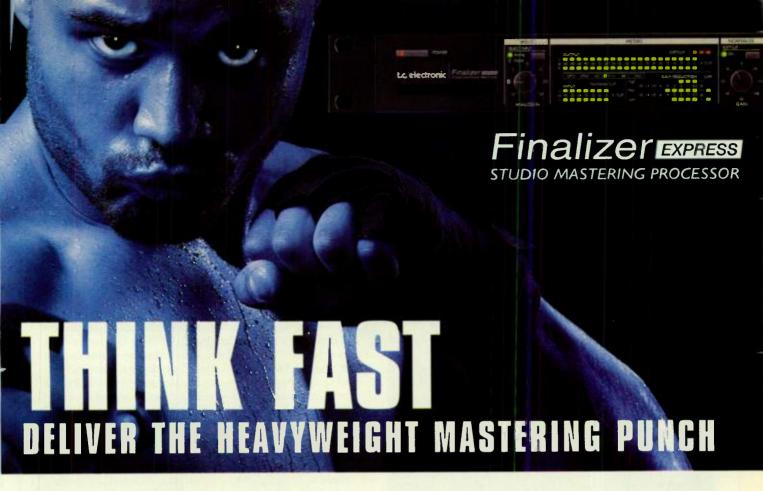
If your application requires the utmost in dependability and price is no object, then consider the hardware from Prism Sound.

MIDIMAN Flying Cow

It's nearly impossible to build a serious analog-to-digital converter that resides inside the computer. A computer is a very hostile environment with all kinds of digital clocks and power supply noise that are not conducive to converting small analog signals into digital words. So, if you're going to make any real music, an affordable external converter is mandatory. But you thought you were going to have to wait till cows got wings to be able to afford one. Wait no more...the cows are flying.

And so, you now know the name of this MIDIMAN converter: Flying Cow. Let's see how "the cow" stacks up to some of the more expensive units in this review series. Now I know it's not fair to compare a \$400 converter with an \$18,000 converter, so, of course, I'm not doing a point-by-point analysis. I was, though, pleasantly surprised at how well the Flying Cow did in my studio when compared to units costing 30 times as much.

The Flying Cow is built in a rugged steel chassis and includes combo XLR/TRS jacks for the analog inputs and outputs. Be aware, however, that since Neutrik doesn't make a male XLR combo jack,



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PRODUCT: Prism AD-124 And Dream DA-1 Component A/D and D/A Converters

MANUFACTURER: Prism Media Products, Inc., 21 Pine Street, Rockaway, NJ, 07866 Tel. 973-983-9577. Web. www.prismsound.com.

FEATURES: Twenty-four-/20-/16-bit separate A-to-D and D-to-A industrial duty converters with multiple-source selection from front panel and Dynamic Range Enhancement (DRE).

PRICE: \$5120, AD-124; \$5630, Dream DA-1

CIRCLE EQ FREE LIT. #: 132

that the analog outputs are on female XLR jacks, rather than the expected male jacks. Also included are XLR AES/EBU and RCA-style S/PDIF jacks for interfacing into both professional and consumer equipment.

A 9-volt external transformer (wall wart) powers the unit. The front panel includes a mode select switch and LEDs that allow you to toggle between AES/EBU or S/PDIF inputs and 48, 44.1, 32 kHz, or externally clocked sample rates. A six-position LED meter for input level is thoughtfully provided — something that a lot of expensive converters don't include. And those six LEDs are spaced so that they cover from –60 dB to clipping in useful increments. I know that the software will probably have digital peak meters on the computer screen, but I still like to see basic metering on each piece of gear just for troubleshooting and confidence.

An input level control is included on the front panel. It changes the sensitivity to allow full-scale operation of other gear with either $-10\,\text{dBV}$ or $+4\,\text{dBu}$ signal levels, which is how you can help maintain the proper headroom throughout your signal path.

The Cow did much better sonically than its bargain price would imply. Even though I could at times hear small differences in the output signal vs. the input signal, it was only noticeable during a direct A/B comparison, and never sounded harsh or forced until the clipping level was reached. There was a small static burst in the output signal when switching between AES/EBU and S/PDIF input modes, but that's probably a result of the clock needing to lock to the different signal source, and occurs only the first time you switch digital sources.

For the bucks, this unit is hard to beat. It has enough features to easily work in a project studio or to upgrade a basic digital workstation, and it won't let you down on sound quality. For really tough mastering or multitrack situations there are other converters that you can spend a lot more money on, but if you just need a good

stereo converter to get the job done, then check out the Flying Cow.

Oh, and these guys get a gold star for including all the needed contact information on the back page of the manual which included not only their corporate address and phone number, but also their e-mail and phone numbers for tech support, along with Web site and fax numbers.

Event Layla

Layla is the flagship of the I/O cards (Darla and Gina are the others) designed by Echo Corporation for Event Electronics. Layla is a professionally designed system that comes in two pieces: a PCI bus card that fits into your PC or Mac and a remote rackmountable module that houses the converter electronics and jack panel. A 15-foot cable interconnects the two units and a standard IEC power cable provides power for the remote module. The PCI card has but a single LSI chip on the board, which doesn't look like much at first glance, but is obviously sufficient for the I/O tasks involved.

I installed Layla in my 233 MHz Pentium machine using Win95 and it snuggled right up next to my on-board Creative Labs AWE 32 card without a problem, even assigning alternate address for the MIDI ports on each card. Curiously, I did have one lock-up problem in a session and found that something (or possibly the ghost of Bill Gates) had mysteriously uninstalled Layla's drivers upon rebooting. It only took a minute to reinstall the drivers, and I was back in business. It felt like a Window's thing rather than a Layla thing, but I don't like these little surprises.

Operationally, there are eight analog inputs and ten analog outputs on the rack module, with any of the outputs assignable as monitor sends that can automatically route any recording or playback action to your control-room speakers — a pretty handy feature. The sensitivity of the input and output ports can be set to –10 dBV or +4 dBu, depending on whether you're connecting to consumer or professional gear.

I was able to get eight inputs and eight outputs going at the same time with my SCSI hard drive (with up to 10 by 12 being possible) and there were never any dropout or glitch problems. But be aware that I have a workstation that's been lovingly fine-tuned for maximum drive throughput. You may have a little tuning to do on your own hard drive to get it to run that fast, but drives are getting faster every day.

Layla came bundled with Cool Edit Pro Special Edition, which gets you into the multitrack game very quickly. I use a lot of the big-name editing software on my workstation (such as Cakewalk, SAW 32, and Sound Forge), but I still keep a shareware copy of Cool Edit on my computer for some of the tricks it does quicker than anything else does. So bundling Cool Edit Pro with Layla makes a good bargain even better. It's very intuitive to use and powerful enough for a lot of applications.

The sound of the unit was good with the program material I was able to throw at it. I did some 8-track transfers of 16-bit ADAT material into my workstation without having to resort to multiple passes using timecode as I've done in the past. Linearity was fine during listening tests of very low-level program material, and



I couldn't get any distortion using my dreaded maraca test. The rated dynamic range of 98 dB is about aver-

age for gear of this type, and, of course, doesn't come near the theoretical range of the 120 dB possible with 20 bits. Nonetheless, as I've said before, a lot of the benefits of 20-bit and 24-bit resolution are the result of higher internal accuracy possible for processing, and the better linearity of 20-bit processors compared to their 16-bit ancestors.

All in all, this is a nicely engineered piece of gear that looks like it should do the job quietly and accurately. If you're not hung up on the 24/96 mania that's going on at the moment, Layla may be for you.

Aardvark AARK 20/20

The AARK 20/20 allows you to take a Windows-based PC and turn it into a full-featured recording system. The PCl bus interface card has a rather large epoxy-looking module that looks like it would protect the electronics from physical and electrical abuse. This being a professional system, all of the A/D-D/A electronics resides

PRODUCT: Layla 20-Bit/48-kHz Multitrack Audio Recording System

MANUFACTURER: Event Electronics, PO Box 4189, Santa Barbara, CA 93140-4189. Tel: 805-566-7777. Web: www.event1.com.

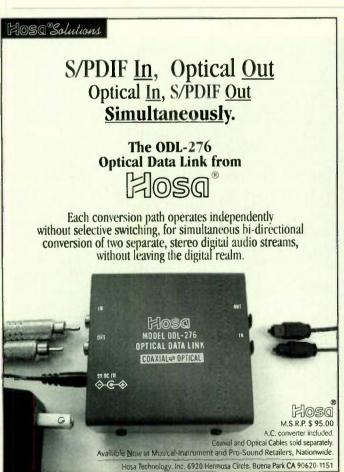
FEATURES: PCI bus interface card; eight balanced 20-bit A/D inputs with 1/4-inch TRS jacks; ten balanced 20-bit D/A outputs with 1/4-inch TRS jacks; S/PDIF I/O with 24-bit resolution; word clock/superclock I/O; on-board 24-bit 80 MIPS DSP; 44.1 and 48 kHz sample rates; MIDI I/O connectors.

PRICE: \$995 (w/multitrack record/edit software)

CIRCLE EQ FREE LIT. #: 133

in a remote box hung on the end of a 6-foot cable. The size and shape of the remote box doesn't seem to lend it to rack mounting, but it's heavy enough to sit on a shelf without sliding around. This "pod" gets its power from the computer, so no additional AC power cord is required. The pod is ruggedly constructed with 1/4-inch phone jacks for the analog Ins and Outs. Curiously, Aardvark uses unbalanced jacks for the audio connections instead of the expected TRS jacks. But nearly all studio installations will probably be unbalanced anyway, so it's of little consequence.

Included with the AARK 20/20 is a software control panel for the PC, which allows you to set the sample rate to 44.1 or 48 kHz,



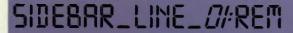


DigitalConverters

generate calibration tones (very handy), and meter any or all of the inputs and outputs. Also bundled with the system is the excellent Samplitude Basic by SEK'D, which performs the multitrack tasks. 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. And now ASIO drivers are available for Cubase VST, which provides zero latency and seamless multichannel integration.

I installed the host interface card in my Win95 workstation, which is a 233 MHz Pentium with 64 MB of RAM and a 4/4 Gig SCSI hard drive set. While this computer/workstation isn't state-of-theart, it's typical of what you might have in your studio. Windows quickly found the new hardware and asked for the driver disk, which then installed in about a minute. There are no switch settings on the card, and it did peacefully co-exist along side my Sound Blaster AWE 32 card, which is already in the system.

After a few minutes of reassigning ports in my existing SAW 32 and Cakewalk Pro Audio programs, I was ready to play. The throughput of the PCI bus was sufficient to easily get eight tracks of recording and playback at the same time on my workstation, and Aardvark advises that multiple AARK systems can be installed in the same machine for 16-in/out applications. Also included are connections for word clock I/O and video black burst, both essential for interfacing into a professional audio or video studio environment. The interface driver seemed very stable — with no unintentional trashing of existing applications, nor any surprise audio dropouts or glitches in the soundfiles. Overall, the sound of the A/D converters seemed very transparent, especially at very low levels where I like to listen for nonlinearity problems. Aardvark has in-



What are bits, bytes, nibbles, and words? For our purposes, a bit is simply a single digit in a computer, on a digital tape, or transmitted over a phone line via a modem. And, unlike the fingers on your hands, instead of having ten possible values (zero through nine), it has only two possibilities — usually referred to as zero and one. That said, it's really more like 0.2 volts and 3.8 volts (for TTL circuits), but it all means the same thing; on or off, true or false, mark or space.

When we group several bits together they can represent more than just on or off. Put two bits together and they can stand for four possible values: 0-0=0; 0-1=1; 1-0=2; and 1-1=3. If you put eight of them together, you get what's commonly known as a byte, with 256 possible values. (Nibbles were 4-bit bytes and haven't been used in 20 years or so, but it's a cool word.) If you put two bytes together, you get a 16-bit word with 65,152 possible values.

In an A-to-D converter, the more bits you have to represent any given value, the closer it will sound to the original. Many analog-to-digital converters are now available with 20 or even 24 bits of resolution. As we add a bit to the word length, there's an additional six decibels of sound that can be stored. So a 20-bit word could capture dynamics up to 120 decibels and a 24-bit word could get 24 dB more, or 144 dB of dynamic range. But, in the real world, you can't get analog electronics with low enough noise figures to be below the noise threshold of the 24-bit converters.

What's this got to do with the quality of your music, and how does it relate to that other parameter, sample rate? Sample rate is how fast those bytes (whether they're 8, 16, 20, or even 24 bits wide) are



PRODUCT: Aardvark AARK 20/20 20-BIT Multitrack Audio Recording System

MANUFACTURER: Aardvark, 202 E. Washington, #306, Ann Arbor, MI 48104.Tel: 734-665-8899. Web. www.aardvark-pro.com.

FEATURES: PCI bus interface card, 20-bit A/D-D/A with 24-bit 80 MIPS DSP, 10 inputs and outputs, word clock and video sync; eight unbalanced 1/4 inch analog inputs and outputs, two S/PDIF ports with RCA connectors.

PRICE: \$799

CIRCLE EQ FREE LIT. #: 134

cluded some of its past expertise on high-end converters, including low-jitter clocks that have been integrated into this system.

The dynamic range for the 20-bit A/D converters is rated at 100 dB. A-weighted, which is less than the theoretical maximum of 120 decibels for 20 bits. But as I've noted in my sidebar, the current state-of-the-art for analog support circuitry can't really get up to the resolution of 24-bit conversion (146 dB). Suffice it to say that the analog electronics seemed very quiet and behaved satisfactorily even using ultrasonic test signals. Note that this is a 44.1-or 48-kHz-only converter, which is sufficient for all but the most critical applications. If you feel you must have 24/96 recording, then you need to look elsewhere. If not, for the very easy price of \$799 retail, you could hang this on a \$1500 computer and be in the multitrack business pronto.

sampled. Stated in kilohertz, the sample rate must always be at least twice as fast as the highest frequency that needs to be sampled. So an A-to-D converter with a sample rate of 44.1 kHz can, in theory, accept an audio frequency of up to 22.05 kHz. It never really works out that well in real life, so throw away a few kHz for real-world analog filters, and it ends up being more like 20 kHz of actual audio. A 96 kHz sampling raises this frequency up into the ultrasonic region of 48 kHz of actual audio.

There is no such thing, however, as a free lunch. Adding extra bytes does affect your storage requirements in a big way since it all adds up rather quickly. So while stereo 16-bit, 44.1-kHz audio requires about 11 MB of storage per minute, 24-bit audio will require 50 percent more (around 16 MB per minute), and a 96-kHz-by-24-bit stereo track will need about 33 MB per minute. Consequently, while you may be able to get an A/D converter that will run at 24/96, you may not have the hard-disk speed or capacity to do so.

The biggest benefit seems to come when going from 16 bits to 20 bits: after that it's mostly diminishing returns. Twenty bits is certainly much easier to record on, since you have those extra 24 decibels of range to play with. I don't think that having a 24-bit A/D converter is sonically that much better than a good 20-bit unit, but I do know that you need all the internal byte-width you can get. Twenty-four-bit or even 32-bit internal processing really helps, especially with complicated multitrack mixing to a common stereo digital bus. As for the higher sample rates, I've yet to find source material that seems to justify 96 kHz sample rates (and the double file size it requires), but I'm still looking and listening.

RETURN

REM REENTER I'M IN ARTICLE FACILISIDEBOR

The Birth Of A Legend



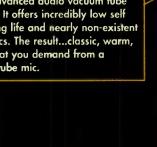
What turns a studio microphone into a legend?

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Legendary mics are made by people who share a passion for the art of sound. So we gathered together some of the most passionate designers in the world to create GT Electronics, a new division of Alesis that's dedicated to the qualities of legendary audio equipment design. It all starts with the AM Series large diaphragm studio condenser microphones, which offer everything you'd expect from a legendary mic except the legendary price.

GT. The new legend has arrived.

The GT AM61 and AM62 maintain an all-tube signal path for preamplification. The tube, a military-spec GT5840M, is the most advanced audio vacuum tube ever made. It offers incredibly low self noise, a long life and nearly non-existent microphonics. The result...classic, warm, rich tone that you demand from a legendary tube mic.



Cardioid.

Figure 8

Omni.



CLASS A FET

AM52



AM 61



AM 62

Cardioid.

Omni, Figure 8,

Super-Cardioid

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CIRCLE 06 ON FREE INFO CARD











KSM32

Does Shure's newest mic live up to the high expectations set by its past workhorses?

I was in the studio last week recording various overdubs for the new Steely Dan album, when Walter Becker asked me if I would set up a couple of microphones to record the piano. I said, "Shure, I'd be glad to." This may be a bad pun, but it segues into the review of what turned out to be a great new Shure condenser microphone.

Shure maintains the reputation of having developed the standard workhorse for dynamic microphones with the Shure 545, which later evolved into the SM56/SM57 group of dynamic microphones. If you were on a desert island with only one microphone, your choice would probably be one of these Shure dynamics.

The new Shure KSM32 studio condenser microphone may well become the standard workhorse of condenser mics, because as I recorded the piano, I found the KSM32 to have a warm low end like a Neumann U87 and crisp highs like an AKG 414. Plus, the noise floor of the KSM32 was unbelievably low for a phantom-powered microphone. This new mic was definitely the right mic for recording the piano.

Using the KSM32 resulted in a piano sound that was rich, yet had plenty of sparkle. I love microphones that I don't have to EQ. I have just found my new standard piano mic. But wait a minute! The KSM32 sounds great for overhead drum mics. (Am I going to have to buy more of these?) Their brightness brings out the attack of the cymbals, while maintaining a warm tonal balance of tom and snare ambience (if it is good, I don't call it leakage). If you are recording jazz combos with just a kick drum mic and one overhead mic for drums, the KSM32 would be the choice.

VOCALEZE

Vocals are always a pain in the butt (wrong end!). Most singers like the lowend build-up caused by the proximity effect when singing close to a directional

microphone. It makes them sound like the DJ on a classical music station. The bad part is the pops that you have to deal with when singers get so close to the mic. You can slip on a foam pop filter, but that changes the high end too much. You can use one of those "panty hose"-type pop filters, but by the end of the night the lead singer is wearing them over his head. (Wrong end again.) The Shure KSM32 has a unique screen design that helps to eliminate most pop and wind noises without adding additional filters. The microphone was designed with the pop filtering in place, so you don't sacrifice sound quality and only need to add external pop filters under severe



MANUFACTURER'S SPECS

Cartridge Type: Permanently biased condenser

Pattern: Cardioid

Frequency Response: 20 Hz-20 kHz [measured 0.6 meters (2 ft.) from a

spherical sound source

Sensitivity: Open circuit voltage, -36 dBV/Pa (16 mV) typical (1 Pa=94 dB SPL); @ 1000 Hz

Dynamic Range: 126 dB (max. SPL minus A-weighted noise level), 20 Hz-20 kHz, 2500-ohm load

Self Noise: 13 dB typical, A-weighted

(IEC651), equivalent SPL

Output Impedance: 150 ohms

Signal-to-Noise Ratio: 81 dB (IEC 651); S/N ratio=difference between 94 dB SPL and equivalent SPL of self-noise A-

Dimensions: 55.9 mm (2.20 in.) maximum body diameter; 187 mm (7.37 in.) long

Weight: 490 grams (17.3 oz.)

conditions. In essence, the mic's design permits you to record vocals that are warm and natural and without hype all without the fear and distraction of recording popping sounds.

The KSM32 has a three-position low-frequency response switch: flat; 6 dB per octave below 115 Hz (rolloff); and 18 dB per octave below 80 Hz (cutoff). These response positions help when the singer thinks you are really supposed to record his tonsils, or there are other low-end rumble problems that need correction. There is also an attenuation switch that reduces the capsule output level by 15 dB.

The KSM32 comes packed in a quality aluminum carrying case. The case contains a standard mic stand adapter as well as a shock mount adapter. I have used many microphones that take either a rocket scientist or a three-year-old to get them safely placed in their suspension mount. I have more than once looked out into the studio to see a microphone that has worked its way out of the rubber bands to be found hanging by the mic cable. The ShureLock™ threaded connection on the KSM32 won't let that happen again. The microphone itself is in a Velcro*-closed velveteen pouch nestled in plenty of foam for protection during transport.

Don't I have anything negative to say about the KSM32? Well, the only thing I could think of is the fact that the KSM32 is cardioid pattern only. There are times when I like to switch to figure-eight or omni for certain situations, but the fantastic job the KSM32 does as a cardioid far outweighs this one shortcoming.

CONCLUSION

In the price/performance ratings, I would give the KSM32 a solid 10. For what you were planning on spending for a single microphone you can have a pair of KSM32's. Today you can walk into any studio mic closet and see a

shelf full of Shure SM56 and SM57 dynamic microphones. I'll bet that by this time next year you will also see a shelf full of KSM32 studio condenser microphones. This may end up being Shure's workhorse for the next 20 years.

MANUFACTURER: Shure Brothers, Inc., 222 Hartrey Avenue, Evanston, IL 60202. Tel: 847-866-2200. E-mail: sales@shure.com. Web: www.shure.com. Circle EQ free lit. #119.

PRICE: model KSM32/SL (champagne finish w/all accessories), \$1029; model KSM32/CG (nonreflective charcoal gray w/swivel mount and zippered case), \$959.

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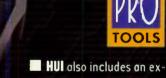


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Blue Ribbon

Well, it's that time of year again post-AES-gear-overdosehangover. It's really a beautiful thing, and the editors of EQ had a great time checking out all of the new toys at this year's AES Convention. Of course. as we do every year, we came up with a list of our favorites and present them here. But we've added a new wrinkle to this year's festivities at the end of this section is a ballot for you to let us know what you think is the most promising product introduced at the show. So check out these Blue Ribbon nominees and send us some feedback.

The official Blue Ribbon winners will be announced in a future issue.



Nominations

No Blue Ribbon . Somunations

AKG C3000 Microphone

AKG's C3000 microphone is a condenser microphone with a rather interesting capsule combining a gold-coated, large diaphragm with AKG's micro-transducer technology. Three switches are built into the mic, allowing selection of polar pattern (cardioid or hypercardioid), low-frequency rolloff (-10 dB per octave at 100 Hz), or -10 dB preattenuation. The C3000 may be used for stage or studio applications. Although the C3000 has been on the market for a few years, it is now available in a nickel finish, and the list price has been reduced. It is also available in a version called the C3000 Pro, the difference being a shock mount and protective case available only with the C3000 Pro model. For more information, call AKG at 615-399-

Allen and Heath ICON DP1000 Digital Mixer

2199 or visit their Web site at www.akg-

acoustics.com. Circle free lit #135.

The ICON DP1000 digital mixer from Allen and Heath is a 10-input, 4-output console with a built-in, 600-watt (into 4 ohms) stereo power amplifier, and 20bit A/D and D/A conversion. The DP1000 features six analog mic/line inputs, each providing 1/4-inch or XLR input and 4-band EQ with parametric mids. Two analog stereo inputs each accept two 1/4-inch or RCA inputs or may be used as mono XLR mic inputs. Frequently used channel settings such as gain, level and mute have dedicated controls, including 100-mm faders for all input and bus faders. Other console settings may be adjusted using a strip of rotary controls and a backlit LCD screen that displays channel parameters. Two effect processors are included onboard the DP1000: one capable of delay and reverb, the other capable of delay, reverb, chorus, flange, tremolo, autopan, and vibrato. In addition, a compressor and gate are available per channel. In addition to configurable "AB" outputs for the power amp (enabling one channel to be used for mains and the other for a monitor mix), the DP1000 has analog monitor, aux, and L/R recording outputs. An unpowered version, the DL1000 is also available. For more information, contact Allen and Heath at 805-568-7660 or visit their Web site at www.Allen-Heath.com. Circle free lit #136.

Beyer MCD Digital Mics

It's no secret that beyerdynamic has been hard at work in getting their MCD Series of digital mics to the market, and now they've arrived. The MCD Series marks a fundamental change in the function of the microphone by bringing the analog audio signal directly into the digital domain at the mic. After passing through the preamp stage, analog audio from the capsule is sampled at 48 kHz with 24-bit resolution *onboard the microphone*. A minor modification can be made to convert the sample rate to 44.1 kHz, and beyerdynamic maintains that the mic can be adapted in the future to a 96 kHz sam-



ple rate. After conversion, the bit stream can optionally be routed to an internal DSP for gain control or filtering functions. MCD Series microphones operate on Digital Phantom Power (DPP), which provides the necessary power supply for the condenser element, the converter circuitry, and signal processing circuitry in the mic body. For more information, see Roger Nichols's review in our September issue or contact beyerdynamic at 516-293-3200 or e-mail them at: salesUSA@beyerdynamic.com. Circle free lit. #137.

CM AUTOmation Motor Mix

Brand new from CM AUTOmation is the Motor Mix, a cost-effective, motorized fader control surface designed for digital audio workstations. Motor Mix features eight motion-sensing 100-mm motorized faders designed for smooth operation without jerky movement. A section with eight rotary pots for control of pan, send levels, and channel plug-in settings is also provided. A 40 x 2 backlit LCD allows you to view channel labels, rotary pot settings, locate addresses, transport controls, or other important information. Four "view" switches are provided for control over multiple banks of

faders in workstations with more than eight channels. A total of 56 backlit switches are included on Motor Mix for instant control over mute, solo, record ready, automation enable, EQ in/out, dynamics in/out, and other functions. For more information, contact CM AUTOmation at 818-709-4732 or visit their Web site at www.cmautomation.com. Circle free lit #138.

Crane Song Flamingo

Crane Song's Flamingo is a discrete, Class-A, stereo microphone preamp with a split personality - largely due to the presence of two controls: the Sound switch and the Iron switch. When both of these controls are out of the audio path, the Flamingo behaves like a musically transparent preamplifier. Changing the Sound switch to the "Fat" setting routes audio through an alternative amplifier path, creating a different sound. In Fat mode, Flamingo has a much higher level of 2nd- and 3rd-order harmonic distortion. The Iron switch allows distortion of the low frequencies, while leaving the frequencies above about 400 Hz largely unchanged. For more infor-

mation, contact Crane Song at 715-398-3627 or visit www.cranesong.com. Circle EQ free lit. #139.

Crane Song Trakker Analog Compressor

The Trakker is a mono analog compressor featuring several "vintage" presets intended to re-create sounds of classic compressors. A brother to Crane Song's STC-8 stereo compressor, the Trakker employs pulse width modulation for precise control of the FET

gain cell and discrete, Class-A circuitry. Provided on the Trakker is a "Shape" control that manipulates the release time to simulate the reaction of vintage optical limiters. A saturation circuit helps the Trakker create an overdriven-type of sound when needed. For more information, contact Crane Song at 715-398-3627 or visit www.cranesong.com. Circle EQ free lit. #140.

Dynaudio Acoustics BM15A

The Dynaudio Acoustics BM15A is an active, console-top, studio monitor with a 9.5-inch woofer and a 1-inch tweeter in a ported cabinet. Provided in mirror-image pairs, the BM15A is biamped with XLR inputs accommodating +4 or -10 input levels (switchable on the rear panel). For cases where the BM15A's will be placed close to room boundaries, Dynaudio Acoustics includes foam plugs that may be inserted in the ports for increased low-frequency clarity. Rearpanel potentiometers allow ±3 dB adjustment of the high- and low-frequency response. For more information, see the review in the July 1998 EQ or contact AXI, Inc. at 781-982-2626 or www.dynaudiointernet.dk. Circle EQ free lit. #141.

EMU-Ensoniq Mantis: Modular Digital Mixing System

Mantis is EMU's new modular digital mixing system with a mix engine that supports up to 112 inputs and 32 output busses. User interface software is available for both Mac and PC platforms, providing dynamic automation, surround sound mixing, 32-bit internal processing with 24-bit A/D and D/A, and a dedicated control surface, as well as support for the Mackie HUI. System components include the Mantis Mainframe (a three-rack-space mix engine with seven digital I/O expansion slots), Mantis Annex (analog expander), Mantis Console, and MantisMix software. Each input to Mantis has a 4-band EQ, 12 aux sends (four of which are directed to the internal 32-bit effects engine), and a dynamics section for compression, expansion, and gating. Inputs and outputs to the system can be configured to user need, and options include analog mic or line inputs, or TDIF, ADAT, AES/EBU, S/PDIF, or Firewire digital interfaces. Additionally, Mantis will support a new interconnect format called EDI (EMU Digital Interface). Mantis will ship with MantisMix automation software - a cross-platform program featuring user-definable control panels, multimode automation editing, plug-in based effects, and the ability to download software updates via the 'Net. For more information, contact EMU-Ensoniq at 831-438-7854 or visit their Web site at www.emu-ensoniq.com. Circle EQ free lit. #142.

Euphonix R-1Hard-Disk Recording System

With the introduction of the R-1, Euphonix steps into the land of hard-disk recording systems. Capable of recording 16- or 24-bit audio files at 44.1 and 48 kHz, plus pull up and pull down rates (and 96 kHz in the future), the basic R-1 System consists of the Pilot Computer, Studio Hub, and Audio Deck, Available options include a remote as well as A/D and D/A converters. Euphonix has designed the R-1 to behave like a tape recorder, providing a familiar remote control for "transport" operation and even ramp up and ramp down times when in fast-forward or rewind. A muting feature has been implemented during transport start and stop to eliminate the clicks and pops that can be produced when some digital recorders switch between modes, Although the R-1 works like a tape machine during recording, it can switch to an Edit mode, eliminating the need to transfer tracks to an editing system. The 24-channel R-1 system is modular. Variable speed play in forward and reverse is supported, and a "speedometer" gives visual clues to the user about the direction and speed of the transport. Audio sync options to the R-1 include word clock, black burst, video sync, SMPTE code, and MTC. Four Analog Devices SHARC DSP processors provide real-time sample-rate conversion, cross fading, monitor mixing,

Great River Electronics MP-2/MP-2X Mic Preamps

and metering. For more in-

formation, contact Euphonix

at 650-855-0400 or visit www.eu-

phonix.com. Circle EQ free lit. #143.

Great River Electronics' MP-2 is a stereo version of their MP-4 microphone preamp reviewed in the June 1998 *EQ.* It uses a goldplated rotary gain switch with 1 percent resistors for very precise and repeatable

gain adjustment. The MP-2 comes standard with a Jensen input transformer; a Jensen output transformer is optional. Both channels have rear-panel mic inputs and front-panel, 1/4-inch instrument inputs, as well as pad, phantom power, and phase reverse switches. The MP-2X is the newest design from Great River Electronics, a transformerless stereo mic pre based on a new circuit topology. For more information, contact Great River Electronics at 612-455-1846 or visit www.greatriverelectronics.com. Circle EQ free lit. #144.

Manley Massive Passive Stereo Tube EQ

Manley Laboratories' latest introduction is the Massive Passive, a stereo tube EQ with four bands per channel plus high- and low-pass filters. The tone shaping circuitry in the Massive Passive does not use any active circuitry such as ICs, transistors, FETs, or tubes. The tube circuitry in the Massive Passive serves to make



No Blue Ribbon ... Somunations

up gain lost in the tone-shaping process. Each of the four EQ bands overlaps slightly: 22 Hz to 1 kHz, 82 Hz to 4 kHz, 220 Hz to 10 kHz, and 560 Hz to 27 kHz; each band may be individually bypassed. Very steep slopes are designed into the filters, with 60 dB/octave at 18 kHz, 30 dB/octave at 12 kHz, and 18 dB/octave at lower frequencies. For more information, contact Manley Laboratories, Inc. at 909-627-4256 or visit www.manleylabs.com. Circle EQ free lit. #145.

Motorola DSP56364 and DSP56362 Audio DSP

While there aren't that many of us who will be coming in physical contact with Motorola's new audio DSPs, it's very likely that the gear we use will be incorporating these ICs. The DSP56364 is an audio-specific IC capable of 100 MIPS with a 3.3-volt power supply. The DSP56364 includes 8 K x 24-bit ROM. and 3 K x 24-bits of onboard RAM. It is intended as a cost-effective DSP for performing audio algorithms such as Dolby® Pro Logic® processing, bass enhancement, and speaker equalization. A 1.8-volt version is planned for use in portable applications. The DSP56362 is a DSP also intended for audio applications and has demonstrated performance of up to 150 MIPS, making it one of the most powerful DSPs ever designed for audio purposes. The DSP56362 is intended for use in multimode, multichannel decoders supporting Dolby Digital, DTS, and MPEG2. It is expected that the first products incorporating the DSP56362 will be introduced later this year. For more information, contact Motorola at 800-521-6274. Circle free lit #146.

MTA Intermix Modular Mixing System

Intermix is a very interesting, modular audio system designed for easy expansion to ac-

commodate a user's needs. There are several modules in the Intermix line, including a Master Control Unit, 16 Channel 8 Aux Send, 16 Channel Four-Band EQ, 16 Channel Mic/Line Amplifier, 16 Track Monitor and Tape Return, and 16 Channel 16 Track Routing and Panning modules. Each of the modules lives in a rack-mounted unit and may be purchased (and operated) separately or together. Any of these modules may be linked together in a few minutes by connecting several cables. The 16 Channel 16 Track Routing Module provides 16 balanced inputs with 16-bus assign, pan, mute, AFL, PFL, and fader for each channel. Mix busses are built into the unit and appear on the rear panel as balanced 1/4-inch jacks. If you need more than 16 inputs, a second 16 Channel 16 Track Routing Module could be connected to the mix busses via ribbon cable. For more information, contact MTA America at 716-589-2100 or visit their Web site at www.toft.co.uk. Circle free lit #147.

Sabine GRQ 3102 GRAPHI-Q

Sabine's GRAPHI-Q is a 2-channel, 24-bit digital processor that incorporates a graphic equalizer, FBX (Feedback Exterminator"), compressor, and delay in a two-rack-space chassis. Thirty-one bands of EQ are provided per channel, each with 6 or 12 dB of boost/cut range. High-cut (3-20 kHz) and low-cut filters (20 Hz-1 kHz) are also provided for each channel, A/D and D/A is 24-bit, with 32-bit floating-point processing internally, resulting in a dynamic range stated to be 105 dB. Twelve of Sabine's patented FBX Feedback Exterminator filters are included per channel, along with a TURBO Mode for quick setup. A digital delay with up to 1 second of delay time is provided for time alignment of speaker arrays, and is adjustable in increments of 20 ms. For more details, contact Sabine at 904-418-2000. Circle EQ free lit. #148.

Shure KSM32 Microphone

The KSM32 is Shure's first entry into the highend studio market. It is a side-address, cardioid condenser microphone that utilizes a Class A, transformerless preamp. This design is intended to drastically reduce crossover distortion while improving linearity across the mic's operating range. For quicker transient response, the KSM32 uses a 2.5-micrometer diaphragm made of gold-layered Mylar®. A 15-dB attenuation switch helps the KSM32 manage high SPLs and — combined with the mic's low self-noise (less than 13 dBA typical) - results in a very wide dynamic range. The KSM32 is equipped with an internal shock mount, three-stage pop filter, and a low-frequency rolloff switch. Two versions of the KSM32 are offered: the studio version KSM32/SL comes with an elastic suspension, carry case, swivel mount, and a protective pouch. For more details, see Roger Nichols's review on page 92, or contact Shure at 800-25-SHURE or visit their Web site at www.shure.com. Circle free lit #149.

Soundscape Mixtreme

Mixtreme is actually the mixer portion of Soundscape's HDR-1 hardware workstation built into a PCI card. Mixtreme has two TDIF ports, allowing connection to TASCAM DA-98, -88, or -38 machines and providing 16 channels of digital I/O. An S/PDIF I/O may be added as an option. Mixtreme supports word clock and super word clock sync I/O, and employs Motorola 56301 DSP processing. For more information, contact Soundscape Digital Technology, Inc. at 805-658-7375 or visit www.soundscape-digital.com. Circle EO free lit. #150.

Steinberg Quadra Fuzz

Quadra Fuzz is a VST plug-in developed by Spectral Design for VST, Wavelab, or Direc-





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tX host software. Quadra Fuzz breaks the audio signal into four frequency spectra, which may then be independently distorted. The width of each band may be adjusted, and by distorting certain bands while leaving others unchanged, very interesting effects may be generated. This very cool plug-in is a software representation of a hardware device originally designed and built by our own Craig Anderton. For more info, contact Steinberg North America at 818-993-4161 or visit their Web site at ww.us.steinberg.net. Circle free lit #151.

Studio Technologies Studio Comm Models 68 and 69

Studios jumping into the realm of 5.1 surround will appreciate this new introduction from Studio Technologies. The 68 and 69 are actually two separate devices that work together to make surround monitoring easier. Model 68 is a single-rack space routing unit containing analog, digital, and power supply electronics. Four analog inputs can be connected, with inputs one and two supporting 6-channel sources. Inputs three and four support stereo sources. For surround remixing sessions, input 1 could be the console output

and input 2 would carry output from the (multitrack) mixdown deck. Sources are selected via the Model 69, a switchbox capable of selecting any of the four inputs for monitoring. Model 69 includes a rotary level control, mute, dim, and monitor select switches as well as LEDs associated with each monitor source. For more information, contact Studio Technologies, Inc. at 847-676-9177 or visit www.

studio-tech.com. Circle EQ free lit. #152.

Synchro Arts VocALign Software

VocaLign is an automatic audio alignment plug-in program for Pro Tools and AudioVision. Intended for use in work-intensive tasks such as dialog synchronization for postproduction, or tightening up background vocal parts, VocaLign automatically aligns and edits one audio signal to match the timing of another audio signal through a simple process of identifying the guide region and then selecting and processing the region that needs to be aligned. For more information, contact

Synchro Arts at 44 (0) 1372-811934 or visit their Web site at www.SynchroArts.co.uk. Circle EQ free lit. #153.

TASCAM DA45-HR DAT Recorder

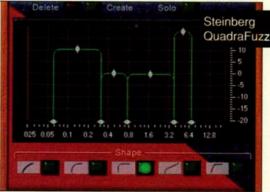
With the bit wars heating up, it was only a matter of time before someone introduced a high-resolution DAT recorder. TASCAM gets the jump on everybody by introducing the DA45-HR, the first DAT recorder with the ability to record 24-bit data on standard DAT tape. Maintaining backward compatibility with existing DAT tapes, the DA45-HR can operate in two modes: standard 16-bit and high-resolution 24-bit mode (44.1- and 48kHz sample rates are supported). In the 24bit mode, a standard 120-minute DAT tape provides 60 minutes of recording and - as you'd expect - two hours in the 16-bit mode. Packaged in a three-space rack chassis, the machine has XLR balanced and RCA unbalanced analog I/Os, AES/EBU and S/PDIF digital I/O, word sync I/O, and a parallel interface. For more information, contact TASCAM at 213-726-0303 or visit their Web site at www.tascam.com. Circle free lit. #154.

ADAT, TOS optical, and MIDI in/out interfaces. For more information, call TC Electronic at 805-373-1828 or visit their Web site at www.tcelectronic.com. Circle EQ free lit. #155.

Xwire X905

To our knowledge, Xwire's X905 is the first commercially available, digital wireless microphone system. Broadcasting in the UHF frequency band, the X905 combines a 20-bit, all-digital audio path with Quadiversity™ reception. Audio from the microphone (or instrument) is converted to a 20-bit data stream without any type of companding circuit and then broadcast with a digital key sequence that identifies transmission to the proper receiver. The X905 receiver continuously scans RF for data containing the key sequence, locking out other RF energy to eliminate interference. To reduce any possibility of dropout or dead spots, the RF section of the receiver operates in Quadiversity, which is actually two diversity UHF receivers with four antennas. A microprocessor compiles the data received and sends it to a 20-bit D/A converter, which in turn feeds analog, balanced XLR, and 1/4-inch connectors. For more in-





TC Electronic M3000 Studio Effects Processor

Based upon their proprietary C.O.R.E (Coefficient Optimized Room Emulation) technology, TC Electronic has introduced the M3000 studio effects processor. Designed as TC's next generation in signal processing, the M3000 is a dual-engine, true-stereo processor featuring 24-bit A/D and D/A with 16- and 20-bit dithering. The M3000 is capable of generating reverb, delay, chorus, flange, tremolo, dynamic EQ, pitch shift, and other effects. Rear-panel interfacing includes gold-plated AES/EBU, S/PDIF, and analog 1/O as well as

formation, contact Xwire Digital Wireless Systems at 916-929-9473 or visit their Web site at www.xwire.com. Circle free lit #156.

Yamaha FSR1 Synthesizer

Yamaha's FSR1 tone generator introduces a new type of synthesis called Formant Shaping Synthesis. A formant is a set of fixed-frequency elements in a sound that give the sound its identity regardless of what pitch is being produced. The FSR1 synthesizes and manipulates these elements of a sound, resulting in tones that are different from those created via other synthesis methods. For more information, contact Yamaha Corpo-

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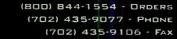
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ration of America at 800-937-7171 or visit www.yamaha.com. Circle EQ free lit. #157.

Yamaha GA32 Console

Yamaha's GA32/12 is a 32-input, 12-bus console intended for sound reinforcement applications. This console (and its 24-channel brother, the GA-24) has an interesting feature that Yamaha calls GA (group/auxiliary) Diversity, which lets user-configure the bus architecture of the board for their particular needs. The GA-32 has 10 mix busses plus a main stereo L/R output. Under "normal" conditions, it operates as a house console with four subgroups and six aux sends. But at the flip of a button, the aux busses may be individually reassigned as group busses,

turning the GA-32 into a 10-mix monitor console. For more information, contact Yamaha Corporation of America at 800-937-7171 or visit www.yamaha.com. Circle EQ free lit. #158.

Yamaha D24 Digital Multitrack Recorder

The D24 from Yamaha is an 8-track digital recorder that stores audio on removable, rewritable, 3.5-inch magneto-optical disks. Up to eight tracks may be recorded simultaneously, each with up to eight virtual tracks (for a total of 64). Sample rate and bit resolution may be set on a song-by-song basis for 96-, 48-, or 44.1-kHz rates, at resolutions of 16-, 20-, or 24-bit word lengths (without data

compression). At 16-bit/44.1 kHz, each 640 MB MO disk can hold 15 minutes X 8 tracks. Audio interfacing for the D24 is provided via four rear-panel slots that accommodate the same YGDAI cards as Yamaha's 01V digital mixing console. Cards that are currently available include the MY8-AD analog input card (eight TRS analog inputs), MY4-DA (four XLR analog outputs plus a headphone out), MY8-AT (ADAT optical I/O), MY8-TD (TDIF I/O), and

the MY8-AE (AES/EBU and S/PDIF digital I/O). For more information, contact Yamaha at 800-932-0001 or visit their Web site at www.yamaha.com. Circle free lit #159.

Honorable Mention: TC Finalizer Express

TC's Finalizer has quickly become a *de facto* standard in studios that need multiband digital compression and limiting. The Finalizer Express is a simplified version of the original Finalizer, and employs the same internal hardware. Multiple knobs on the front of the Finalizer Express allow instant access to adjustable compression parameters such as threshold. For more information, contact TC Electronic at 805-373-1828 or visit www.tc-electronic.com. Circle EQ free lit. #160.

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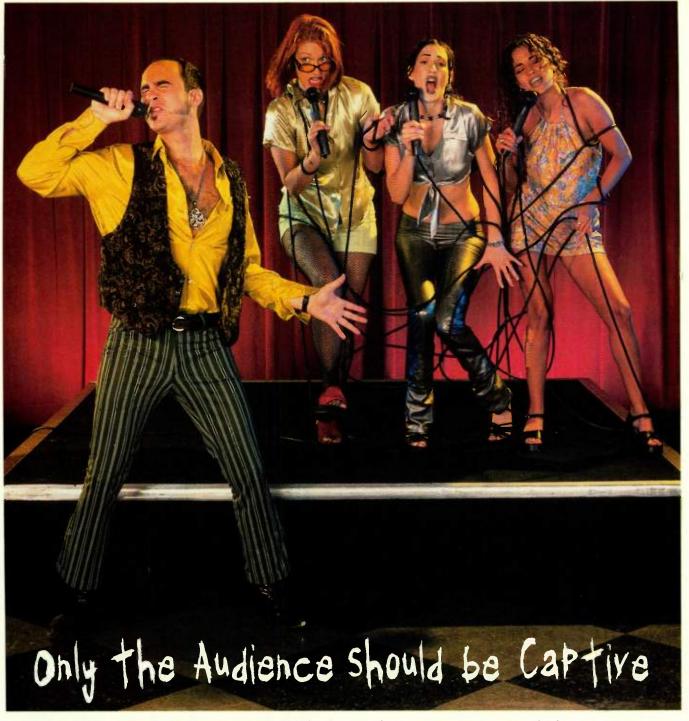
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SUBS SUBS

GETTING THE MOST FROM SUBWOOFERS DURING A LIVE SHOW



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DR. SEUSS'S LOST

MANUSCRIPTS, BUT HOW TO

BEST USE THE SUBWOOFERS

IN A LIVE-MUSIC PA SYSTEM

By Steve La Cerra

When it comes to producing fat bottom end out of a PA system for live music, there's little debate over the usefulness of a subwoofer. Adding the sheer air-moving capabilities of large drivers and cabinetry can produce the visceral impact that helps makes live music exciting. However, the means of routing audio to a subwoofer can vary quite a bit. In visiting many clubs, theaters, and sheds over the past few years, I've noticed two distinct routing schemes for subwoofing — both quite different in terms of connection and operation. Each has distinct advantages and disadvantages, and either routing

plan may be used in fixed or mobile sound systems. Let's take a look.

THE TRADITIONAL APPROACH

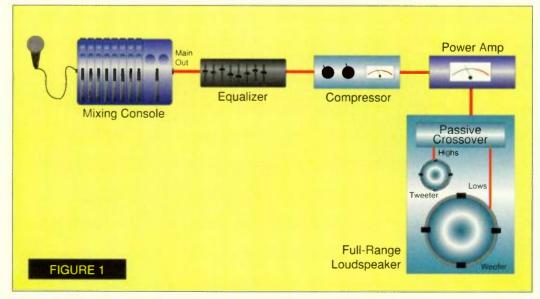
Take a look right now at fig. 1. It shows a block diagram of a very simple PA system that might be used in a small club for live music or DJ applications. (Only one channel is shown for clarity. Obviously, most systems will be stereo.) The main output from a mixing console is patched through a graphic EQ into a compressor and then into a power amp. The power amp is feeding a "full-

range" cabinet, typically housing a single 15-inch low-frequency driver and a 2-inch horn. "Full-range" is put in quotes because — while it may produce fine audio from the low-mids up through the high-frequencies — this type of cabinet is generally not capable of producing low end to make your pant leg shake. Notice that, inside the cabinet, a passive crossover divides audio into lows for the woofer and highs for the tweeter or horn. It's a tried-and-true setup that works for a lot of applications.

That is, it works fine until you develop the need for serious low end — at which point the limitations of the full-range cabinet become quite apparent. So the natural thing to do is to add some kind of a subwoofer to increase power and clarity (while lowering distortion) in the bottom end. To run that subwoofer, you normally need another power amp and an active crossover to divide audio from the console/EQ/compressor chain into the correct ranges for the sub and the "full-range" cabinet. The result is something like the system shown in fig. 2.

The active crossover routes lows to the low amp/subwoofer and sends the higher frequencies to the full-range amp/cabinet. A passive crossover in the full-range cabinet still serves to send highs to the horn and lows to the woofer, but those low frequencies no longer include the lowest of lows (below roughly 120 Hz). Whether or not to place the compressor or the EQ first and where to set the crossover is a discussion for another day. We're concerned with the addition of the active crossover. This is a very common "upgrade" scheme for bands or DJs that find themselves playing to larger audiences in larger rooms.

Now this may sound kinda' silly, but observe something very important (and possibly very obvious) for both of these systems: If you raise the level of a channel fader in the mixing console kick drum for example - that change in signal level will be heard through all of the drivers in the system. In other words, you've made the kick drum proportionally louder in the low-, mid-, and high-frequency range. That proportion depends upon (a) how the manufacturer has built the passive crossover, (b) how you've set the active crossover, and (c) how linear the entire system may or may not be. Besides providing an increase in low end, configuring your PA system in this manner also removes the lowest frequencies from the full-range cabinet, reducing intermodulation distortion and increasing clarity in the mid and high frequencies.





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AUXING THE SUBWOOFER

Now take a look at fig. 3. It's very similar to the system shown in fig. 2, but look carefully at how audio is fed to the subwoofer, and notice the major difference from the system in fig. 2: there's no active crossover. An aux send from the console is patched directly into the subwoofer amp. The stereo bus from the console is still routed to the EO/compressor chain, but this time the output of the comp is sent right into the power amp for the full-range cabs. This is a quick, easy "fix" for increasing low end in a system simply by adding a subwoofer cab and a power amp. When

you want a certain instrument (such as a kick drum) to rock in the bottom end, you turn up the aux send on that chan-

nel and it goes to the sub. The "crossover" in this system is based upon the subwoofer's tendency to naturally roll off high frequencies and the full-range cabinet's tendency to roll off low frequencies.

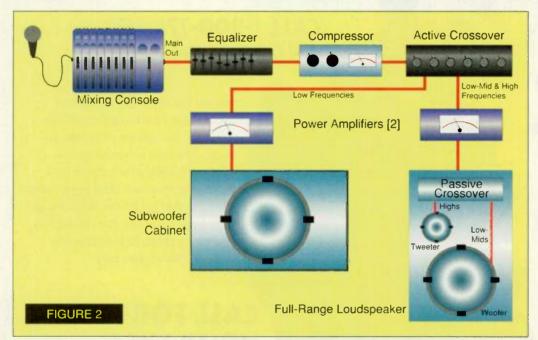
Of course, you don't get something for nothing, so let's look at the whole picture. If you axe the crossover, the full-range amp is going to amplify at least some low frequencies, which the full-range cabinet won't be able to reproduce, so system efficiency is de-

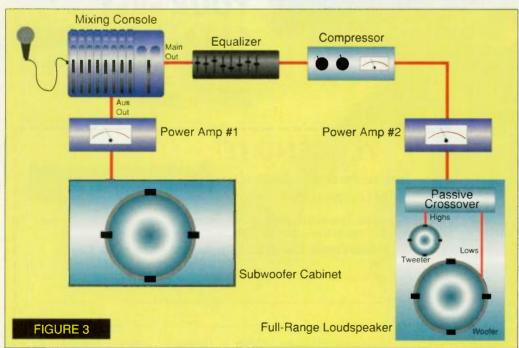
creased. Also, the lower frequencies that do reach the full-range part of the system help give you back the intermodulation distortion and reduce clarity in the mids and highs. By not using a crossover, you lose some of the advantages of a biamped system, but, again, it's a quick cheap fix.

Fig. 4 shows a connection scheme that seems to be more popular among medium-sized (1000 capacity) club systems. It's almost the same as fig. 3, but adds in an active crossover before the full-range amp. In reality, the active crossover now behaves like a simple filter, rolling

off the low end that reaches the fullrange amp (below say, 100 Hz), increasing the efficiency, and again reducing IMD. Another perk is that you can easily insert another separate EQ or compressor on the aux send and process the low end to your heart's content without messing with the main L/R mix. It's also easier to run a mono subwoofer system from an aux, though, quite frankly, any professional-quality active crossover should provide all of these capabilities.

It's not the point of this article to say that either auxing the subwoofer or using the traditional approach is better. The point is that systems wired both ways are in existence, and there are operational differences that you need to be aware of when you work for the first time on a system with an aux send for the subwoofer. First and foremost: You don't get any true bottom end until you turn up the aux send on a channel. When you turn up the fader for the kick





drum, you're going to get a thin, wimpy sound until you bring up the aux on the kick channel. Then you'll need to know whether the subwoofer send is pre- or postfader. If the aux is prefader, you'd better be aware of the fact that when you change the fader level, you are *not* also changing the level of the low end for that channel. If the aux is postfader, then moving the fader will also change the feed to the sub.

SOCIAL AWARENESS IN GROUPS

When a set of drum channels is subgrouped to a pair of audio subgroup busses, interesting things happen in an aux/subwoofer system. Many engineers will assign the drum channels to a pair of stereo *audio* subgroups so that they can make the entire kit louder and lower by moving just two faders — which simplifies mixing. But when you move the groups faders around, the amount of low end on the kick drums and floor toms does *not* change because the aux sends are way before the audio groups.

Fig. 5 is a simplified signal flow drawing of a channel. You can see that the aux out feeding the subwoofer is way upstream at point "A" while the audio subgroup fader is way downstream at point "B." You can actually turn off the subgroups fader but your kick drum will still go to the subwoofer. An interesting effect, but keep this in mind between sets when you want all the channels muted: if you mute only the groups, the subwoofer still gets fed directly from the channel. Likewise, find out if muting the main L/R bus also mutes the aux sends (it doesn't, I checked).

On consoles that have VCA groups masters, you can avoid this problem. Assigning the drum channels to a single VCA master allows you to raise and lower the level of all the channels with a single fader, while maintaining a stereo submix. Recall that a

VCA group fader is really just a remote control for the gain stage on the channel. When you raise

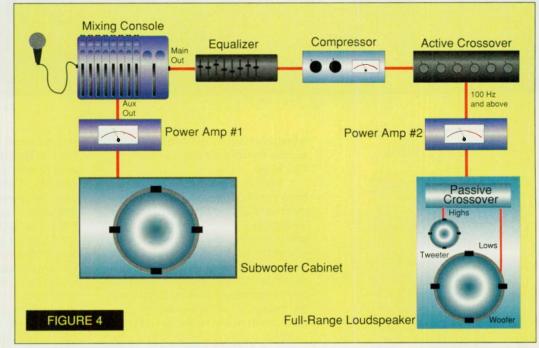
the VCA group fader you are actually turning up the gain of *the channel*. So if the aux send for the subwoofer is *post*-fader, then moving the VCA will change the level of the channels and the subwoofer feed for the drum kit — maintaining that delicate spectral balance you've worked so hard to achieve (for a detailed explanation of VCAs, see Greg Price's article in the July '96 issue of *EQ*).

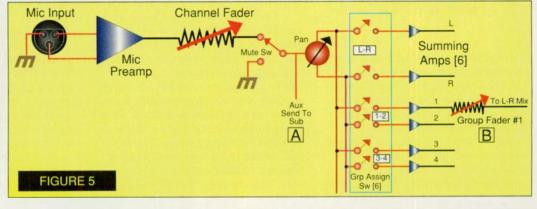
WHY BOTHER?

Having said all that, one of the advantages of auxing the subwoofer is that channels not requiring extreme lows (vocals, for example) don't ever need be turned up in the subwoofer. Keeping all the stage crap (which often leaks into vocal mics) out of the crossover and amplifiers gives you a huge increase in low-end headroom. Think about all of the low-frequency junk that spills into a mic placed on a guitar

cabinet. In many cases, there's no point in amplifying this aspect of the guitar sound because it only muddies up your mix. Take it out of the subs and you clean up the mix. For that purpose, auxing the subwoofer is much more effective than just running a high-pass filter on the guitar channel, and you don't get the phase shift that some filters can cause. Similarly, there's no reason to amplify any low end from a hihat mic, so the subwoofer send on that mic stays turned all the way down (ditto for overheads). Sounds such as kick drum, bass, synths, floor toms, and large rack toms are all candidates for being auxed to the subwoofer. The tambourine microphone is not. Of course, the flip side of this is that you can create some really cool effects by selectively pumping the subwoofer send on a synth or guitar channel - without disturbing the EQ.

Steve La Cerra is currently touring as the front-of-house engineer for Blue Öyster Cult. He does his best not to blow up PA systems.







ROCKIN' IN THE TRENCHES



LLUSTRATION BY MIKE SPERANZA

EQ'S ROVING
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TALE FROM

By Steve La Cerra

THE ROAD

It was as plain as the black-and-white print on the rider: a 32 x 8 desk for front-of-house (and another for monitors), eight compressors, eight gates, and a couple of digital effects. I'm usually not particularly concerned with the effect units because I carry a few of my own. Besides, worrying about effects is probably not wise when the real worrying should be over

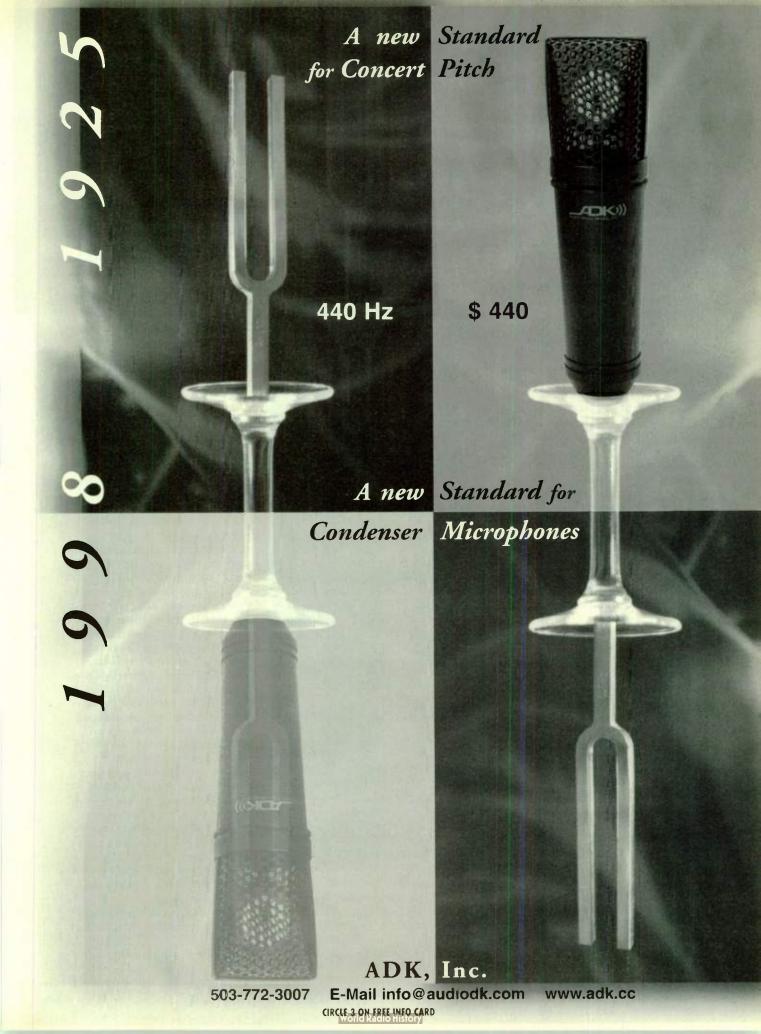
whether or not I can fit every member of Blue Öyster Cult into the PA in the first place.

Keep in mind that we're not carrying production, so I have no idea what kind of gear I'll be getting. When we land at the airport, one of the guitars is missing and, of course, it's not one of the back ups. It's Allen Lanier's main axe. Business as usual. Lucky for us, Alaska Air had the good sense to put the guitar on the next flight into Anchorage, so while we wait for the instrument to arrive, we have a little curbside picnic at the arrival pickup terminal. At least we won't starve.

Oh yeah — about that rider. It must have been sent on one of those faxes with the disappearing ink. We get to the gig just in time for doors (no soundcheck today) and I find that FOH has been setup rather unconventionally. You see, they couldn't (or maybe wouldn't) get us a 32 x 8, so instead we have a 24 x 4 and a 16 x 4. Not bad for a home stereo. The L/R outs of the 16 x 4 have been patched into two channels of the larger console, with the hope that all will be

happy. That's certainly livable, but the fact that we only have six channels of dynamics is much more of a problem. Two of those are already patched between the stereo output and the crossover to the house amps. I'm just as much a fan of compression on the house as the next guy, but let's face it: there are other places I need the control much more than on the stereo bus. Those two get pulled and I begin to think about where I could more effectively patch them.

All of the dynamic units are dbx 166A's, which have a comp and a gratuitous gate built into each of two channels. On paper it looks like I have six gates and six comps, which wouldn't be so bad. But - as many of us already know - the gates can't be separated from the comps. I mull over the quandary of which channels are not going to get compression so that the gates can be patched into the drum channels. It's certainly a compromise, but maybe there's a way to make it work. I decide that I really need two channels of comp for the lead vocals, leaving the other four channels to be



used as gates on the drums. *Ugh*. I hate skimping on vocal compression.

Thinking I can weasel out of this and turn two compressors into five, I decide to group the five vocal mics to two of the subs on the console, and then use two compressors inserted on the subs. Voila! Now I have compression on every vocal. But something is seriously wrong with this picture. I can't seem to get the groups to cross the compression threshold. I set the threshold of the comps way down at -30 dB and even -40 dB, but still no compression kicking in, which is really weird. No time for a crash course on the gain structure of the console versus the comps, so on we go.

The remaining four channels of 166A's are patched into kick, snare, rack 1, and floor tom 1 channels, leaving the rest of the drum channels ungated and teetering on the verge of feedback. I entertain the idea of grouping the toms to a stereo pair and gating the groups, but these consoles are rather old and you cannot directly assign an input channel to the L/R bus. You have to assign the channel to one of the four groups, then assign the group to the L/R bus. Groups 1 and 2 are for vocals, which means that the rest of the instruments must be routed through groups 3 and 4 or they don't get into the PA. So much for trying to group the toms (or the rest of the drums, the guitars, the keyboards, or the bass channels). A bit of EQ'ing in the lower midrange gets the ungated toms under control.

Unfortunately, I don't have compression on the bass, but Danny Miranda is a great player so I know I can get away without it. Since there's no time for a soundcheck, I figure it might be a good idea for me to mix the opener (they don't have an engineer) so that at least I can see if everything works while becoming familiar with the console.

I should have seen the signs. The console is old, beat to hell, and looks like it hasn't been dusted off in about five years (lots of glacier dust). Since it's at an outdoor venue, I thought maybe the breeze might blow some of the crud off the desk, but I was mistaken. The fader surface has that three-dimensional look — you know, where the imprint of someone's fist makes some of the faders higher than the other. Good grief.

The warm up act sounds horrible. It's a battle just to get the vocals loud

enough over the band, but it ain't happening (the guitar player is *very* loud). The console has no PFL meter, so set-

ting input level is an educated guess. At least there's a peak LED on each channel. I raise the channel gain up until I see the peak LED light and then back the gain knob off as a concession to gain structure. It's 8:30 PM, but it's broad daylight in this part of the world, so I can't see the lights on the console meters — which later would give me a very important clue about what was happening. With just the vocals in the PA, I get the mics up, into some sort of coherency, and turn the mix over to a friend of the band who

On paper it looks like have six gates and six comps, which wouldn't be so bad. But the gates can't be separated from the comps. I mull over the quandary of which channels are not going to get compression...

was voted as their mixer for the day.

Once the warm up act's set is over, the crew puts BÖC's gear up and I start a line check. There's a few mispatches, but nothing disastrous. We fix the patches and check all the in-

struments. Buck Dharma's lead vocal sounds kinda funky, so I check the channel gain setting and put the pad on. Then it seems OK. Eric Bloom's lead vocal sounds distorted, so we change the mic and it appears to clear up. Bass, Buck's guitar, Allen's guitar, keys...all the instruments are coming up roses (note that this is done *one* at a time). We roll the intro tune and get the set started.

The band kicks into "Burnin' For You," and it's a sonic meleé. The balance between the band instruments is cool, but somehow the vocals are very weird. I bring up Buck's channel and it sounds like he is singing through a megaphone. Very cool, except that's not the way it is on the record. Where is Buck's silky-smooth lead vocal? Unfortunately for me, it's in the trash can right about now. When the chorus hits, I bring in Eric's and Danny's vocal mics and get more of the megaphone effect. What the heck is going on? I bypass the house EQ. I bypass the vocal comps on the subgroups. I try turning channels on and off to see if the switches are funky. That seems to do something, but the problem remains.

I gently shake the console panel near the faders where one of my predecessors has left his fist mark. Now it's gone, then it's back. I try turning the pads on and off, raising and lowering the gain to see if there's a dead spot on the pot, ditto for the channel fader, group fader, and group on/off switches, bypass the channel EQ, check the subgroup levels, the stereo bus levels, the levels hitting the input of the house EO, exercise all of the main cable connections, and find the same thing all around - they're all fine. This ain't right. What's worse is that the band can see me from the stage and they know I'm in trouble. Having had a totally miserable experience at a recent show in Lynchburg, VA, I do the undoable: I ask the road manager to stop the show. If you ever want to feel the ultimate in embarrassment, sit in the middle of a crowd and try this. May the RIAA have mercy on my soul.

We meet backstage. Surprisingly, I'm remaining calm and not freaking out. If I knew what the problem was, I'd probably freak

out less - even if I couldn't do anything about it. We check cables and inputs and outputs, and find that on one of the house speakers, someone has set the full range/biamp switch to the wrong position. The house engineer feels that this was loading down one of the amps and that it must surely be the problem. My belly hurts and I need a cigarette. I'm sure that there was distortion coming and going on its own, but only in the vocal channels. We change more cables, replace a mic or two, then redo the entire line check. One by one everything checks OK. The band starts to walk back on stage and, lucky for me, begins an instrumental jam as an impromptu soundcheck. Musically, it's cool. The PA sounds clean, I'm running the busses at around -10 (plenty of headroom), and both the crowd and promoter are happy that we're not gonna cancel.

The band starts the second song of the set ("Cities On Flame," appropriately enough) and the same thing happens: the vocals are grossly distorted. I pull the comps out of the subgroups and put them on Eric's and Buck's lead vocal channels, hoping that will help. Nope. We pull the vocals out of groups one and two and swap them with the instruments that were in three and four. Nope. We bring the stereo bus faders down. Nope. We bring the subgroup faders down. Nope. We bring the stereo bus way up and pull the subgroup faders way down. Nope. I'm wondering if I should join my road manager who's just about ready to go fishing at the lake backstage, and try to forget the whole thing. I can't do that. It's just not in my blood to quit. The show continues with the same nasty distortion on the vocals, but at least I've got the vocals loud enough to hear. I'm not happy.

As it approaches 10:15 PM, twilight begins to fall and my glazed, frustrated eyes stare at the meters on the console. Their lamps are flickering. I watch the lamps more carefully and notice that they're getting dim every time a vocal comes in. Then it dawns on me: we don't have enough AC mains supply for the PA gear. I whip out my trusty, dusty VOM and slam two probes into a nearby AC outlet — 115 volts. Not great, but not horrible. When the lead vocal comes back in, the voltage drops to 111. I suggest to the house engineer that we don't have enough juice for the system. He runs to the stage and checks the voltage supply to the amp racks: it's way

down. He also notices that the lights in the bar are dimming with the music and we're not referring to

the new disco lighting they've just purchased. The entire PA, along with the lighting and electrical appliances in the bar, is all on the same AC circuit. No wonder the gear is not happy. It's grossly underfed. There's a voltage drop every time the PA has to produce some muscle. The really sad part about it is that there's nothing that can be done because there's no additional AC service to tap into. Thank heaven we didn't have a light-

ing truss online or we'd have blown the AC service to pieces.

If there's any kind of lesson to be learned from such an unpleasant experience, it's that engineers cannot take anything for granted. Not only do we have to say, "How many of those 32 channels actually work?" but we also have to ask, "Do you have sufficient AC power to run this stuff?" You can put your meter on the AC supply during soundcheck when you take the PA for a spin, but if you use a test CD, make sure that you give the system enough gas to tax the electrical supply. And watch those lamps!





ROAD GEAR



MAGNETIC BODIES

JBL has introduced new maximum output midrange/low frequency loudspeaker components. The 2012H 10-inch and 2020H 12-inch maximumoutput cone midrange transducers for direct radiating and horn-loaded applications are the latest from JBL, incorporating a magnet structure that reduces both second- and third-order distortion characteristics. The flat impedance curve over the entire pass band of the transducer created by this new magnet structure results in constant power delivery to the transducer at all frequencies. The 2012H model has already been employed by JBL in custom midrange horns in its recently introduced Venue Series products and the 2020H model has been used in custom systems for the European market, both in tour systems and stadium installations. For more information. contact IBL Professional, 8500 Balboa Blvd., Northridge, CA, 91329. Tel.: 818-894-8850. Web: www.jblpro.com. Circle free lit. #120.

DAS THE WAY

D.A.S. audio has introduced the DS-15A, a self-powered

cabinet designed for mobile and fixed sound-reinforcement applications. The DS-15A is a biamplified two-way system that is protected against overvoltage, undervoltage, and overloads. The model has heavy-duty components, such as a mix of composite fibers and resins used in the cone construction and the low transducer that uses a high-pressure injection-molded aluminum chassis to avoid magnetic dispersion. The DS-15A uses a fullcompression driver and a constant-directivity horn design and is available in black or white. Versatile in posirethe SR7 tioning, the DS-15A can be ceiling or wall mounted, placed on a tripod for mobile use, or used horizontally as a floor mirror. For addition al information, contact D.A.S. Audio USA, 1 Enterprise Dr., P.O. Box 987, Old

Lyme, CT, 06371. Tel:

860 434-

9190.

Web:www.dasaudio.com. Circle free lit. #121.

STAGE SUCRETS

Pro Co has introduced the new Cough Drop momentary muting switch, a simple microphone signal muting device. This muting switch performs with most balanced or floating low-impedance microphone or signal sources. In any environment where a user needs to temporarily mute microphone output, the Cough Drop is suitable and accessible by connecting into the signal path with standard mic cables and requires no additional cables. The Cough Drop features a silent "no-pop" mechanical switch and works with phantom powered or normal balanced mics. For additional information, contact Pro Co. 135 E. Kalamazoo Ave., Kalamazoo, MI 49007, Tel: 800-253-7360. Web: www.prosound.com. Circle free lit. #122.

WHERE IT'S AT

Panasonic announces three new loudspeakers for their AT series - the AT-200, AT-250, and AT-80. Suitable for any sound reinforcement application, Panasonic's AT series is a fully integrated family of professional loudspeakers. Incorporating Panasonic's SCWG (square contour wave guide) horn design are the AT-200 and the AT-80, the two bass reflex compact systems, Radiating sounds in a circular pattern, the SCWG works to enforce directivity control at specific angles horizontally, vertically, and obliquely. This combination of abilities results in an even distribution of sound pressure in a

wide frequency band. The new AT models vary in size and power output, the AT-200 is a two-way, 12-inch system that delivers 300 watts continuous program, while the AT-80 is a two-way, 8-inch loudspeaker that delivers 160 watts continuous program. Most powerful of the three is the AT-250, deliver-



ing 800 watts continuous program with a frequency response of 30 Hz–500 Hz. For more information, contact Panasonic Pro Audio, 3330 Cahuenga Blvd. West, Los Angeles, CA 9068. Tel: 323-436-3500. Circle free lit. #123.

ON THE ROAD AGAIN...

Earthworks, Inc. has introduced its new tube mic, the SR71, a rugged cardioid condenser intended for live performance. Said to provide studio quality sound from a rugged roadworthy package, the SR71 has both the qualities necessary for studio and on-the-road use. The Earthworks SR71 is available at \$399. For more information, contact Earthworks. P.O. Box 517, Wilton, NH 03086. Tel: 603-654-6427. Web: www.earthwks.com. Circle free lit. #124.

Earthworks SR71



Total Sound
Solution

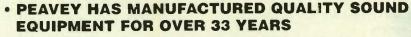
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performance from

microphone to speaker and

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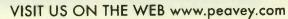
(TSS - System Two Equipment List:)

- Two SP" 2G Enclosures
- Two SP" 118 Subwoofers
- Two SP" 112M Floor Monitors
- · One PV" 2000 Power Amp
- · One PV" 1200 Power Amp
- · One Q" 231 F Equalizer with FLS"
- · One Deltafex* Effects Processor
- Three PVI XLR Microphones
- · One PVM 22 Diamond Microphone
- · One Unity" 2002-12 RQ Mixer
- Two SP" G Pole Stands · Four S2 Mic/Speaker Stands
- Six 25" 16-Gauge S/S Speaker Cables • Four 25" HIP LO Z Cables
- · Eight 20" S/S FMJ Instrument Cables
- · Peavey 10-Space Flight Case

THE SOUND OF EXPERIENCE.

CIRCLE 57 ON FREE INFO CARD









REAMP TAPE RECORDER-TO-INSTRUMENT AMPLIFIER INTERFACE



By CRAIG ANDERTON

One of the cool things about software plug-ins is you can record a track dry, and postpone adding effects until it's mixdown time. Not sure which distortion you want to use on guitar? Just record it straight and use a distortion plug-in (like Steinberg's Red Valve It or Line 6's Amp Farm) after the fact to create the type of sound you want.

In a way, the REAMP is kind of like an "analog hardware plug-in," as it also allows you to postpone processing until late in the recording process. Here's how.

CONTROLS

The REAMP (designed by recording engineer John Cuniberti while working on a project with Joe Satriani) is a small (5" X 3" X 2"), well-constructed box that could probably survive being run over by a truck or dropped from several stories up. You feed a tape or hard-disk track into the +4, balanced, XLR input, and out comes a guitar-level/impedance signal at a 1/4-inch phone output jack, suitable for feeding into a guitar amp. Other controls include an output trim control and a ground lift switch (that, incidentally, doesn't just lift the ground pin, but the shield as well). The box is entirely passive (no power required), and consists primarily of a high-quality transformer (frequency response, 20 Hz – 20 kHz, ±1 dB) with some high-frequency filtering to minimize RFI and other interference.

APPLICATIONS

Suppose you have a session with a guitarist, and can't afford the time to tin-

ker with a variety of amp and distortion sounds. A typical REAMP use would be to record the guitar's direct out to a separate track, in addition to (or maybe even instead of) a "dirty" track created by using a guitar preamp (or miking a standard guitar amp). On mixdown you can then feed the direct track into the REAMP, and experiment with feeding a variety of guitar amps to

get just the sound you want.

Of course, this technique isn't limited to guitar. Musicians are discovering the creative possibilities of running synthesizers, drum machines, and even vocals through amplifiers; REAMP saves you from having to commit to a sound during recording, as you can take a track at any time and "reamp" it. Sure, you could kluge together an attenuator to feed an amp for a lot less, but the REAMP does the job in a high-quality fashion.

Another use is to interface tape tracks with "stomp boxes" designed to accept guitar-level signals only. Feed the track into the box via the REAMP, then send the stomp box out to a console mic pre. Yet another application is to avoid leakage problems when recording a band. If the guitar amp leaks into the drums, send the guitar into a SansAmp-style box hooked into the headphone mix while recording so the guitarist can monitor using a dirty signal, but record the direct

continued on page 159

ROAD

MANUFACTURER: Distributed by Audio Exchange International, 357 Liberty St., Rockland, MA 02370. Tel: 781-982-2626. Web: www.aximarketing.com

APPLICATION: Feed tape tracks to guitar-level amps and effects for studio and live recording.

SUMMARY: Think of REAMP as an insurance policy that allows you to postpone guitar tone decisions until the mix, as well as add creative effects to other instruments, such as drums.

STRENGTHS: Extremely rugged. Fills unique need. Quality transformer and proper ground lift. Trim control allows additional amp overloading.

WEAKNESSES: Not exactly inexpensive. Handles +4 input signals only (no -10).

PRICE: \$299

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CIRCLE 61 ON FREE INFO CARD

Tannoy Reveal Loudspeakers

Tannoy offers a compact, useful monitor at a price that's just right

BY STEVE LA CERRA

The Reveal monitor is Tannoy's latest offering in its line of popular, compact nearfield studio monitors. EQ magazine recently put the Reveals through their paces in the studio on some tracking and mixing sessions.

Housed in an eye-catching gray enclosure with a red front baffle are a 6.5inch low-frequency driver and a 1-inch soft-dome tweeter. On the rear panel are a low-frequency port and a pair of gold-plated, five-way binding posts for connection to a power amplifier.

The Reveal is designed to be vertically positioned. This placement, says Tannoy, allows you to obtain the correct time/phase relationship between the tweeter and woofer.

As you'd expect, connecting the Reveals is simple. We powered them with a Bryston 3B amplifier connected with

heavy-duty, Westlake speaker cable. The monitors were placed atop the console, forming the typical equilateral triangle with the listening position.

These monitors maintain a consistent and solid stereo image across the console's listening position. The Reveals produced a sweet spot that was vertically and horizontally wide enough to accommodate several people in the listening area. We like this because you don't get the feeling that you're locked into one spot to hear what's going on. While we'd describe the sound of the Reveals as small, they were no smaller (or larger) sounding than most monitors of this size.

Audio reproduction through the Reveals is well balanced. There's no hype to their sound. Although you're not going to get huge bottom end from a speaker this size, what you do get is useful and accurate. Under certain circumstances most notably in cases where kick drum, bass, and acoustic guitars are prominent in the mix - the Reveals can sound a bit murky in the lower-mids (this is a characteristic shared by other small monitors). In the upper-mid and high frequencies, however, the Reveals have the ability to differentiate between similar timbres, like tambourine and snare drum, when they are layered together in a mix. We obviously liked this quality.

Top end was very smooth; we never got a feeling of stridency, and the tweeter made long listening sessions relatively fatigue-free. Mixes done on the Reveal were pretty much surprise-free when played on other systems in various environments (e.g., alternate studio monitors, home hi-fi systems, boomboxes, and car audio systems). This is an obvious strength for any monitor used for mixing.

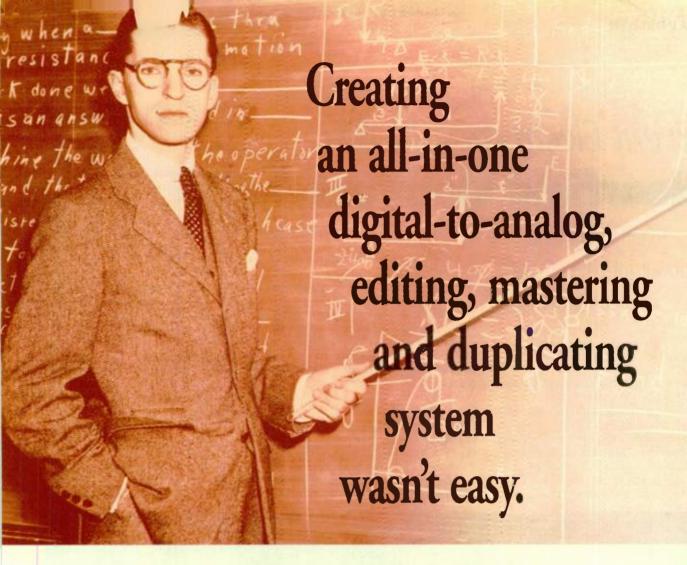
We also powered the Reveals with a Crown D60. Interestingly, we preferred the Reveal/D60 combination at lower levels, because at louder levels the D60 couldn't push enough clean power into the monitors. We felt that Tannoy's power recommendation for the Reveal was accurate for our 12- x 15-foot control room, but don't expect to fill a huge control room with hair-raising SPLs.

Pun intended, the Reveal's biggest strength is its ability to reveal quite a lot of detail. These monitors have depth, letting you hear subtleties in reverbs or low-level instruments in a mix. On one particular recording, a lead vocal had been gated to tape (big mistake), and the Reveal let us hear tape hiss on the track poke through whenever the gate opened. Clearly, this is a strength, but it sometimes allows the Reveal to "dismantle" a mix - which could be distracting. It is this same quality, however, that also makes the Reveal appropriate for tracking sessions, because you'll hear a great deal of what's actually going to tape.

Overall, Tannoy has produced a very useful monitor that sounds good, is easy to listen to for long sessions, and translates well to other systems. While we wouldn't recommend them for situations where high volume or dance

continued on page 134





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Event Electronics 20/20p

Nearfield Monitors

Event puts some power into their 20/20 monitor series

BY BOBBY OWSINSKI

I like surprises, especially when they're good (doesn't everyone?). And I recently got two pretty nice surprises when auditioning the new Event 20/20p monitors. The first surprise came immediately upon opening the box. The initial 20/20p that I pulled out had only binding posts for speaker inputs, leading me to believe that I'd be breaking out the old Phase Linear

power amp in order to power these babies up for a listen.

Much to my surprise, however, I soon found that the 20/20p's are indeed powered, because when I opened the second box and looked on the back of that monitor, I found all the appropriate inputs, outputs, trims, and sensitivity controls common to a pair of powered monitors. The first monitor was a satellite, enabling the old Phase to remain in retirement

If, like me, you're a bit confused about what monitor models Event offers, here's the breakdown. The 20/20p (the model auditioned here) is one of three similar Event systems presently available that utilize the same enclosure and drivers, but have slightly different electronics. The standard 20/20 model is an un-

powered, passive two-way; the 20/20p is powered, but utilizes a single amp per speaker with a passive crossover; and the 20/20bas is the high-end biamped unit.

PERSONAL INVESTIGATIONS

The 20/20p is a shielded, two-way system containing an 8-inch polypropylene cone woofer and a 1-inch silk-domed, Ferrofluid-cooled tweeter that is crossed over at 2.2 kHz. One of the units contains the amplifiers - 100 watts RMS each - for both cabinets. This amplifier module contains input connectors for both channels that accept both balanced or unbalanced sources using a combo XLR/1/4inch TRS jack and some welcome adjustments for each amp, including input sensitivity (with a 20-dB range), and Low- and High-Frequency Trims. The Trim controls allow for a fair amount of adjustment, with the LF providing 3 dB of boost/cut at 100 Hz, while the HF gives 3 dB of boost/cut above 2.3 kHz. Both controls are calibrated in dB increments, but are continuously variable.

On the front of the powered monitor, just below the woofer, there's a combination Power On/Clip LED indicator that



glows green when powered and flashes when overloaded. I never did get the system to clip, and the levels were still pretty darn loud. I didn't see a sensitivity spec for the 20/20p with regards to output sound pressure level, but the manual lists the unpowered 20/20's as rated at 88 dB @ 1 watt/1 meter, which is moderately efficient.

The cabinet measures at 10-1/4 W x 14-3/4 H x 11-3/4 D (inches) and is made from 5/8-inch, vinyl-laminated, lock-mitered MDF. The powered main cabinet weighs in at 33 lbs., while the passive satellite is 22 lbs. The manual is a little sparse, but does cover all the necessities with sections on unpacking, setup, interfacing, care and maintenance, and specifications. Event even thoughtfully includes a speaker cable for connecting the satellite with the powered unit.

The 20/20p system features a lot of safeguards: output current limiting, overtemperature protection, turn on/off transient protection, a –3 dB, 30-Hz subsonic filter and resettable mains breaker. The powered unit also can be factory set for either 120- or 240-volt operation, and features a standard detachable IEC-type line cord.

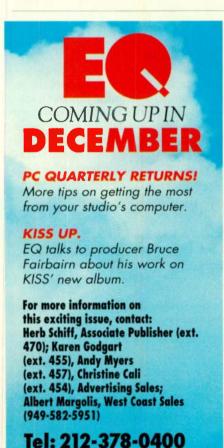
After listening to a number of recordings, I initially felt that the 20/20p's were a little strident in the upper midrange and didn't quite have the low end that I was used to hearing on my standard reference monitors. Adjusting the LF and HF trim controls on the rear of the powered monitor mostly, but not entirely, solved this first impression. While the adjustments helped the low end somewhat, they still didn't generate the response I was used to. Still, though, the response was still very good for a monitor in this price range (more on that later). In fairness, anything better also cost at least three times as much.

When I backed the high end off a dB and a half, a lot of the upper midrange that bothered me disappeared. I then forgot about it and went happily on my recording way until I was reminded later that the upper midrange was still a bit different from what I was used to. This was made evident when I brought up my normal writing samples and the snare sounded so different that it took me a couple of minutes to figure out that it wasn't the sample that had changed. What I was hearing was a different upper midrange character of

the monitors. After the initial adjustment period, though, I basically forgot about them and went to work, which I think is a great compliment in that it says that the monitors didn't get in the way.

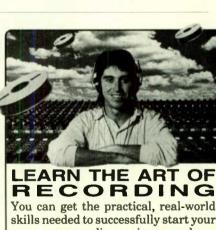
The 20/20p's have the unique quality of telling you exactly when your mix is balanced right, especially in the bottom end. In playing back some mixes that I knew I'd missed, it was always very obvious. It was just as obvious when I got it right, too.

So what's the second surprise? I'd written the majority of this audition thinking that these monitors were in the \$800-\$900 price range, and while the 20/20p's acquitted themselves nicely for that range, I was floored to find that their suggested retail price is only \$599! This is a great value for the studio that requires reasonably high quality at a modest price. While they don't sound like monitors costing three or four times as much (nor do any \$599 monitors!), they weren't that far away either. I don't know what the other models in the Event 20/20 line sound like, but if they're anything like the 20/20p's, then you certainly get a lot of bang for the buck.



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CIRCLE 71 ON FREE INFO CARD

Fostex FD-4 Digital Multitracker



BY EDDIE CILETTI

multitrack recorder

If my Web camera were online right now, you'd see one very fried geek. Why? 'Cause I've been up till 4 AM two nights in a row recording my latest hit, "Get a Life." This is what happens when I review gear that requires "content." If you've never owned a personal cassette multitrack, skip that path altogether and buy the Fostex FD-4 digital multitracker. As a writing tool, the FD-4 delivers amazing sonics for less than a third of the price of the best analog cassette system.

The FD-4 delivered above and

price) by overcoming one obstacle that has long plagued anyone who's ever bounced tracks. Fostex removes

process.)

can also be included in the back-up

MANUFACTURER: Fostex Corporation of America, 15431 Blackburn Avenue, Norwalk, CA 90650. Tel: 562-921-1112. Web: www.fostex.com.

APPLICATION: Personal digital multitrack recorder/mixer.

SUMMARY: Four tracks, two sends, and two stereo returns. The DB-25 SCSI-II port supports various media. Review unit tested with SyQuest ezFlyer 230 MB removable media.

STRENGTHS: MIDI I/O; two auxiliary tracks for bounces; digital patchbay; optical S/PDIF port; two XLR mic preamps.

WEAKNESSES: Access to pitch could be more conventional (see text); manual would be even more effective by also being available as an HTML document and supplied on a CD-ROM.

PRICE: \$599 (w/out drive; optional internal 2.5 IDE drive factory installed). SyQuest ezFlyer drive available for \$149.95 through dealers with one cartridge (\$30); 10 cartridges for

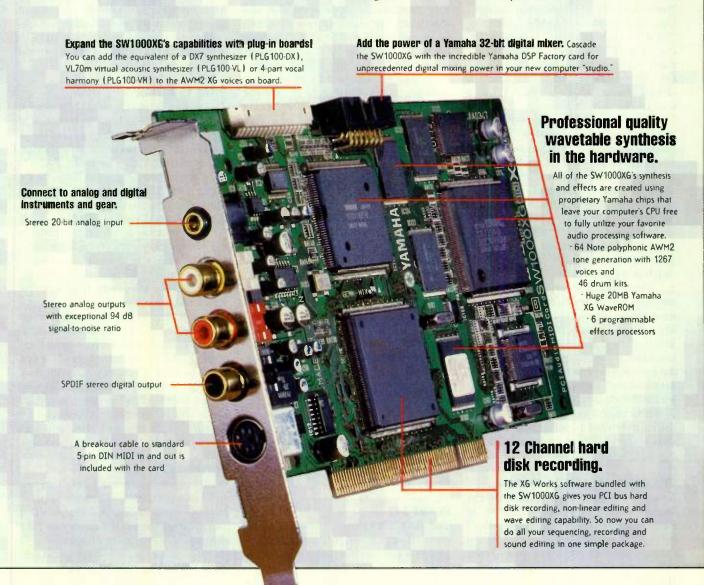
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For more information about the SW1000XG visit www.yamaha.com

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Track	TABLE ONE: Step one	THE SIX STEPS Step two	OF PRODU	CTION FOR Step four	"GET A LIFE." Step five	Step Six
1	Drums	Bounce 1 L	Mono Bounce	Mono Bounce	Mono Bounce	Mono Bounce
2	Bass	Bounce 1 R	Lead vox 1	Vocal comp	Vocal comp	Vocal comp
3	Guitar 1a	Guitar 2a	Lead vox 2	Bkg vox 1a	Bkg vox 2a	Bkg comp1
4	Guitar 1b	Guitar 2b	Lead vox 3	Bkg vox 1b	Bkg vox 2b	Bkg comp2
5	Bounce 1 L	Mono Bounce*	Vocal comp	Bkg 1 comp‡	Bkg 1 comp	bkg compz
6	Bounce 1 R			ong i compt	Bkg 2 comp	

^{*} Indicates detour to workstation for format conversion.

MODE EARN

The FD-4 has three recording modes: Normal (DAC), Mastering Mode-1 (16-bit), and Mastering Mode-2 (16-bit). ("DAC" stands for Digital Acoustic Coding, a data compression algorithm.) Both Normal (32 kHz) and Mode-1 (44.1 kHz) allow four real tracks and two virtual tracks. Mode-2 (44.1 kHz) is four tracks only.

The "luxury" afforded by the FD-4 is its ability to take advantage of various recording media. Almost any SCSI-II device is fair game, from the traditional external hard disk to removable media, including Zip™ (33-min./17-min., recording time at 32 kHz/44.1 kHz sample rates), ezFlyer™ (78-min./42-min.) and Magneto-Optical (MO) drives. As a factory-installed option, an internal hard IDE drive makes the FD-4 that much more portable.

The manual is very thorough, and includes an addendum on how each mode affects the total available recording time and media performance. In a nutshell, DAC mode will run on slower media such as the Zip drive because the data compression and lower sample rate reduce the throughput requirements. Mode-1 is the most demanding (6 tracks at 44.1 kHz) while Mode-2 reduces overhead by dropping the two virtual tracks. There's a lot of technology in this box!

SY'S QUEST: HOW I WON THE WAR

A song was taking shape in my head at the same time I was doing a favor for Kasim Sulton (Todd Rundgren, Meatloaf) — the multitalented, multitasking manipulator of the bass and treble clefs. I enlisted his services to create a rhythm track after laying out the changes on an analog stereo cassette deck. Two days later, Kasim returned with the FD-4, a smile, and four tracks: stereo drums, guitars, and bass on tracks I and 2, plus two individual gui-

tars on tracks 3 and 4.

Kasim recorded in the default 32 kHz DAC mode. I dumped the raw tracks into my Soundscape workstation — to convert up to 44.1 kHz — locking via MIDI timecode (MTC). The tracks were then backed up to DAT and the drive was reformatted to 44.1 kHz. It took under six minutes to format the 230-MB SyQuest media, after which there were 43 available "track" minutes. (Divided by four tracks, that's 10.75 "song" minutes.)

After sample-rate conversion, I made some arrangement changes, then digitally dumped a mono mix from Soundscape to the FD-4, locking via MTC. Sure, a workstation precludes the need for a "personal and portable" system, but, at the very least, interfacing the two was a valid test of the FD-4's functionality. In addition, a "clipboard" feature allows the user to paste a bounce later in time after the original recording (rather than via the traditional method).

Table 1 shows the six steps of production for "Get a Life." By step three, the lead vocals had been recorded on the real tracks, then compiled and bounced to a virtual track. The same applies to the background vocals, although the first comp was stored in the virtual domain to keep two open tracks for the second set of backgrounds. Then both comps were exchanged with tracks three and four.

IN AND OUT

The FD-4 has a generous supply of I/O ports. There are two mono effects sends and two stereo effects returns (somebody at Fostex was thinking). There are separate mix and monitor outputs (for overdubs) and a monitor switch to select between the two, or a combination of both. The 3-band equalizer has fixed bass and treble frequencies plus mid sweep. (ART's Tube EQ would be a per-

fect complement to the FD-4.)

I was very surprised to see a pair of XLRs for microphones (channels 3 and 4) on the back panel. All four inputs appear as 1/4-inch jacks on the front panel. Using them bypasses the balanced microphone circuit.

INTER RE-ACTION

The Fostex FD-4 is incredibly powerful and the manual is both generous and generally helpful. Managing all of those details, though, becomes a challenge. The recurring theme on many pages is the phrase "refer to page xx for more information." This information would be more effectively delivered as linked hypertext (HTML) via CD-ROM.

The Display is where most of the user feedback occurs, including metering and access to default parameters. There are plenty of user tweaks that require help from the manual the first few times, but the system eventually reveals itself and you can pretty much figure out the rest. The FD-4 does feel like a \$500 recording studio-in-a-box - most noticeably the scrub wheel needs a felt shim to keep it running smooth. As a control surface, I wouldn't mind seeing larger buttons and a more standard pitch control knob combined with an in/out switch. Beyond that, you just can't knock the power in this package.

OUTTA HERE

Well, I can honestly say I didn't expect to have this much fun! Thanks to trick-le-down technology, the Fostex FD-4 can greatly increase the quality and the dimension of your art with minuscule damage to the wallet. I say good riddance to analog cassette decks!

Eddie Ciletti moonlights as Italian heavy-mental crooner, Fred Zeppole. Visit his online cave at www.tangible-technology.com for the RealAudio portion of this review.



Before you buy software for your DSP Factory, check to make sure it supports all of the amazing features of this powerful card. MxTrax supports all of the features including:

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- -REALTIME DELAY on 24 input channels*
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- -REALTIME ATTENUATORS on 24 input channels*
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(48 input channels with 2 cards;

Plus these great Mx Trax features:

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Copy Time Insure Tune Fode Crossfade Nondestructive Waveform Editing Snap Nodge Group/Ungroup Split Move to Back Gain Change Normalize Move in Time Markers Zoom In/Out Independent Vertical Sizing of Each Track Scroll Left/Right Add/Insert/Delete Tracks Group Cut Group Copy Group Poste Group Delete Group Fade Group Crossfade Group Trim **Group Split** Group Gain Change Group Normalize Group Move in Time Play from Beginning Play Selection Play from Cursor Play to In Point Play to Out Point Jump to Splice Point Jump to In Point Jump to Out Point

Josep to Marker Zoom In by 2 Zoom Out by 2

Zoom to Sample Level

Scale in Real Time

Autorewind on Stop

Zoom to Full Recording Rescale waveform

Scale in Beats per Minute

Copy

Paste

Update: Steinberg ReBirth 2.0



Steinberg makes a significant upgrade to their venerable program — is it worth it?

BY CRAIG ANDERTON

ReBirth 1.0 (for Windows or Mac), which emulated a Roland TR-808 drum machine and a pair of Roland TB-303 "bass line" boxes in software, has been ideal for the techno-oriented musician. With an interface that simply duplicated the original hardware's front panels, ReBirth 1.0 was not only fun, but reproduced a coveted sound with uncanny accuracy.

Version 2.0 turns ReBirth from a "cool toy" into a serious production tool. Compared to 1.0, the main differences are more sound options, MIDI remote

control for "live" use, and Cubase VST integration.

MORE BETTER

An excellent-sounding TR-909 emulation joins the original modules (fig. 1). Other enhancements include new patterns for the Pattern-Controlled Filter (added in version 1.5), which produces effects like a cross between a sample-and-hold and an envelope follower, along with a compressor module (it doesn't exactly knock me out, but it's functional). For hip-hop fans, there's a shuffle option with variable shuffle amount. This greatly helps humanize drum patterns, and can be applied selectively to any or all modules.

Even better, ReBirth now supports "mods" — extensions to ReBirth that substitute alternate drum or other sounds (these live in host RAM, so you can't really go too nuts with sample length), and change the graphic interface (although control functions remain the same). For example, fig. 2 shows Fredrik Hägglund's "Pitch Black" mod; the program comes

with three other mods, and more are downloadable. Check the Steinberg Web site (www.us.steinberg.com) for more information, as well as their link to the Web site for Propellerheads, who designed Re-Birth. Industrious types can create their own mods, using tools included with the program.

MIDI

Since version 1.5, front-panel controls and switches can be MIDI-controlled via continuous controller and note-on messages, respectively. Latency is an issue, but, with Windows, a DirectX driver makes a huge improvement — with my 200 MHz Pentium machine, the standard drivers required a 250 ms delay to avoid buffer underruns, while DirectX cut that down to 40 ms. Lesser delays translate to more responsive controls.

There are also two settings that can optimize ReBirth's performance. First, go to Edit > Preferences and decrease the buffer size as low as possible, consistent with the audio not breaking up. This allocates the minimum amount of computer resources needed to run ReBirth properly.

Second, to tweak ReBirth with Cubase, check ReBirth's Adjust Sync parameter (just below the Buffer Size parameter). To set the correct number, set up Cubase to play a consistent click, then program ReBirth to generate a closed hihat at the same rate. Next, try different Adjust Sync values until the Cubase clicks and ReBirth hihats hit at the same time. This adjustment will be different for every system, given the large number of possible configurations.

MIDI control takes ReBirth to an entirely different level. What Version 1.0 always lacked was the "hands-on" feel of using the real thing; you could overdub one change at a time with a mouse in Song mode, but that was tedious. Version 2.0 lets you reclaim some of the fun of live performance by interfacing with a device like the Peavey PC1600 fader box, which lets you grab faders and pushbuttons. As with the original version, you can also record all these changes by switching over to Song mode, and "render" the audio to hard disk if desired. The "Phat Boy" from Keyfax is also great for this application, as continued on page 131



EMU ALUI PALLUA SULLI put power in your tower

EMU's Audio Production Studio (APS)

is nothing you'd expect from a "sound card" and everything you'd expect from an EMU product – a professional-quality audio system for your Windows 95 or Windows 98 based PC.

IT'S A POWERFUL SAMPLER

While other "sound cards" are based on game cards, the APS was designed as a professional-quality, 64-voice musical instrument. Use up to 32MB of your computer's RAM to record your own sounds or play the hundreds of included SoundFont samples – including original Proteus sounds.

IT'S A POWERFUL HARD DISK RECORDING SYSTEM

Other sound cards only let you record multitrack digital audio — we do that, but we're also a multichannel sampler and an effects processor. Mix multiple analog (with 1/4" balanced I/O) and digital sources, at the same time.

IT'S A POWERFUL DIGITAL EFFECTS PROCESSOR

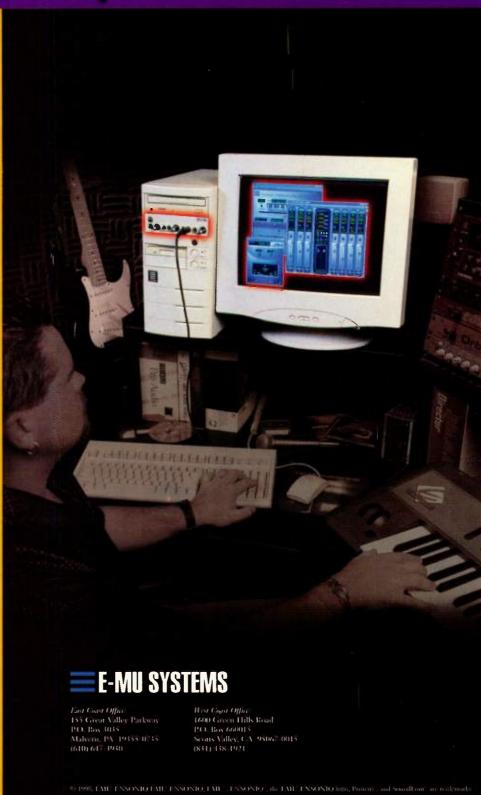
When other cards claim to replace "rack-mount" effects, all you get is a reverb, with just a few controls. The APS's reverb is a full-featured effect with diffusion, hi and lo cut, early reflection and more. The APS effects include Reverb, Chorus, Flanger, Distortion, Echo, Auto-wah, Pitch Shifter, and Compressor. In fact, each of the 8 real-time effects and EQs could stand alone as true studio-quality devices – plus, you can use all of the effects at the same time!

IT'S A POWERFUL, COMPLETE, COMPATIBLE AND AFFORDABLE SYSTEM

The APS hardware consists of the E-Card (a Windows 95 PCI card, with analog and digital I/O), the E-Drive (a drive bay replacement with microphone/line inputs and additional digital I/O), MIDI bracket, and connecting cables, plus all of the basic software you'll need to sample, record, and process MIDI and audio. And, of course, the APS is compatible with most professional Audio/MIDI and multimedia software. Enjoy the Audio Production Studio's professional features and remarkable sound quality at the astounding price of only \$699. See your dealer today!

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THIRD-PARTY BRINGS POWER TO ALESIS ADAT USERS



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MULTITRACK MOTIVATOR

Seven years ago, the product that sparked the project studio revolution was introduced.

any products have changed the music industry, but only a handful have revolutionized it — and ADAT is one such product. Just before it came out, I remember talking to various Alesis employees who were, understandably, extremely excited about their upcoming product introduction. But I had the feeling that even they didn't fully understand what kind of a tiger they had by the tail. They weren't

just introducing a new product; they were creating a new industry — the digital project recording studio.

ADAT drew the dividing line between "home studios," which were good enough for demos, and "project studios," which could produce master-quality hit records, soundtracks, and commercials. Despite some major birthing pains, it became obvious within a few months after ADAT's introduction that it would truly change the face of recording.

But ADAT affected more

than the lives of individual musicians: it provided a shot in the arm for an industry that had been coasting since the mid'80s, when, in quick succession, MIDI, sampling, music software, and FM synthesis appeared. ADAT's superior specs compared to budget analog gear caused people to upgrade their mixers, mics, monitors, cables — you name it. Some would argue that much of the success of companies like Mackie was tied to the rise of ADAT. Certainly, the timing for EQ was fortuitous: the fledgling magazine

dedicated itself to the project studio, and became one of the success stories of the music publishing industry.

Perhaps even more far-reaching than ADAT itself was the introduction of the ADAT Optical Interface, a fiberoptic-based link for exchanging data among ADATs. No one knew at the time that this interface would become the de facto standard digital audio multichannel interface for the



The ADAT continues to be a trend setter in the project studio world — and beyond.

'90s, and probably beyond.

Alesis's openness in making the specification available, and encouraging the participation of third-party developers, was crucial to its near-universal adoption. Studios that don't even have ADAT depend on the optical interface it spawned to transfer data from hard-disk recorders to digital mixers, from tape to computer, from synthesizer to digital recorder, or

even from computer to computer. Fortunately, the interface was designed to accommodate 24-bit transfers, so as the world moves toward 24 bits, the interface remains relevant.

ADAT's ubiquity also has turned it into the "coin of the realm" for digital audio projects. I'm not the only person who has tracked sessions on ADAT, then transferred the data over to a hard-disk system at home for editing.

With ADATs now available for under \$1500, they're inexpensive enough to be treated as a peripheral for hard-disk systems that allows compatibility with the 100,000+ ADATs in service worldwide.

Of course, ever since ADAT was introduced, some have sounded its death knell, saying that affordable hard-disk recording would spell the end of digital tape. But it just didn't happen that way. Without a universal standard for file transfer, hard-disk systems — while extraordinarily

powerful — tend to live in their own world. ADAT is so commonplace, and so easy to use, that it provides a universality hard disks can't provide. And, at least for now, digital tape remains by far the least expensive way to archive digital audio; the ability to make bit-for-bit "clone" (continued on page 24)

EQ columnist Craig Anderton is the author of *Home Recording for Musicians* and *Multieffects for Musicians*, and is a popular lecturer.



ALESIS ADAT: THE FORMAT THAT STARTED A REVOLUTION

A look at the past, present, and future of the ground-breaking digital multitrack recorder.

et into your time machine and set the controls for "minus 10 years." You step out into the world of 1988. George Bush has just been elected President, Bon Jovi is playing on the radio, big hair

ity and affordability of available gear.

Three years later, in 1991, the first ADAT rolled off the assembly line at Alesis, and — almost overnight — the world of recording would change

that this interface uses a fiberoptic cable that actually emits a bright red glow on the output side, people quickly dubbed it the "Lightpipe," and the name stuck, ADAT Optical is an advanced

communications protocol that sends eight channels of digital audio simultaneously, at up to 24 bits of resolution, and was originally developed as a method of sending audio between multiple ADATs in a system.



Latest Rage: The Alesis M20 20-Bit ADAT.

is still relatively in fashion, and there's not a nose ring in sight.

While you're in the late '80s, visit a place where music gets recorded and you'll notice another big difference between then and now: the project studio has yet to be invented. Sure, there are home studios where people compose music and record demos, and there are plenty of high-end commercial facilities. But the project studio, an environment that offers the level of audio quality needed for professional recording but is designed mostly for the owner's personal use, was a concept that was limited by both the qual-

drastically. By 1993, ADAT had become a de facto standard at every level of recording studio around the world. As the ADAT format grew more and more popular, people expressed their desire to form a digital interconnect to equipment beyond their recording systems. Other manufacturers were happy to oblige, and the result was the birth of The ADAT Group — Alesis's family of third-party developers.

ADAT OPTICAL...LET THE LIGHTPIPE SHINE

The primary factor that allows other equipment to form a direct digital connection with ADAT is Alesis's proprietary ADAT MultiChannel Optical Digital Interface. Because of the fact

Not surprisingly, Alesis was the first manufacturer to realize that the Light-pipe had more potential than that for which it was designed. As early as 1994, they started using the ADAT Optical interface on some of their more advanced synthesizers, signal processors, and interface boxes. But it wasn't long before other innovative manufacturers understood the possibilities of using the ADAT Optical interface as their standard digital interconnection for other equipment such as digital mixers, processors, synths, hardware interfaces, computer peripherals, editing tools, and more.

At this point in history, over 300 companies are making gear that implements the Lightpipe, and you can

find dozens of currently available products that connect to ADAT via this unique and powerful interface.

Craig Anderton on the ADAT Optical interface, *EQ* Magazine, April 1998, wrote: "Stereo digital audio is fine for

consumers, but for pro audio, you need channels and lots of 'em. ADAT's optical interface has turned into a de facto standard for digital audio transfer..."

ADAT SYNC...LOCK 'EM UP

Much like the ADAT Optical protocol, ADAT Sync was specifically designed to lock multiple ADATs together, with perfect single-sample accuracy. ADAT Sync is much more precise than other synchronization formats. Think about it: an ADAT running at 48 kHz sample rate is checking its sync every 1/48,000th of a second — a drastic improvement over other popular protocols like MIDI timecode and SMPTE/EBU.

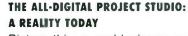
Today, there are devices that allow for conversion between ADAT Sync and nearly every other synchronization protocol, allowing you to precisely lock ADAT systems to analog recorders, MIDI sequencers, and film/video recording and editing equipment.

ADAT: THE FORMAT THAT KEEPS GETTING BETTER

In addition to the advancements brought on by the use of the ADAT Optical and ADAT Sync interfaces in a wide variety of equipment, the ADAT itself has grown considerably more powerful as the years have passed. Recently, ADAT took a giant step forward with the introduction of ADAT Type II,

The XT20 features ADAT Type II technology.

a technology built into the newest generation of ADAT recorders like Alesis's LX20, XT20, and M20 machines, as well as Studer's V-Eight recorder. ADAT Type II upped the ante of professional modular multitrack recording



Picture this: a world where you can digitally connect a synthesizer into a digital console, send your signal through to digital recorders at high-bit



to the 20-bit level, which captures 16 times the audio data that the older 16bit machines could handle. All ADAT Type II recorders are compatible with older machines — they will recognize and work with tapes that are formatted at 16 bits, and can be combined in a system with 16-bit machines. The resulting increase in audio fidelity, expanded dynamic range, and decrease in low-level distortion is remarkable. Plus, ADAT Type II recorders are ideal for the newest applications in audio recording such as 5.1 discrete channel surround sound. Also, many tools offered by ADAT Group developers are compatible with this new generation of ADAT, so you can continue to take advantage of their products in the highresolution world of the 21st century.

resolution, send it into a computer and perform the magic of nonlinear digital editing, and send it back to the recorder while synchronizing it to virtual MIDI tracks. Stop dreaming, because that day has arrived. The most amazing part is that this can be done affordably within a studio in your quest bedroom. So if you're searching for the recording format that will take you into the future of audio production, there's a choice that's withstood the test of time and continues to provide everything you need for professional audio recording. Call it revolutionary, call it Alesis Digital Audio Technology, or just look at the nameplate of well over 100,000 recorders in use around the world and just say ADAT.



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BASF FORMATTED ADAT MASTER

ADAT users save time, money, and head wear with BASF's formatted ADAT master.

eave it to the company that invented recording tape to come up with what ADAT users around the world are hailing as a real "no-brainer." Although ADAT has been universally acclaimed by users as the coolest way to make master-quality digital recordings in any

home or project studio, the one sticking point was the need to format each tape in real time before recording. Now, you never need to wait again to get right to the music.

EMTEC Pro Media is the U.S. sales arm of tape pioneer EMTEC Magnetics that recently introduced the BASF Formatted ADAT Master to the ADAT market. "The Formatted ADAT Master will not only save time and money in the studio," says

Jean Tardibuono, EMTEC's Vice President of Sales & Marketing for Audio and Broadcast, "it will also be a creative boost for artists and engineers who will be able to record whenever inspiration hits."

The BASF Formatted Master eliminates the time-consuming process of formatting ADAT masters before

recording, allowing artists and engineers to go immediately to tape. With over 100,000 ADAT systems in use worldwide, BASF estimates that using a formatted master can save about 1 million hours of studio time per year. The life of ADAT recorder heads will

also be significantly extended by eliminating the "drum-on" hours required by real-time formatting for those who purchase the Formatted ADAT Master.

EMTEC is also collaborating with Alesis Corporation to produce an instructional video, Care & Feeding of Your ADAT. The video demonstrates basic cleaning and maintenance procedures for ADAT recorders, emphasizing the importance of using

the highest-quality ADAT tapes for best recorder performance and longevity. It will be available from EMTEC Pro Media and Alesis early in 1999.

"We're very pleased by BASF's strong support of the ADAT recording format," says Jim Mack, Vice President of Sales and Marketing for Alesis Corporation. "Both the Formatted ADAT Master and the Care & Feeding video really speak to the needs of the ADAT user. BASF has long been regarded as one of the leading media manufacturers for professional recording applications, and their commitment to projects such as these shows their confidence in ADAT's long-term viability as the world's most popular professional recording format."

The new Formatted ADAT Master is available in 40- and 60-minute lengths, and is compatible with all ADAT 16-bit recorders. EMTEC is already in development of the 20-bit BASF Formatted ADAT Master, to be available the first quarter of 1999.

EMTEC also offers an unformatted ADAT Master with significantly better performance than other leading brands due to its specially designed tape formulation developed for digital audio recording, armor-like ABS shell, which eliminates dropouts caused by dust or dirt, and convenient sliding erase lock tab.

EMTEC manufactures and markets a full range of professional audio recording tapes that deliver the highest quality and lowest error rates of any brand on the market. A free product catalog and dealer listing is available by calling toll free 1-888-295-5551 ext. 14 or referring to the EMTEC Web site at www.emtec-usa.com/.

Contact: BASF/EMTEC Pro Media, 25050 Ave. Kearny, Ste. 203, Valencia, CA 91355. Tel: 888-295-5551 ext. 14. Web: www.emtec-usa.com.



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MIDIMAN PIPELINE AND SAM

Get the most from your multitrack with these ADAT enhancers.

ince the company's founding 1988, MIDI-MAN has built a formidable reputation in the music industry for developing high-value music hardware products. Widely regarded as one of the premier developers of MIDI interfaces and MIDI synchronization products, MIDIMAN has anticipated the trends and growing customer needs in

tomer needs in the digital audio marketplace and has subsequently released a growing line of professional quality digital audio products. Once again, these products are distinguished for their quality, ease of use, and tremendous value. Products such as the DMAN 2044 digital audio card and the Flying Cow and Flying Calf A/D and D/A converters have been embraced by music industry professionals around the

MIDIMAN's most recent additions to their growing line of digital audio gear now include two new and distinguished ADAT products. The flagship product,

world.



the Pipeline 8x8, is an 8-channel, 24-bit ADAT audio conversion system. Pipeline features include balanced and unbalanced analog I/O, selectable word widths with optional noise shaping and dither, MIDI I/O for extended control through system exclusive messages, word clock in and out, internal sample rates of 44.1 kHz and 48 kHz (supports external sample rates of 39 kHz to 51 kHz), and exclusive BitRazor™ technology. BitRazor™ automatically encodes and decodes 24-bit audio on two ADAT tracks, thereby turning any ADAT into a 24-bit recorder. Pipeline 8x8 is fully rack

mountable and is guaranteed for life.

SAM, or "S/PDIF ADAT Mixer," is the second MIDIMAN's growing line of ADAT support products and represents the most affordable bridge between ADAT and S/PDIF digital audio formats available today. SAM not only provides flaw-24-bit less conversion from ADAT to S/PDIF and

S/PDIF to ADAT, but also includes an integrated 8-channel ADAT to S/PDIF mini-mixer. Features include eight individual pan and gain controls, left and right level and clipping indicators, 56-bit internal processing, a tiny desktop size, and support for 44.1 kHz and 48 kHz sample rates. As with all MIDIMAN hardware products, SAM is guaranteed for life.

Contact: MIDIMAN, 45 E. Saint Joseph St., Arcadia, CA 91006. Tel: 800-969-6434. Web: www.midiman. net. in digital audio



Finally! A 24-bit, 8 in/8 out digital audio converter for the rest of the world!

For over a decade MIDIMAN has provided the music industry with reliable, low cost solutions for synchronization. MIDI and, more recently, digital audio. Well we've done it again. Introducing the Pipeline 8x8 digital audio converter. We've combined true 24-bit A/D and D/A converters with 8 balanced, 1/4" I/O's, external word clock, 16 & 20-bit dithering and our exclusive 16/24 "BitRazor" technology into a truly affordable (under \$1000), professional quality recording tool.

Check out Pipeline 8x8 along with SAM (Adat-S/PDIF & S/PDIF-Adat converter) at your local music dealer.

pipeline 8x8 features:

- 8 in/out true 24-bit Audio-10-Adat and Adat-10-Audio conversion.
- Balanced or unbalanced 1/4" TRS I/O's.
- Sample rates of 44.1 and 48 kHz.
- Selectable word width of 16, 20 or 24 bits
- 16 and 20-bit conversion with optional noise shaping and dithering.
- Word Clock in and out with selectable 75 ohm termination.
- MIDI I/O for extended control through system exclusive messages.
- +4 db or -10 dB input levels selectable per channel.
- Special BitRazor^M 24/16 mode allows 24-bit audio to be recorded and played back using 2 standard 16-bit Adat tracks.











800-969-6434

WWW.MIDIMAN.NET

INFO@MIDIMAN.NET



SYNTRILLIUM SOFTWARE COOL EDIT PRO 1.1 UPGRADE

The latest upgrade adds even more valuable features to the popular program.

Syntrillium Software has just released their Cool Edit Pro 1.1 Upgrade Version, a significant upgrade for users of OEM versions of Cool Edit Pro. Cool Edit Pro's latest version provides faster DSP processing, improved SMPTE support, and larger file-handling capacity.

Created by David Johnston, Cool Edit Pro is a digital audio editor, recorder, and mixer application for Windows

95 and Windows NT that is designed to include all of the necessary features users need in order to actualize their audio projects. This capacity is held together by a clean, uncluttered interface — the key to a successful and worthwhile upgrade program. In addition to 64-track mixing capability with Record/Solo/Mute controls, Cool Edit Pro 1.1 offers Crossfade, Punch-In, Splice, Loop, Multiple Takes. Amplitude and Pan envelopes, and Zoom and Snapping features, And, these are just a few of the fantastic elements of Cool Edit Pro. With higher quality DSP effects than any other wave-editing package, Cool Edit Pro offers the highest quality Reverb, Chorus, Dynamics Processing, Graphic and Parametric EQ, 3D Echo Chamber, Noise Reduction, Click and Pop Eliminator, Pitch Shift, and Time Stretch/Compress.

Some of the new features of Cool Edit Pro 1.1 are also significant im-

ty DirectX so users to ac Waves and facturers.

Requested begunncy response

Response using current accuracy

Waves and facturers.

accessibility Edit Pro 1.7 preview of many and a second sec

provements from its predecessor. Sporting, for example, a "grouping" function, Cool Edit Pro 1.1 can effectively and rapidly associate waveforms into families. This "grouping" feature can arrange tracks by musical groups, like sorting all of the drum tracks into a percussion group or guitar tracks into a string group. Other attractive features of Cool Edit Pro 1.1 are its Vocoder and Envelope Follower functions, which enable creating special effects within the multitrack environment. Also, Cool Edit Pro 1.1 will prove a compatible tool for combination with other audio tools in a complete studio environment. This strength is supported by Cool Edit Pro 1.1's third-party DirectX software plug-ins, allowing users to access DSP modules like Waves and Qtools from major manufacturers. As part of this improved accessibility and compatibility, Cool Edit Pro 1.1 also supports real-time preview of most of the effects such as

DirectX effects, while all the effects support 24bit audio.

With its MIDI/SMPTE synchronization capabilities, Cool Edit Pro 1.1 offers the user flawless integration with MIDI sequencing, video, and other software applications. Carried over from Cool Edit Pro LE and SE, which are bundled with sound cards and other hardware and software

packages, the upgraded version also supports multiple sound cards and WAV devices.

As far as Cool Edit Pro 1.1's accessibility is concerned, users will have no problem finding it and taking advantage of all its upgrades and improvements. Licensed users of Cool Edit Pro 1.0 can upgrade to version 1.1 free of charge by downloading the upgrade patch from Syntrillium's Web (continued on page 24)

Contact: Syntrillium Software Corporation, 6210 E Thomas Road, Suite 104, Scottsdale, AZ 85251. Tel: 602-941-4327/888-941-7100. Web: www.syntrillium.com.



The complete multitrack recording studio for Windows™

BUY SOMETHING REALLY

- Sixty-four tracks
- Thirty-three DSP effects
- Under \$400

"Cool Edit provides all the tools - right out of the box - to get you from start to finish on most multitrack recording projects." - Electronic Musician, August 1998

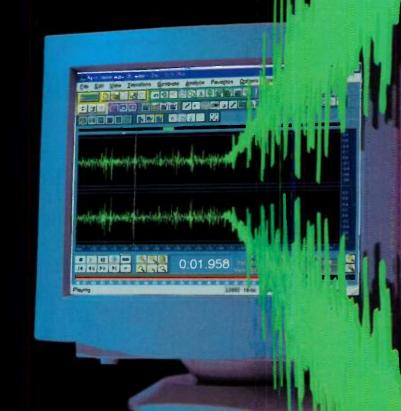
"Cool Edit Pro...continues to maintain Cool Edit's excellent price/performance ratio, and adds a few new twists."

- EQ, October 1998

"...this exceptional product is perfect for professionals in the music, broadcast, and multimedia development industries."

- ZD Net, May 1998

Look for Cool Edit Pro at your local music or computer store.



COOL!

Check out our downloadable demo at: http://www.syntrillium.com



PO Box 62255 Phoenix, AZ 85082-2255 USA cepro@syntrillium.com 1-602-941-4327 1-602-941-8170 (fax)

1-888-941-7100 (US & Canada toll-free sales)



DIGIDESIGN'S ADAT BRIDGE I/O

The best of both worlds: edit your ADAT in your PC.

here are more options for digital audio production today than ever before. From the vast sea of products, two solutions have emerged to dominate the minds of digital audio customers: modular digital multi-

tracks (led by Alesis's ADAT technology) and digital audio workstations (led by Digidesign's award-winning Pro Tools®).

s: modular digital multi-

If you've already invested in ADAT technology, it may feel as if digital audio workstations exist in a parallel universe somewhere or on the other side of some great chasm — one that cannot be crossed without sacrificing a bunch of prized gear and rebuilding your studio from the ground up. The reality, however, is that there's now an affordable, professional way to bring these two popular solutions together: the ADAT Bridge I/O.

Digidesign's ADAT Bridge I/O interface gives you the best of both worlds: the affordability of digital multitrack tape and the nondestructive editing and built-in mixing environment of Pro Tools (or compatible digital audio sequencer application). It works with any ADAT or compatible recorder, including the original 16-bit ADAT or ADAT XT as well as the newer 20-bit XT20, LX20, or M20. The ADAT Bridge also supports any device carrying the Alesis "ADAT Optical" logo, so it's a great way to transfer audio back and forth between Pro Tools and ADAT Optical-compatible consoles, such as the Yamaha 01V and Mackie's Digital 8-Bus.

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Using the ADAT Bridge I/O to interface your ADAT with Pro Tools, you can

literally edit your ADAT tracks to create the perfect performance. Say you're paying your local diva \$100 an hour to sing backups on your new funk tune. After she leaves, you go through the recorded tracks and realize you want the multi-layered part she sang over the chorus during the sax solo. With the ADAT

Bridge I/O, you can simply transfer your

tracks into Pro Tools, copy the parts she

did in the chorus, and paste them to the

solo section. No problem.

The ADAT Bridge also lets you take advantage of the world-class digital mixing capabilities integrated into TDM-based Pro Tools systems. Pro Tools TDM system users enjoy total recall of everything in their sessions (including Plug-In parameters) and automation capabilities rivaled only by the world's most expensive mixing consoles. With any Alesis-supported sync device and the ADAT Bridge, you can enjoy all of this automated mixing power without even recording tracks into Pro Tools!

Need an economical means of archiv-

ing your final mix?
Just record your Pro
Tools session out
to ADAT as a discrete stem mix from
2 to 64 channels
wide. It's fast. It's
easy. And, of
course, it's cheaper
than the removable
media or SCSI harddrive options currently
on the market.

The ADAT
Bridge I/O features:
Sixteen discrete channels of ADAT Optical I/O.

- High-quality 20-bit digital-to-analog converters for monitoring.
- Separate AES/EBU and S/PDIF ports for mastering to DAT.

The ADAT Bridge I/O hooks up to a Digidesign PCI audio card using the computer interface cable. (Supported Digidesign cards include the d24 card, Disk I/O card, DSP Farm card, and the new Project II card. If you plan to interface two ADATs, you'll also need the separate 16-channel Peripheral Cable Adapter, purchased separately.) The ADAT Bridge, in turn, connects to either a single ADAT or two ADATs using the ADAT Optical connectors on the back of the interface.

Complete compatibility information and feature specs can be found on the Digidesign Web site (listed below).

Contact: Digideeign, 3401-A Hillview Ave., Palo Alto, CA 94304. Tel: 650-842-7900. Web: www.digideeign. com.



ENSONIQ PARIS

PARIS and ADAT make the perfect match.

f you work with ADAT digital audio recorders, you probably wish you had access to the powerful features a digital audio workstation can provide. Modern music production has evolved to incorporate new techniques only achieved through the use of hard-disk recording systems, like looping and random access editing. If you're considering adding a hard-disk system to your ADAT studio, consider PARIS. PARIS, when configured with the optional

ADAT interface, is the perfect match for anyone working with ADAT recorders.

THE ENSONIQ PARIS EDS-ADI-01 ADAT INTERFACE

The ENSONIQ PARIS EDS-ADI-01 ADAT Digital Optical Interface supports the fiberoptic Light-

pipe Protocol for the sample synchronous digital transfer of audio between PARIS and ADAT digital recorders. A single EDS-ADI-01 installs easily into any available bay in a PARIS Modular Expansion Chassis (MEC), providing eight channels of input, eight channels of output, and synchronized remote control of up to 16 ADAT recorders via a 9-pin D-type connector.

Multiple EDS-ADI-01 cards can be installed into the MEC interface, allowing up to 16 channels of audio to be transferred to or from ADAT recorders simultaneously. PARIS can be expanded to a Multi-Card system, which allows a second MEC interface to be connected and configured with additional ADAT interfaces. This expanded system will allow the sample-ac-

curate transfer of up to 32 channels of digital audio simultaneously.

Sixteen-bit and 20-bit ADAT audio can be recorded via the EDS-ADI-01 by setting PARIS to record in either 16- or 24-bit resolution. Convenient front-panel LEDs provide status update messages for sync and optical transfers. The EDS-ADI-01 also works with other Lightpipe-compatible devices such as synthesizers, mixers, and effect processors.

from an ADAT, or to an ADAT from PARIS, without the need for an additional hardware remote control. The intuitive user interface makes it is easy to designate any of the connected ADATs as a target for recording, punching in and out, and transferring audio.

Synchronization can be enabled or disabled for any machine in a multi-ADAT chain. A Sync button governs the transports of all synchronized ADATs so they will obey the transport controls in

the PARIS Transport Window and on the Control-16 hardware mixing control surface. The ADAT transport buttons in the ADAT Interface Window will likewise control the PARIS transport. The PARIS ADAT Interface Window also allows opera-

tion of the target ADAT remotely from PARIS, mimicking the act of pressing buttons on the ADAT's front panel. The Tape Start Point Window allows users to align a location on a target ADAT tape with the beginning of the current Project. The ADAT punch controls allow for automated punch-ins and punch-outs on the target ADAT. Easy signal routing is provided by the Track/Channel Matrix, which allows the patching of ADAT tracks to PARIS Channels by clicking points within the Matrix.

ADAT Interface: EDS-ADI-DI

WHISE

CHORONOUS

TO PARIS

THE START POINT

TO STANDATE

PARIS

THE START POINT

TO STANDATE

TO STANDATE

TO STANDATE

TO STANDATE

TRANSFER

TRAN

THE PARIS ADAT INTERFACE WINDOW

INSERTS EXPORT

The PARIS ADAT Interface Window provides a comprehensive suite of controls and tools for moving audio back and forth between your ADATs and PARIS. This includes a powerful one-button shortcut for transferring audio to PARIS

Contact: EMU-ENSONIQ, P.O. Box 660015, Scotts Valley, CA 95067-0075. Tel: 408-438-1921. Web: www.emu-ensoniq.com.



GRAHAM-PATTEN ADAT INTERFACES

Keep your ADAT well connected.

any devices that are equipped with ADAT I/O — ADAT tape machines, for example — have conventional analog or digital I/O as well. But some devices — certain computer workstations, for example — have ADAT Optical I/O only. No problem if you plan to connect the workstation to an ADAT machine, but how does one interface conventional analog or dig-

ital audio equipment with these devices?

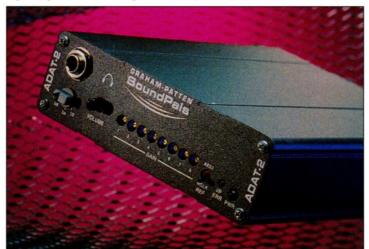
Graham-Patten Systems of Grass Valley, California has developed a family of ADAT converters that addresses this question. These converters are part of the company's SoundPals™ product line, a growing family of modular building blocks for digital audio signal processing, distribution, and format conversion.

All of the modules in the SoundPals line are housed in

a rugged aluminum enclosure measuring 5.2 x 1.62 x 6.625 inches. They are all designed to be powered from an external 6 VDC source — a "wall wart," a regulated 6 VDC supply, or batteries. The company offers a 1 RU mounting tray that holds up to three modules along with a pair of regulated supplies.

The ADAT-1 has eight balanced analog inputs on 1/4-inch TRS jacks. Each input has a gain trim and 4-segment LED level indicator. The input gain trims cover a range of –8 dBu to +6 dBu for –20 dBFS output, and the LEDs indicate –60 dBFS (signal present), –20 dBFS (normal digital reference level), –3

dBFS (approaching clipping), and 0 dBFS (clip level). A/D conversion is performed with 20-bit accuracy. The ADAT-1 has built-in jumper selectable oscillators for 44.1 or 48 kHz sample rates. The unit may also be driven by an external sample-rate reference — word clock or an AES3id signal. The module has a single ADAT Optical output.



GRAHAM-PATTEN

The sound choice.



The ADAT-2 has an ADAT Optical input and eight balanced analog outputs on 1/4-inch TRS jacks. Individual gain trims allow the level of each output to be adjusted across a range of –5 dBu to +12 dBu, referenced to a –20 dBFS input signal. D/A conversion is performed with 20-bit accuracy. A reference output, switchable between word clock and AES3id, is provided for locking other equipment in the system. The ADAT-2

has a stereo headphone output jack with volume control and channel selector for monitoring pairs of module outputs.

The ADAT-3 has inputs for four AES signal pairs and a single ADAT Optical output. Two model groups are available — one with XLR connectors for interfacing with AES3 equipment and one with BNC connectors for AES3id systems.

Within each model group, there are three different configurations - sample-rate converters on all four inputs, SRCs on two of the four inputs, and no SRCs, Models with SRCs allow sources with different sample rates or different timing references to be used. A 9-pin remote control connector is provided to allow the user to select which of the four AES inputs will be used as a master timing reference and also to control channel muting. A reference

connector is provided, with switch selection of input reference (AES3id or word clock) or word clock output.

The ADAT-4 has a single ADAT optical input and outputs for four AES signal pairs. Two models are available — one with XLR and one with BNC connectors. Both models are equipped with an output reference connector that may be switched to provide either word clock or a silent AES3id signal.

Contact: Graham-Patten, P.O. Box 1960, Grass Valley, CA 95945. Tel: 800-422-6662. Web: www.gpsys. com.



MACKIE DESIGNS DIGITAL 8-BUS

The perfect mixer for the ADAT-equipped studio.

ackie Designs' Digital 8•Bus (D8B) is the perfect mixer for the ADAT-equipped studio. Though it was designed to look and feel like an analog mixer, the D8B gives you the control and connectivity of digital. Top automation specialists gave the Digital 8•Bus the chops of digital boards costing ten times as much, and you'll appreciate all it can do.

Because the Digital 8-Bus is set up in fader banks, the console's 24 channel faders do the work of a whole lot more. Track your session in Fader Bank 1, where you have access to 12 mic inputs and up to 24 line-level inputs. Switch to Fader Bank 2, and you can monitor your tape outputs as they go to your ADATs. The automation remembers all of your fader settings instantly. Because the D8B was designed to live up to the Mackie family name, it has lots more highly usable features, including a built-in patchbay. You can route any input to any tape out, bus out, or aux out without re-patching.

Operating your ADATs is a snap from the D8B. The console is fully MMC-compatible, so its transport section allows you to not only control standard transport functions (play, record, rewind, etc.), but lets you record-enable your ADAT tracks from the front of your mixer (requires an ADAT-to-MIDI interface). You can stay right there in your comfy chair.

Practically everything on the Digital 8•Bus is automatable — including faders, pans, mutes, and much more — thanks to the massively powerful built-in computer. The Remote CPU houses the computer that uses Mackie's Real Time Operating System™,

designed by automation software pros who helped design many of the big-name digital boards and knew what it would take to give a digital console the Mackie name. The Real Time OS lets you process all of your ADAT tracks simultaneously. It has fully automatable EQ, compressor, and gating, so you can do whatever you want with your tracks — EQ 'em until your heart's content, gate out unwanted track noise, etc. — and then save the settings as presets to use in future sessions.

forget the Mix Editor, which lets you make tiny little adjustments to any automated track offline. Change a mute so it comes in three frames earlier. Lengthen a fade. Do what you like — Mackie Real Time OS will let you.

If you're ready to enjoy the total control and total creativity you've always wanted with your ADAT tracks, go to your Mackie Digital Systems dealer and have them give you a hands-on demo, or visit them on the Web at www.mackie.com. Call us toll-free at 800-898-3211 for a free video.



What else makes the Digital 8•Bus an automation powerhouse? You can create a beautiful fader curve on any track and copy it to any other track(s). You can save it and apply it to another mix next week or next year. And let's not

Contact: Mackie Designs Inc., 16220 Wood-Red Rd. NE, Wood-inville, WA 98072. Tel: 425-487-4333/800-898-3211. Web: www.mackie.com.



STUDER INTRODUCES THE STUDER OF ADAT

Improved stability and higher performance make a practical and popular medium fully professional.

hile the ADAT format has gained tremendous success within the music community, fundamental limitations in the format and hardware has kept it from being fully embraced in the professional recording arena. With the introduction of the Studer V-Twenty⁴ 20-bit modular recording system, many of these limitations no longer exist.

The Studer V-Twenty⁴ is a complete 24-track, 20-bit recording system based on Studer's new V-Eight recording module. The multi-machine array is controlled by Studer's elegant "Cockpit" remote controller, which can precisely manage systems of up to 64 tracks. The system's "RLD" Remote Level Display allows visual monitoring of all track levels.

Created as an integrated recording system, the V-Twenty⁴ offers seamless "systems" operation while maintaining the advantages of a modular system. Dual V-Twenty⁴'s can be controlled from a single Cockpit, resulting in a V-Forty⁸ 20-bit, 48-track recording system.

The V-Twenty⁴ brings Studer's signature sound to the new ADAT II S-VHS recording format. This is due, in part, to the V-Twenty⁴'s enhanced A/D converters, modeled after those incorporated in Studer's legendary D827 multitrack DASH recorder, long regarded by many as the sonic standard for digital recorders. These new 24-bit A/Ds, created by Studer, store a precisely dithered 20-bit signal onto tape, ensuring sonic performance that will more fully meet the needs of demanding audio professionals. The high-gain in-

16

put and output stages may be adjusted (externally) to accommodate a wide range of operating levels. An AES/EBU digital I/O option can also be added.

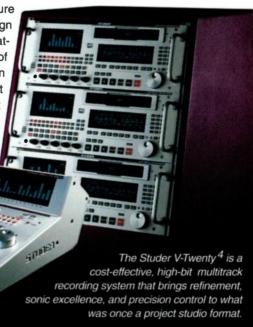
Studer's superlative tape handling is achieved through the use of an industrial-grade tape transport built by Panasonic. This precision transport uses no belts, pulleys, or mechanical brakes. Instead, it employs three software controlled direct-drive motors, mounted on a robust die-cast aluminum chassis. This remarkable transport system ensures fast, precise lockup, gentle tape handling, and ultra-fast wind times.

Many will find it comforting to know that the new V-Twenty⁴ adheres to Studer's rigorous standards. And that it grows from a 50-year tradition for precision, elegance, and simplicity. Every feature of the V-Twenty⁴'s meticulous design is evidence of Studer's legendary attention to detail. For example, all of the system's buttons are washed in a gentle backlight for confident and decisive operation in dimly lit control rooms. The intensity of backlight even adjusts to the ambient room light!

Full timecode integration is provided by the on-board Chase Synchronizer. Timecode reading is displayed even during fast wind operation. The system's jog and shuttle operations are facilitated using a linear, analog Cue Track that can be recorded automatically during the session. A simple, yet functional, on-board mixer facilitates monitor mixes, eliminating the need for an external monitor console.

Introducing the V-Twenty⁴. The Studer of ADAT.

Contact: Studer North America, 1308 Borregas Ave., Sunnyvale, CA 94089. Tel: 408-542-8880. E-mail: studer.sales@harman.com. Web: www.studer.ch.





YAMAHA 01V DIGITAL MIXER

The same sonic performance as the legendary 02R, but at an unbeatable price.

epresenting a quantum leap in mixing capability, sonic performance, and affordability. Yamaha digital mixers are taking the market by storm. If you've been wanting a Yamaha digital mixer for your ADAT-format multitrack, but cost has been an issue, the new Yamaha 01V is the mixer vou've been waiting for. At the unprecedented price of iust \$1999*, the 01V runs circles around an analog mixer and gives you the exciting bene-

fits of Yamaha digital technology: unparalleled mixing power and pristine sonic performance.

Based on the legendary 02R recording console, the new 01V provides the same sonic performance, plus powerful capabilities, which make it a ground-breaking product in its own right. The 01V has 24 inputs, 6 busses, 6 aux sends, direct outs, and 12 phantom-powered mic inputs, making it the perfect mixer for top-quality recording and live sound mixing.

Its capabilities go way beyond what an analog mixer can provide by including parametric EQ on every channel, 22 limiter/compressor/gates, two built-in 32-bit effects processors with their own effect returns, digital delay on inputs and outputs, and



smooth-touch motorized faders. But it's the memory capabilities of the 01V that allow you to create your best mixes. Snapshot memory of all mixer settings allows you to store your mix settings with the simple press of a button, so you can come back to the mix at any time. Useful "libraries" allow you to store your favorite settings for EQ, Effects, and Dynamics. These can be recalled at any time and applied to any mix, so you can use that perfect sound you had the last time.

The addition of a MIDI sequencer lets you perform real-time automated mixes. Of course, the 01V's smooth-touch motorized faders will track your every move. And, in the tradition of the 02R, the 01V can dock with ADAT, TASCAM TDIF, and AES/EBU-format mul-

titracks and other digital equipment via a variety of optional 8-channel digital I/O cards.

Once you've mixed through the 01V, you'll notice your mixes sound better more open. And if you are thinking of adding an additional 8-track to your system in the near future. no problem: one 01V can easily handle 16track mixdown. For a really large system, the new 01V-Link feature connects and

synchronizes two 01V mixers for true 48-channel mixdown, giving you plenty of inputs for your multitracks, synths, and effect processors.

The digital mixing revolution is here, making it easy to make great mixes. Now is the time to jump in, because at an unprecedented price of \$1999*, you don't have to have the big bucks to command the big bucks. The Yamaha 01V brings digital power to the people.

*Manufacturer's suggested retail price. 01V Digital I/O cards each: \$299 MSRP.



Contact: Yamaha Corporation, P.O. Box 6600, Buena Park, CA 90622-6600. Tel: 714-522-9011. Web: www.yamaha.com.



MYTEK DAW 9624

Mytek mastering converters and a Sonorus card make the multichannel DAW 9624 possible.

igital audio workstation software has come a long way. "Used-to-be-toys" or low-cost software packages are now well-suited for any professional task, including high-resolution recording and mastering. What required a costly proprietary DAW setup just a few years ago can now be done in Cubase, Logic Audio, Samplitude, Wavelab etc., in 24-bit, 96-kHz resolution. External signal processors have been replaced by an abundance of excellent software plug-ins. Many of them, such as the Waves L1 compressor, are considered to be superior to their hardware

alternatives. In short, low-cost/ high-resolution software packages now produce professional results. The buyers, however, when considering building their studio

around such software, are faced with hardware solution choices of mediocre sound quality. Costing less than \$1000 and claiming 24-bit performance, they, in reality, deliver sound quality of an average DAT machine and have no features. This is an understandable result of quick, "cut cost" hardware design and manufacturing.

Mytek Inc., a New York City-based company known for their high-end mastering converters, has joined forces with Sonorus Inc., manufacturer of the STUDI/O PCI digital I/O card, resulting in DAW 9624TM, a high-performance DAW with an expandable number of channels. DAW 9624 uses the same quality converters as those used in top mastering facilities, yet is available at almost one-third

the cost of proprietary DAW packages.

DAW 9624 uses an extensive set of features built into 8X96 converters to provide 24-bit format conversion between ADAT and AES/EBU on all channels. It also provides advanced noise shaping for 16-bit or 20-bit recording directly to ADAT and MRX[™]

bit-splitting algorithm from Prism, UK. Low jitter clocking I'm writing for some final info on configuration and pricing, as well as some questions about the 9624....

What makes this critical is the quality of your product. Frankly, while I can hear differences in amps and consoles, nothing short of speaker changes have made as radical a difference in sound as your converters. They are a revelation. While

other converters

shine brightly in some genres and styles of music, none were as consistently accurate, solid, and responsive as the W24 (TC and Apogee products had a very "warm" tonality that sounded nice on rock, but masked detail in

the low mids... they fell apart

with some jazz and classical pieces). Problems in imaging and localization were instantly recognizable. Phase holes were obvious. For mastering, such precision is a necessity.

Good job, and great product.

D. Davis dlincoln@ultrainteractive.com

Extensive information about DAW 9624, including technical specs and a listing of over 50 compatible software packages is available at www.mytekdigital.com.

Contact: Mytek Inc., 142 East 27th Street Suite 6A, New York, NY 10016. Tel: 212-274-9191. Web: www.mytekdigital.com.



Lightpipe interfaces, and built-in word clock sync facilitates multichannel, as well as postproduction work.

High-performance 8X96 Series converters make the DAW 9624 sound extraordinary. As one mastering engineer recently e-mailed:

We had the opportunity to evaluate the Mytek W24 alongside offerings from Apogee, TC, and Sony, as well as some audiophile converters. The W24 was the unanimous choice of our engineers and everyone else who listened. At this point,



SONORUS STUDI/O CARD

This PC card packs features and functionality for digital audio workstation and ADAT users.

> he award-winning STUDI/O card from Sonorus, Inc. allows recording engineers and project studio owners to input/output 16 channels of audio in parallel from the PC to a pair of Alesis ADATs using standard fiberoptic cables.

> STUDI/O offers full 24-bit capability with support for all standard sample rates (44.1 kHz, 48 kHz, and 96 kHz), as well as varispeed. Sample conversion on the fly is available across a 30-50 kHz

range. STUDI/O includes two 8-channel Alesis ADAT optical interfaces and an 18bit stereo analog monitor output. For mastering applications, one or both ADAT interfaces can be software-configured for optical S/PDIF input and/or output, including sample-rate conversion, for connection to DAT machines or highperformance converters. STUDI/O can now be upgraded for 96 kHz, 24-bit, 8channel operation by merely downloading the latest driver from the Sonorus Web site.

The supplied software drivers are compatible with a wide range of existing Windows and Macintosh audio devices. Compatible PC (Windows 95/98, NT) programs include Cakewalk Pro, Emagic Logic Audio, Goldwave, SAW Plus 32 and SAW Pro from Innovative Quality Software, Sonic Foundry's Sound Forge and Acid, Samplitude Studio from SEK'D, Steinberg's Cubase VST and WaveLab, and Cool Edit from Syntrillium. Macintosh-supported programs include Cakewalk, Steinberg's Cubase VST v3.5, Metro 4.1 and Spectrafoo from Metric Halo, Opcode's Vision DSP, and MSP from Cycling '74.

Sonorus's Sync Backplate allows STUDI/O users to expand the unit's applications, utilizing word clock in and out and ADAT and MIDI timecode inputs. With word clock in, STUDI/O can be synchronized within a professional digital studio environment to a master clock generator.

Suggested retail price for STUDI/O is \$849. Suggested retail price for the STUDI/O Backplate is \$149.

Contact: Sonorus, Inc., 111 East 12th Street, New York, NY 10003. Tel: 212-253-7700. Web: www. sonorous.com.

WHAT DOES ALL OF THIS SOFTWARE HAVE IN COMMON? cakewalk





























SONORUS

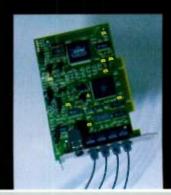
Sonorus, Inc., 111 E. 12th St., NY, NY, 10003, USA; Phone: +1-212-253-7700; Fax +1-212-253-7701 http://www.sonorus.com; info@sonorus.com

16-CHANNELS **24.BITS**

- •Brings 24-bit digital audio in and out of your favorite program
 - Connects to all ADAT lightpipe and SPDIF equipment • Simultaneous 16 channel record and 16 channel playback
 - - Real-time stereo sample rate conversion • PC And Mac compatible PCI (short card)
 - Optional studi/o-sync backplate for sample-accurate synchronization
 - Up to four cards per computer (64 channels)
- Ships with Windows 95/98, Windows NT, Macintosh, and ASIO (Mac/PC) drivers
 - Four optical cables included
 - · Available at your favorite music store

NEW LOWER PRICE!

Coming soon! 96KHz





OPCODE STUDIO 64 XTC

Digital sync processor, MIDI interface, and patchbay all in one unit. superclock out, the Studio 64 XTC makes it easy to lock your hard-disk digital audio tracks to analog or digital tape with incredible accuracy. This solves previously difficult and expensive problems like sync'ing DA-88 (using the SY-88 sync card) with Digidesign Pro Tools audio tracks, as well as many other word clock-capable digital audio recorders.

On top of all this, the XTC is also a 64-channel, 4 X 6 MIDI interface with sophisticated MIDI patchbay and processing functions for any Macintosh or PC!

Features include:

- 4 X 6, 64-channel MIDI/SMPTE interface/patchbay for PC or Macintosh
- ADAT and DA-88 Sync for Pro Tools with MIDI Machine Control



The Studio 64 XTC will take the assorted, individual pieces of your studio — your computer, MIDI keyboards and modules, ADATs and DA-88's, standalone digital and analog multitracks, and even professional video decks — and put them all together in perfect sync.

With simultaneous word clock and

The XTC can even generate word clock from incoming SMPTE to sync computer digital audio tracks to analog tape tracks flawlessly. The Studio 64 XTC has an internal sync clock that can act as the master. Or, if you're working with video, the XTC has Blackburst and Video reference input for locking to Blackburst/House sync.

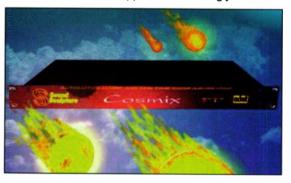
- Synchronizes any word clockcapable device
- SMPTE input from analog tape deck generates word clock output

Contact: Opcode Systems, Inc., 3950 Fabian Way, Suite 100, Palo Alto, CA 94303. Tel: 650-856-3333. Web: www.opcode.com.

SOUND SCULPTURE COSMIX

Automation on a budget.

ound Sculpture has introduced the Cosmix automated mixing system. ADAT owners needing to mix down hours of tape on a limited budget will find the Cosmix approach refreshingly



efficient. Using nothing more than one Cosmix per ADAT and a few signal processors for effects, precision mixes can be performed entirely on a computer using inexpensive sequencing software without having to dump the tape to hard disk. Since all mix automation is saved on disk in small files, hundreds of tapes can be mixed and tweaked at later dates without eating up hard-disk space.

The flexibility and the high-powered command set of the Cosmix opens up new areas for live multimedia artists as

well. Dozens of ADAT tracks can be routed to dozens of speaker systems simply by adding more units. "We saw a real need in the market for an automation product that was flexible enough that it could be used in a wide variety of applications and easy enough to use that anyone with an ADAT could benefit," says Ken Cze-

pelka, founder of Sound Sculpture. "The kind of mixing power offered by the Cosmix has, until now, only been available on industrial systems costing much more. And we are very pleased we can offer such a product at such a low cost."

Sound Sculpture has been building high-quality guitar, studio, and industrial switching systems since 1988. They were awarded *Electronic Musician*'s "1995 Editor's Choice Award" for their respected Switchblade-16 guitar system used by top musicians. Their industrial systems can be found in theme parks and performing theaters around the world, including Disneyland, Six Flags America, and Universal Studios.

Contact: Sound Sculpture, 4700 Sterling Drive Ste. C, Boulder, CO 80301. Tel: 303-442-1954. Web: www.soundsculpture.com.

adat adept

Looking for an automated mixer with transparent sound, versatile architecture and the ability to link popular audio software to your ADAT? Then look closely at the Cosmix.

More gain cells. The Cosmix has four times as many gain cells as the competition. 32 in all. With fully independent fade and pan to both main and aux outputs the Cosmix configures as an 8x2x2 system. Attach a stereo signal processor to add different degrees of

Where s the knobs? No knobs. All mixing par ing and muting is controlled by MIDI from from your favorite aueic so tware or from hardware MIDI control panels.

Clean and simple. We're not just talking about the front panel here. The all analog audio channels in the Cosmix were designed to pass audio with no coloration or artifacts so nething it does considerably better than automation systems costing much more.



Cosmix

adat

What's in a name? Sound Sculpture has been making audio rowing systems since 1988 and variawanded Electronic Musicum Magazine's 1995 Editors Choice Award on 1's respected audio switching system, the Switchblade 16.

The Adat logo. Sound Sculpture is a member of the desis family of Adat Thire Party Developers. This logo insures the Cosmik is compatible with the Alesis Adat and Adat compatible MDM recorders.

processing to each channel. By using different controller numbers the Cosmix also configures as an 8x4 for 4 speaker surround sound, live PA installations, or monitor applications. The Cosmix is fully expandable to increase the number of input channels.

Powerful fade and fade restore commands. Automation eats up MICI pandwidth. Do anything faster than a 24 track 2 second fade to stereo and you have already hit the wall. The Cosmix fade and fade restore commands increase MIDI effectiveness up to 35 times for vastly improved speed and precision. Simply ass gn Sys-Ex fade commands to your sequencers

The input channels use high cuality resistive gair elements rather than the more common VCAs result ug in greater detail and a curacy. Expansion input allows you to connect several units together to accommodate the input ned is of all of your Adats. Tons of headroom on both Main and Aux outputs to prevent or embading even on expended sestions Built in MID merging and automatic out thru switching ma'es MIDI connections simple. "soft" keys specifying the final level, fade time and fader mumber and the Cosmix will sweep the gain from the current value over the time specified. Multi channel faces as fast as 4 ms or as long as a minute are possible. Fade restore is used to sweep gains to pre-fade values.

(MTC) from your ADAT enabling sequencers to

It controls your ADATs transport. The

Cosmix accepts MIDI Machine Code from "soft" keys

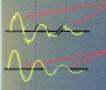
It generates MIDI Time Code. The Cosmix generates industry standard MIDI Time Code

chase lock sync to the ADAT tape position.

Selectable headroom divon the option of matching the Carmis to your Adal or to hear level studio signal studies.

Convert to discrete & channel output simply by using a different set of Controller numbers. When used this way ell cells automatically convert to audio log taper, it is arrangement is excellent for the surround sound of ferentials and attack of monitors.

With all 4 bussess available at the Jacks the Caseds is expandable to 16X4. 24X4 or more.



Use these sync ports to convert the Acha time code to MTC revised your sectioneers the about to chance by it to anywhere on Lope.

Zippering is caused when the gain of a signal changes rapidly in response to Mili controller data resulting in a ratching type sound.

The Cesmix Anti-Zippeting circuit moves all NIDI gain changes to the zero crossing points of the signal virtually eliminating all zippering. Powerful MIDI Sys-Ex commands allow ultra smooth pans a d tades over time while reducing MIDI bandwidth to as low as 3 of hat of other

pans a drates over time earning reducing 41DF bandwick in teast low as 3 s of hat of other automation systems.

for lasting quality.

to control tape motion from your computer screen.

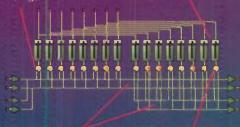
No VCAs. Only resistive gain elements are used for facers for clear, transparent sound and level accuracy. The finest amps and precision film resistors are used in all audio paths.

Natural fade curves. All tades follow audic log curves and all pans follow a constant power curve when responding of M DI linear sliders for musical tades and pars without dropouts at fader extremes.

No zippering Special monitoring circuits at each channel allow gair changes only at audio zero crossing points virtually eliminating zippering even during abrupt gain changes.

The MIDI pan data gets converted to a constant pan power curve for smooth sweeps icross the stereo image.

The MIDI level data is converted in the Cosmix to true audio log taper for very smooth console like fades.



Two sterco busses! By attaching a stereo signal processor to the aux send and return of the Cosmix you can mix in different amounts of effect for each channel. A little reverte on vecals, more on drums. The choice is yours.

Since the aux has it's own pan, the stereo image through the effect can track the main output, if desired, for added real sm.

Abundant headroom. More than + 12dBu of signal level is available on all outputs to help insure that even expanded mixes won't overload your's gnal. A front panel indicator and Sys-Ex reporting inform you in the event you co.

The Cosmix is the shortest distance between your ADAT and your final mix. Face it, the reason you love your ADAT so much is the sheer volume of audio it can record at only pennies a minute. With the Cosmix, the ADAT, a good



signal processor and your favorite sequencing software, you have the tools you need to do fast, repeatable, quality mixes of hours of music in the shortest time possible. That's money in the bank. Want more information? Visit our website for dozens of application ideas. Then order your Cosmix today.



Align world, Nove Supra, Personal Easter Light of Contract on Suprace of Start States Nation Information

Sound Sculpture Musical Instrument Products - 4700 Sterling Drive Ste C - Boulder, CO 80301 - USA (303) 442-1954 - (303) 447-3502 (ax) - info@soundsculpture.com - www.soundsculpture.com



SPIRIT BY SOUNDCRAFT DIGITAL 328 MIXER

One Spirit Digital 328 + Two ADATs = A Complete Digital Studio.



The Spirit 328 and two Alesis ADAT LX20's create a 32-track digital studio for under \$9000.

Spirit By Soundcraft's new Digital 328 sets itself apart from the pack of standard screen-based digital mixers by offering an easy-to-use hardware-based interface that will be pleasantly familiar to analog 8-bus console users.

Housed in a 32:8:2 frame, the Digital 328 features 16 mic/line input

channels with Spirit's trademarked Ultramic+™ preamps, high-pass filters, and inserts, as well as 16 digital tape return channels. Five pairs of stereo inputs have also been included, bringing the console's input count up to 42. Thanks to the revolutionary "E-Strip," every input has access to identical facilities on the mixer's control surface, including 3-band, fully parametric EQ, four external ef-

fects sends, two internal effects sends, and more.

Despite its intuitive analog console

"feel," the Digital 328 also possesses the powerful functionality of a world-class digital mixer, offering two onboard Lexicon effects processors (compressors, limiters, gates, and duckers), full automation, 100 storable scenes, motorized faders, Machine control, Undo/Redo buttons, and channel copy/paste.

Furthermore, 16-track digital recording is possible "straight from the box" with the inclusion of two Alesis ADAT Optical (and two TASCAM TDIF) interfaces as standard. No optional cards are necessary. Pair the Digital 328 up with two ADAT LX20's, and you have a complete 32-track, 24-bit digital studio for under \$9000!

Contact: Spirit By Soundcraft, Inc., 4130 Citrus Ave., Suite 9, Rocklin, CA 95677. Tel: 916-630-3960. Web: www.spiritbysoundcraft.com.

DIGITAL AUDIO LABS V8 WORKSTATION

This real-time PC workstation offers total ADAT integration.

ADATs to

Take complete control of your ADATs with the Digital Audio Labs V8 workstation.

he V8 system from Digital Audio Labs is a totally professional, real-time recording and production studio for the PC. A fully loaded V8 offers 16 discrete disk tracks, 32-plus channels of totally automated mixing, and a hardware DSP architecture capable of dozens of simultaneous, real-time EQs, reverbs, and dynamics processors.

The MDM Custom V8 interface for ADAT and ADAT compatibles is a PC card that transfers up to eight simultaneous ADAT optical audio channels to and from the V8 Mainboard. The MDM Custom also features full

tom also features full sync/transport control via its ADAT 9-pin sync interface, allowing a chain of up to 15

ADATs to be controlled from the V8 and synchronized to disk tracks. Two or more ADAT interfaces may be used in

a single V8 system to add more simultaneous ADAT optical channels. Just like hard-disk channels, live ADAT channels may be mixed, automated, and processed in real time through the V8's mixers and DSP Superchargers:

- Edit your ADAT tapes. Fly individual ADAT tracks or even track sections on and off the hard drive in total sync.
- Simultaneously mixdown live ADAT tracks and disk tracks through the V8's dynamically automated real-time mixer.
- Stream live ADAT tracks through V8-approved Plug-In effects running on the V8's real-time DSP Superchargers.

With the V8's MDM synchronization interface, you can completely and transparently marry hard disk and ADAT tape tracks into one unified recording, editing, and mixing system.

Contact: Digital Audio Labs, Inc., 13705 26th Ave N., Suite 102, Plymouth, MN 55441. Tel: 612-559-9098. Web: www.digitalaudio.com.



APOGEE AD-8000 CONVERTER

A complete 24-bit conversion solution for ADAT users.

pogee's AD-8000 offers a complete 24-bit conversion solution for the ADAT user and provides multiple interfacing for a wide variety of analog and digital signals. The AD-8000 forms the heart of your digital system, with eight analog line-level inputs and optional 2- or 8-channel D/A capability. The add-in ADAT interface card provides not only interfacing for existing 16-and 20-bit ADAT machines, but also supports a full 24-bit path for future recorders or other equipment utilizing ADAT optical connections.

A powerful feature of the AD-8000

is the ability to convert between any installed digital interfaces — including ADAT, AES, TDIF, and Pro Tools, as well as analog. In short, any signal input to the AD-8000, analog or digital, is available from all the installed interfaces, making the AD-8000 ideal not only for A/D and D/A conversion, but also for digital format conversion and distribution.

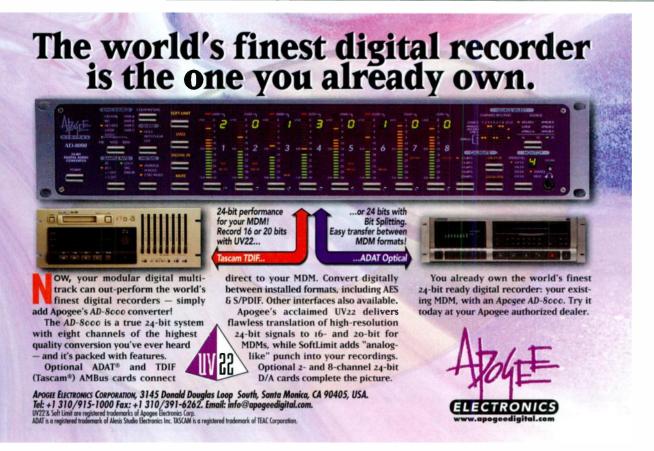
With the optional 8-channel D/A converter card, the AD-8000 becomes a complete conversion solution for the quality-conscious MDM user. The AD-8000 supports both 16- and 20-bit ADAT recorders, thanks to UV22, Apogee's proprietary algorithm for word-length reduction, which takes the high-resolution 24-bit signal from the A/Ds and flawlessly translates it to either 16 or 20 bits. In addition, Apogee Bit-Splitting (ABS) enables four 24-bit channels, or six 20bit channels, to be recorded on eight tracks of a 16-bit MDM. Two interface cards can be used to record the full eight 24-bit channels of the AD-8000 on two

8-track, 16-bit recorders. And, of course, the process is fully bidirectional — at the same time. You can use multiple AD-8000's with multiple MDMs for extended multitrack applications.

Monitoring on the AD-8000 is similarly comprehensive. You can check individual pairs of channels going through the unit with the built-in dedicated head-phone monitor D/A and amplifier. Or, in destination mode, you can check what's coming back from any pair of channels, from any card. The main 2-channel D/A, when installed, follows this monitor selection, and there is a special mode that routes the AES input direct to the main D/A for reference monitor applications.

The AD-8000 is an all-round exceptional performer and an ideal complement to your ADAT recording system.

Contact: Apogee Electronics Corp., 3145 Donald Douglas Loop South, Santa Monica, CA 90405. Tel: 310-915-1000.





MULTITRACK MOTIVATOR

(continued from page 3)

copies also simplifies running off multiple copies as safeguards against possible disasters. Furthermore, upgrading the ADAT format to 20-bit resolution has kept it current as we move beyond 16 bits, but find that 24 bits is overkill for many applications.

One ADAT story sticks out in my mind: In the early '90s, I was doing seminars on expressive synthesis sponsored by Peavey; during the Q&A portion of the very first seminar of the series, I was deluged with questions about what ADAT was all about. As I was essentially a guest of Peavey, I told the audience that perhaps these questions would best be handled one-to-one after the seminar. But a Peavey rep in attendance said, "Let me handle this," then stated, "Of

course, we wish we'd come up with it first, but we think what Alesis has done is pretty incredible. And, frankly, we hope they sell a million of 'em, because anyone who buys an ADAT is going to have to upgrade their studio, and a lot of them will buy our power amps, our monitors, our mics...we believe this is great for the industry, so ask away."

He was right; Peavey did sell a lot of gear to ADAT owners — and so did a zillion other manufacturers. In this special supplement, *EQ* has collected info on some of the top ADAT-specific support products, from tape to interfaces, in celebration of this phenomenon. These are the kinds of widgets that can simplify your life, and sometimes even save a session.

So party on, dig in, get connected, and enjoy the fruits of what a bunch of upstarts from Southern California started nearly a decade ago.

COOL EDIT PRO 1.1

(continued from page 10)

site at www.syntrillium.com. Syntrillium even offers a free demo version of Cool Edit Pro for beginners who want to try out the features of the product. This free demo is also available to download from Syntrillium's Web site. Those who do not have World Wide Web access can request the program patch or the demo on disc from Syntrillium for a small fee.

Cool Edit Pro 1.1 offers undeniable improvements to the audio world and users are sure to enjoy the significant upgrades when working on their next audio project. The product is available for purchase through music hardware and software retail channels and directly from Syntrillium Software. The suggested retail price is \$399, and the upgrade version is \$249.

SOUNDSCAPE SS8I/O-1 INTERFACE

Soundscape Digital Technology has many new products geared to the needs of The ADAT Group. The SS8i/o-1(List \$1995) allows ADAT users to digitally interface with the V2.02 SSHDR-1 Plus digital audio workstation (over 5000 worldwide) and "Mixtreme" PCI card and will also provide word clock sync and eight balanced XLR inputs and outputs with 20-bit Crystal converters, which can be used to "front end" your ADAT. When used as a stand-alone, this unit will also allow ADAT-to-TDIF conversion.



The SS8i/o-2 (list \$600) provides economical ADAT-to-TDIF conversion and can be used with the SSHDR-1 Plus and Soundscape's new "Mixtreme" dual-TDIF PCI card, featuring V2.02 16-bus digital mixing software, which allows you to get 16 simultaneous channels of audio into and out of your PC.

Contact: Soundscape Technology, Inc., 4478 Market St., Suite #704, Ventura, CA 93003. Tel: 805-658-7375. Web: www.soundscapedigital.com.





ALESIS ADAT PARTNERS DIRECTORY



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TASCAM

IF-TAD DIGITAL INTERFACE CONVERTER

Bridging the gap between ADAT and DTRS.

ADAT and DTRS camps, TASCAM's new IF-TAD digital interface converter facilitates data transfers in either direction between the two popular digital multitrack formats. The unit incorporates the standard ADAT "lightpipe" connectors for both digital input and output, a TDIF (TASCAM

Fridging the gap between the

Digital Interface) port, and a BNC connector for word sync out. Both the ADAT optical and the TDIF ports have associated LEDs to indicate data activity for either format. The IF-TAD is designed for those facilities in need of a convenient means of either receiving from or delivering material to clients in either format.

According to Gene Joly, TAS-CAM division manager, "The IF-TAD digital format converter represents a major breakthrough for musicians and project studio owners who want to professionally translate their DTRS tapes to ADAT tapes without spending a fortune. Essentially, this unit provides the critical link between these two digital format worlds."

Priced at \$199, the IF-TAD gives project studios the ability to make conversion from one format to the other at an aggressive price point.

Contact: TASCAM, 7733 Telegraph Road, Montebello, CA 90640. Tel: 213-726-0303. Web: www.tascam.com.







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2721 Calle Olivo Thousand Oaks, CA 91360 Tel: 805-241-4443 Fax: 805-241-7839

Web: www.proaudio.co.uk/drawmer.htm



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EMU-ENSONIQ

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FOSTEX CORPORATION

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FRONTIER DESIGN GROUP

199 Heater Rd. Lebanon, NH 03766 Tel: 603-448-6283 Fax: 603-448-6398



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P.O. Box 1960 Grass Valley, CA 95945 Tel: 530-273-8412 Fax: 530-273-7458 Web: www.gpsys.com



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JL COOPER ELECTRONICS

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Cerritos, CA 90703-2245 Tel: 562-926-3200 Fax: 562-404-0748

Web: www.youngchang.com/kurzweil/

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MIDIMAN

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MYTEK DIGITAL

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OPCODE SYSTEMS

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OTARI CORPORATION

378 Vintage Park Dr. Foster City, CA 94404 Tel: 650-341-5900 Fax: 650-351-7200 Web: www.otari.com





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Web: www.panasonic.com/proaudio



QUANTEGY INC.

800 Commerce Drive Peachtree City, GA 30269 Tel: 800-752-0732 Fax: 880-486-2808 Web: www.quantegy.com



RANE CORP. 10802 47th Ave. West Mukilteo, WA 98275-5098 Tel: 206-355-6000 Fax: 206-347-7757 Web: www.rane.com

ROLAND CORP. USA

7200 Dominion Circle Los Angeles, CA 90040 Tel: 213-685-5141 Fax: 213-726-8865 Web: www.rolandus.com

RSP TECHNOLOGIES/ROCKTRON CORP.

2870 Technology Dr. Rochester Hills, MI 48309 Fax: 248-853-5937 Web: www.roctron.com/rsp



SEK'D USA

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SILICON GRAPHICS

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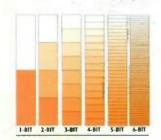


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World Radio History



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it has rotary knobs like the 303, and comes with a template song that pre-maps the controllers to the knobs.

The Peavey PC1600 contains 16 assignable sliders and switches, and stores up to 50 presets. "Following" is a useful preset for overall control of the four modules (the PDF manual shipped on the CD shows a list of all MIDI control defaults).

Programming the PC1600's buttons gives additional control. Using the fader box's "mute" and "solo" options, you can jump the value of an associated fader to full off or full on, making it easy to do quick mutes. But using the buttons to send note-on/-off messages is useful as well, as different notes can turn effects on and off, select patterns, duplicate transport functions, and so on.

You aren't limited to using the factory default assignments; you can also ask ReBirth to "learn" whatever incoming controllers you're using. However, if you want to exchange mappings with other ReBirth owners, I'd advise sticking to the factory defaults.

For live use, you can flip back and forth among several programmed presets to control individual "modules" or the "stack" as a whole. This degree of interactivity brings ReBirth to life — there's no comparison to using a mouse.

However, with the Mac there are issues with OMS that make MIDI control more difficult, which brings up the subject of...

ReBirth now integrates with Cubase VST 3.6 on Windows and 4.0 on the Mac. VST and ReBirth can share a common sound card, including those that support the ASIO specification for multichannel audio.

The simplest ReWire application is running ReBirth's stereo mix into VST. One cool feature: Sending a ReBirth sound to a separate track for individual processing also removes it from the master mix. Furthermore, you can export the ReBirth audio to hard disk, allowing you to clear out the ReBirth patterns you recorded, and program a new batch to play along with the already-recorded versions.

When "rewired," ReBirth can stream up to 18 audio channels into Cubase VST's audio mixer, with sample-accurate audio sync. However, there are "gotchas": ReBirth runs at 44.1 kHz only, and, with the Mac, you can't use OMS and ReWire simultaneously, which eliminates the possibility (and charm)

of MIDI remote control. However, there is a workaround. When using ReBirth with Cubase VST, you can load a mixermap, then send MIDI control signals to Cubase, which in turn sends them to ReBirth (Steinberg plans to upload a suitable mixermap to their Web site).

Using ReWire also requires a hefty computer — at least 233 MMX Pentium or 604 PPC with 64 MB of RAM. Using more outputs, loading in mods, and reducing latency to a minimum requires an even more capable machine.

Overall, ReBirth 2.0 is a worthwhile upgrade, if only for the 909 sounds (and Cubase integration). But if you want to get the most of ReBirth, add a MIDI hardware fader box—it really makes the program shine. In any event, this program is truly fun, and makes it easy to produce some really bitchin' loops.

MANUFACTURER: Steinberg, 21354 Nordhoff Ave, Suite 110, Chatsworth, CA 91311-6910. Tel: 818-993-4161. Web: www.us.steinberg.net. Circle EQ free lit. #127.

PRICE: \$199; upgrade from version 1.0 or 1.5, \$69.

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Sonic Desktop

SmartSound For Multimedia

Creating soundtracks just got a lot easier

BY FRANCIS PREVE

multimedia production needs. A slightly more expensive version, called "Dimensions," uses 44.1 kHz samples.

Musically, SmartSound has its bases covered. Though there's a little over an hour of material on the CD, alLatin numbers are totally authentic. I even liked the quiet, new age passages, which contained some nice melodic motifs.

The only weak area was the "'90s" genre; though I could see TV stations using the rock music for sports shows, some of the electronic music was a bit hackneyed. Not bad, but definitely dated.

Copy protection requires entering a serial number the very first time you run the program; then you're set. The start-up screen presents two options:



FIGURE 1: SmartSound's intuitive interface features metallic "capsules" that can be rearranged to create different musical passages.

Music arranging, which is part precision and part intuition, is difficult to explain — and harder still to master. It is also the key to a great soundtrack.

Thanks to a polished and intuitive interface, Sonic Desktop's SmartSound for Multimedia brings the art of arranging to the masses in an enjoyable, nononsense manner. Its usefulness ranges from creating soundtracks for multimedia presentations, to commercial production, to making mutant musical interludes for answering machine messages.

A television producer I know spends much time sifting through expensive music catalogs for suitable soundtracks. Until now, the only way to create a custom soundtrack for a TV commercial was to hire a composer/producer and hope for the best. When I showed him SmartSound, his eyes lit up. Within minutes he was developing musical "stingers," as well as a 29-second backing track for his latest promotion. Yes, it's that kind of program.

All tracks are recorded in stereo at 22.05 kHz, which is adequate for most

most every genre is represented once or twice. A good portion of the music is created with full bands and orchestras, and wonderfully recorded. The country tracks feature real slide guitar, the orchestral pieces are lush and well played, and the jazz and Maestro and Editor. For starting a new composition, use Maestro. A "Wizard"-like interface presents a series of questions to guide you through the process of making the music.

You can specify the composition's length in increments down to 100 mil-

LAB REPORT

MANUFACTURER: Sonic Desktop Software, P.O. Box 3205, Chatsworth, CA 91313-3205. Tel: 818-718-9999. Web: www.sonicdesktop.com.

APPLICATION: Automated soundtrack production tool, available on CD-ROM for Mac or PC.

SUMMARY: For novices and pros alike, this is a great tool for creating soundtracks of all kinds.

STRENGTHS: Customized soundtrack creation; intuitive user interface; authentic, well-recorded musical tracks; license-free music (for soundtrack-production only).

WEAKNESSES: Manual is PDF-only; some "modern" tracks sound a bit dated.

SYSTEM REQUIREMENTS: 4 MB RAM, 4-MB hard-disk space, 2X CD-ROM drive. Mac minimum: System 7, 68020 processor. Windows minimum: Windows 3 1/95/NT, 386 processor, 8- or 16-bit sound card.

PRICE: \$259 for standard version; \$298 for "Dimensions" version (44.1 kHz stereo samples).

EQ FREE LIT. #: 128

liseconds. Other questions ask you to choose among a set of musical genres and compositional styles. There are approximately 50 sets of musical and sound effects tracks; musical styles encompass orchestral, jazz, Latin, country and western, Cajun, dance, new age, and rock. A modest selection of sound effects includes nature sounds like crickets, storms, and birds, as well as traffic, telephones, and unique transition effects.

As you work, you can preview the results of your choices. If you're not satisfied, just click back through the questions to revise any of your decisions. When the composition is complete, you can save it as an audio file in any major format (WAV, AIFF, AU, QuickTime, or RealAudio) or open it in the Editor for further manipulation.

The Editor is where the real fun begins. Each soundtrack is divided into a number of musical snippets, ranging from short stabs to one- and two-bar excerpts. These are represented visually as metallic capsules (fig. 1). The capsules can be freely dragged while the composition is playing, so you can immediately hear any changes in real time. This is wonderful, as you can easily fine-tune each arrangement.

A primitive recording function for rolling your own sounds and music is also available. There are no wave editing features other than a "clipper" for trimming start- and end-points, but it's a thoughtful inclusion anyway. Besides, if you run out of music or crave more variety, Sonic Desktop offers six additional volumes of Smart-Sound music and sound effects on CD-ROM called Audio Palettes (available in two 16-bit formats: 22 kHz for \$69, or 44 kHz for \$129). These require SmartSound V1.6 for MacOS or V1.5 for Windows.

There's even a "Hinting" function that visually "suggests" arrangements based on traditional musical approaches. While definitely useful for novices, I had a blast by breaking the rules — creating bizarre country and western mutations, and even fiddling around with classic Mozart compositions. This application begs to be played with, which to me is the mark of an exceptional tool.

Also included are several digital effects such as flanging, echo, and equalization. These processors are fairly basic (some users may find them underpowered), but they can be individually applied to any section of a composition.

Multimedia producers will appreciate SmartSound's Quick Time support. You can embed any composition into an existing QuickTime movie and display a filmstrip-like preview above the Arrangement window. On the downside, the app froze once or twice while working with it over the course of a month. Since the freezes were not duplicable, I couldn't determine whether it was a system conflict or a bug. But considering how often my Web browser crashes, this is a relatively minor issue.

I was quite impressed with Smart-Sound: it not only represents the next step in production music libraries, but also really helps to demystify the secrets of arrangements. Anyone looking for a music resource for soundtracks, presentations, or

just fooling around should definitely check out this product. In fact, my television producer buddy is looking into purchasing a copy for his station. I guess that says it all. (*Note:* A demo version is downloadable at www.sonicdesktop.com.)

Francis Preve is a Web designer and remixer whose credits include Orbital, Salt-n-Pepa, and Utah Saints. Visit his Synthesis Web site at www.bga.com/~fap7/synthesis/.

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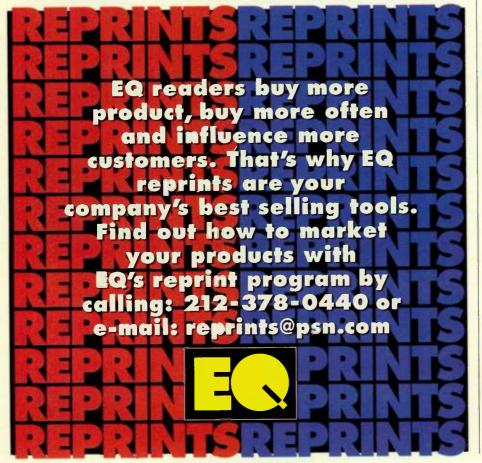
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REAMP REVIEW

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"sweet spot." But I must admit, when surround is good, it's very, very good — especially for home theater.

Deflation spoken here. There's talk on the CNNs of this world about how the next big financial trend might be deflation, but hey, we're already there in the audio biz. Symbolic Sound introduced a new, low-cost, nonetheless-powerful version of their stellar Kyma sound design software, digital computer interfaces keep doing more for less, and multitrack hard-disk recording systems from MOTU, Aardvark, and a zillion others keep improving the price-performance ratio. How about a Pro Tools setup (Digidesign ToolBox) for \$895? Or Microboards's Professional Remix Factory that bundles Sonic Foundry's ACID and CD Architect, a CD burner, PCI SCS1 card, and even a SCSI cable for \$895? For 96 kHz/24-bit fans, \$595 gets you Digital Audio Labs' CardDeluxe PCI interface for Windows with digital and analog I/O. Plus, [EMU-Ensoniq's] PARIS is now available in an entry-level version for \$1299 that can be easily expanded to the whole enchilada (or perhaps, in this case, "soufflé" would be more appropriate). Yes, it's a buyer's market, and there's more to come - as we'll all find out when we descend on Los Angeles for the upcoming 1999 Winter NAMM.

TANNOY REVEAL

continued from page 120

remix sessions are the day-to-day norm, the Reveals strike a balance between being useful for mixing and tracking, and there aren't a lot of monitors about which we can say the same. Also, the drivers in the Reveal are magnetically shielded, so they can be placed close to video monitors without magnetizing the picture tube (a definite plus for post-production or computer-based studios). When you take into consideration the price, it's clear that Tannoy has come up with a winner for the project studio.

MANUFACTURER: Tannoy Limited. Distributed by T.G.I. North America, Inc., 300 Gage Avenue, #1, Kitchener, ON, Canada N2M 2C8. Tel: 519-745-1158. Web: www.tannoy.com. Circle EQ free lit. #129. PRICE: \$399.

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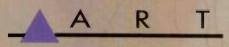
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Just Gimme Five Minutes!

More tape machine tips to get you out of jams (and other problems)

BY EDDIE CILETTI



Hello y'all! Time for more tape machine tips. These are Sir Loin, fer sher.

TIME IS EVERYTHING

First at bat is a tape tip — one that will minimize errors and provide some in-

surance against potential damage. We all know that tape machines occasionally get hungry. You hope, though, if your machine does get hungry, that it won't be dining on important recordings. Fig. 1 shows three formats - DAT, 8mm, and S-VHS each tape wound five minutes from the top. See how little tape is used? If you can schwing it, "burn" this much tape by printing a reference tone, just so the tape doesn't appear blank.

DON'T BE SO AFRAID!

A few times this past summer I was able to solve easy DAT problems over the phone. One phone conversation went like this: "Hello. My DAT machine looks like it's recording, but there's nothing (or mucho digital fuzz) on playback." Uh, ever hear of cleaning the heads? Contrary to popular belief, cleaning tapes work and don't do damage, if you don't abuse the privilege, especially for DAT. DTRS users should only use them in an emergency and/or when the error rate goes up. ADAT users have no excuse. Those machines are just too easy to clean!

Sure, you should manually clean the heads as part of a routine maintenance plan, but even I get the cleaning message - at the worst possible time and I stick in a cleaning tape, first! Usually this solves the problem on the first or second try and is certainly more convenient that vanking the offender out of the rack in the middle of a session. Just be sure to check the error rate immediately afterward.

The other occasional phone caller is a bit more perturbed: "Hello? You fixed my DAT almost a year ago and now it's doing the same thing." This time I wasn't so inspired for a "fone fix." In comes the machine and customer, both in a hurry. As the chief cook-and-bottlewasher, I want my children to behave, so I pop the hood and swab the deck. (On the bench, I never put any tape in a machine without manually cleaning the machine first. Like a computer virus, ya don't really wanna spread that schmutz around!)

The customer looked on while I went through lint-free cloths like an armchair quarterback goes through a bag of Doritos. After about fifteen minutes - alternating between wet cloth followed by dry - I'm still pulling off dirt. Then I asked, "Have you cleaned the heads since it was last serviced?" The answer was negative. I never "just" clean the heads because most people wait so long for service that their machine always needs major attention. You can't blame the machine, except that all of 'em should permanently display the error rate. When the CLEANING light comes on, it's whey too late.

HOW TO

Apply a lint-free cloth moistened with 99-percent Isopropyl alcohol to the side of the head. Use a free finger to rotate the head, counter-clockwise. (Direction doesn't really matter on a DAT or ADAT; however, direction is missioncritical on a TASCAM DA-38/-88/-98 or a Sony PCM-800! Counter-clockwise only! Remember to follow the "wet" cloth with a dry one to wick away residual alcohol as well as dirt. Allow a few minutes for evaporation. Spinning heads must be dry or else tape will wrap around 'em in a heartbeat. Always use a non-critical tape first, before inserting continued on page 138

Figure One Locate 0 = 2 minutes S-VHS 2:00 5:00

ACCURATE MONITORING IS NOW A RIGHT, NOT A PRIVILEGE.

Accurate monitoring used to be expensive. Not any more. Available in both active and passive versions, the new HHB Circle 5 incorporates a number of unique breakthroughs in loudspeaker technology to create a compact, high performance studio monitor that's ideal for use in a wide range of professional applications. An investment of \$250,000 in research and development has produced



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the price and prepare to be amazed.



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MAINTENANCE

continued from page 136

your valuable master. Visit my Web site — www.tangible-technology.com — for more machine-specific information not contained herein.

ADAT ERROR SEVEN

Once in a while I do get momentarily stumped, especially if a problem is in-

inear Head

shell and the machine couldn't even thread it. Other times, I've seen the plastic reel flange come unglued from the hub, intermittently restricting motion. Most of the time, however, the message is the result of a damaged cam. A locating pin, only one-hundredth of an inch too short, rides high in the more vulnerable area of the plastic cam, prematurely wearing it out.

Remember, I said, "Don't panic." A qualified tech can extract the tape with minimal, if any, damage.



termittent. After connecting an ADAT XT to a 'scope, I let it run in Auto Play mode while waiting for the demonic missive to appear, which it eventually did. During the cosmic disturbance, I noticed the RF waveform — the signal from tape — had lost lock. On a whim, I reseated the connector on the linear head. See fig. 2.

Surprised at first that normalcy returned, I then "pulled the plug" to confirm reappearance of said demon. It did! I cleaned the male connector on the head stack and removed the female pins from their plastic house — pinched them to make a better connection — then reassembled and haven't heard from the offender since.

DA-88 S-ERR 11

This one you can't fix, but don't panic if it does happen, especially if your machine is between serial numbers 250000 and 340000 (give or take a few). Only on rare occasions does the problem arise from either the tape or its shell. To avoid potential contamination of your tape, please be sure to keep it wound to either end (head or tail) when not in use. Always store tapes in their cases.

I recently saw one tape that must have picked up a bit of moisture on the backing side of the tape. It stuck to the

LOOKING FOR CLUES?

EQ's Web site has been getting a major facelift. If you haven't been there lately, there is, among much other useful info, a fairly comprehensive listing of manufacturers, their access numbers, and addresses (www.eqmag.com). Need a more extensive list that includes video? Then visit www.avinfo.com. It includes links, often with phone numbers and addresses, plus a search engine.

Ciao for now!

ROOM WITH A VU

continued from page 28

sor, and tube DI; Eventide DSP4000; Lexicon PCM90, PCM80, PCM70, 93, and 95 (digital delays); Yamaha Rev500, SPX90, and SPX900; Apogee AD 500; Antares ATR-1 pitch corrector; Studer D19 tube/digital mic pre; DeltaLab ADM 1024; Alesis Midiverb II [2]; Roland DEP5, SDE-1000, and E-660; BSS DPR 901 [2], BSS DPR 404, and Quad Eight Q8; Innovonics 201 compressor; Symetrix 501 compressor; Symetrix 501 compressors [2]; Rane D24 compressor w/crossover; dbx 160 [2]; UREI 1176 LN [2], 530 WB,

530, and 535 EQs; Drawmer 201 [2]; Orban 622 B [2]; Dynafex DX 2 noise reduction units [2]; BBE 862, 802, and 202 enhancers; Valley Dynamite; Lighthouse 16x16 AES/EBU patchbay; Boss Leslie Simulator; Bedini B.A.S.E.

MICROPHONES: Neumann K100 Binaural Dummy and U87; AKG Solidtube, E34, C414, C414-B-ULS, D392, C535, and D112; Fostex MS and MR-111-P [5]; Sennheiser MD504's, MD409, and MD421's; beyerdynamic MC740, M88, and M500; Audio-Technica AT4050 and AT822; Groove Tubes Model 2; Schoeps Collette; Octavia 1995r; Shure 55 SH, SM57, SM58, SM7, and SM91; Sony ECM50/55 and 632; Azden Wireless; Countryman Lavalier

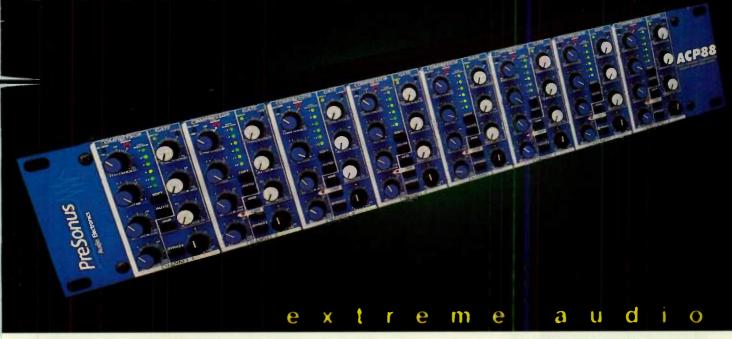
KEYBOARDS AND SOUND MODULES: Alesis D4 and SR16; Roland MC-505, RC-88, and PC-200; Kurzweil Micropiano and GX-1000; Yamaha MU 80; Korg M1R; EMU Proteus 2/XR; Drumkat KAT; Akai S-900; Prophet 2000; Opcode Studio 5; JL-Cooper 16x20 MIDI patchbay

STUDIO NOTES: According to Michael Wagener: The most special thing about the studio is the atmosphere. We're out in the country where it's totally relaxed, and it's basically a "put-the-gear-in-the-living-room" kind of situation. The room is my own, so (of course) I have a lot more freedom in terms of time. I don't feel any pressure whatsoever and I don't pass any pressure on to the musicians.

I only have one recording room, but it sounds amazing for acoustic instruments - especially drums. I built the room with Wolf Hoffman (former guitar player for Accept), and kept it very live. It's all drywall with a concrete floor and has about a 2-second reverb time, without any harsh reflections. Although the room is not particularly big - about 11 x 22 — it's extremely live and extremely loud. Wolf and I have built a few studios together, and it's built in a way that there aren't any harsh cymbal splash sounds to deal with. By adding Tube Traps to the room, I can modify the length of the reverb in the room totally to my taste. When we get to vocals, we put the Tube Traps around the room and it can be as dead as we want it to be.

EQUIPMENT NOTES: Wagener continues: I would have to say that the most important pieces of equipment in the studio are the Yamaha 02R's. I have two as the centerpiece of the studio, and it's a wonderful thing. They enable me to do everything I would want to do in a studio with a "big" console, and more. I would not want to be without them ever again.

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Just How Dumb Do They Think We Are?



A review of RealAudio's beta G2 encoder

BY JON LUINI & ALLEN WHITMAN

This month's review is practically identical to last month's, but with rather different results. We auditioned the new RealAudio G2 encoder in a subjective listening test using a Windows NT System (dual 200 MHz Pentium processor), a 13-inch color monitor (very lo-res), and common or garden variety, tiny, little, powered computer speakers called Labtec CS-150's. Test tubes, retorts, and beakers with mysterious, brightly colored fluids bubbled late into the night at the secret underground FezLab at Grok House.

As before, we put an analog signal from a portable DAT player (see column #3 on www.fezguys.com or the January '97 issue of *EQ*) into the computer, used Cool Edit to create the WAV file, and then compressed it, this time into a RealAudio G2 file.

The G2 encoder is found at: www.real.com/g2/products/encoder/.
Because it's still in beta, it's currently free. If they follow suit with their 5.0 release, a stripped-down version will remain freely available. There are still no

versions of the encoder or the player available for Macintosh or UNIX users. (Hello? Is anybody at the helm at Real-Networks?)

Downloading and installing the encoder is simple and to the point. After installation, we open up the GUI interface of the encoder and poke around. Our first look brings us up short. Ordinarily there would be a choice of various bit-rate settings to facilitate a users' needs based on file size, connectivity, and processing power. We can't believe it! There is nowhere to set the bit rate! There is only a menu bar that says: "Target Audience." Apparently we are being asked to make our encoding parameter choices based not on our technical needs, but on unknown values set by the manufacturer. This is just wrong. Even after we get over our shock and actually encode a file, this interface continues to come up short. It doesn't show us the compression parameters, doesn't offer any information on elapsed time to encode a given file, and doesn't tell us the file size.

We sit back from our computer and draw a deep breath. Is this where Real-Networks wants to take us? Looks like they've decided what's going to be best. We only have to point and shoot. This must be the Microsoft influence. You know the signature computer behavior: an app doing non-intuitive things you didn't ask for automatically and you can't stop it? RealNetworks (the parent company of RealAudio) has been working closely, maybe too closely, with the software Goliath. This beta G2 encoder is offering a letter-perfect example of the "dumbed-down interface." Less user options apparently means, to RealNetworks, more efficiency. We're stunned. There isn't even a setting to encode for 14.4 modems.

Now maybe this kind of overly simplified interface might be appropriate for their "Wizard" (or beginner-user) mode, but a more accomplished power user should be able to override it. We define a power user as someone who has the desire and ability to use an application in a new and creative way beyond the manufacturer defaults. This is what artists do. It's what creativity is all about. If a Stratocaster guitar only allowed a player five notes it would have

been quickly forgotten. If a piano only allowed for music in the C-major scale (the people's key), there would be no Glenn Gould Bach interpretations. Have we made our point? We'd love to override the GUI on this app, but that option is not available. This isn't what we'd call "user-friendly."

On to the test portion of our program. As we stated, instead of setting bit rates and sampling rates we are forced to select a "Target Audience" (choices are: 28k, 56k, single ISDN, dual ISDN, LAN/T1 [low and high]). Each "Target Audience" selection then offers a choice of "Audio Formats" based on the content of our source material. The choices are: Voice, Voice with Background Music, Music With Vocals, Instrumental Music, and No Audio (for encoding video only). For our purposes, we'll stick to files encoded for streaming over standard phone modems, skipping the higher-bit-rate compression settings for ISDN and LAN/T1. We'll compare the elapsed encoding time and sound quality of identical WAV files using both the G2 beta encoder and RealAudio's earlier 3.1 version. The source WAV file is a 3-minute, 35-second song that uses 36.2 MB of disk space.

RealAudio 3.1 (with "Show Audio Signal" option turned off for more speed)

 At a 4.7 kHz sampling rate, 16 kbps file, mono (for streaming over 28.8k modems): Encoding takes 53 seconds. Audio quality: Sounds barely acceptable but sonically legible.

• At an 8 kHz sampling rate, 32 kbps file, mono (for streaming over 56k modems): Encoding takes 55 seconds. Audio quality: Sounds a little better, but still merely OK.

RealAudio G2 (using the "Music with Vocals" setting in the "Audio Format" menu)...

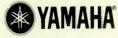
- At an unknown sampling rate, 16 kbps file, mono (the "28k" setting): Encoding takes 1 minute, 10 seconds. Audio quality: Sounds good and actually better then the 3.1 (the G2 16 kHz sounds identical to the 32 kHz 3.1-encoded file.)
- At an unknown sampling rate, 32 kbps file, mono (the "56k" setting): Encoding takes 1 minute, 25 seconds. Audio quality: Sounds very good.

Based on our observations; a 32



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These compunities have announced support for DSP Fartory in their Windows® products, Macintosh software coming soon.

Visit our Web site @ www.yamaha.iio.jp/produit/proaudio or call us at 800-937-7171 ext. 683 • ©1996 Yamaha Corporation • Yamaha, DSP and DS2416 are registered trademarks of Yamaha Corporation. * Nii tall software supports all of DS2416's features.

kbps RealAudio G2-encoded file sounds better than a 3.1-encoded file at the same bit rate. But we can't tell whether the G2 is playing back in stereo or mono. An accurate comparison of the quality of the two applications is difficult because there's no way to set identical parameters on the G2 system. We had to read the kbps value of a G2encoded file by looking at the streaming info on the player's GUI while listening back to the song.

Overall, the RealAudio G2 encoder sounds pretty darn good, though there are some serious problems with the interface design. We found ourselves visiting the Help menu frequently, which, in the arena of audio-encoding software, is typically unnecessary. We're aware that this is a beta version, but it seems that in RealNetworks' desire to simplify and streamline their encoding product they've done the opposite. It feels overly complex, somewhat top-heavy (many irrelevant options), and rather totalitarian (many useful and commonsense choices are glaringly absent).

This new G2 codec is based on a "Cook" compression algorithm, a name we admit we're not familiar with. It sounds better then the MP3-encoded files from last month's Xing Streamworks encoder review (see last issue of FezGuys column #24 at www. fezguys.com). Our listening tests showed that the 32-kbps-encoded Xing MP3 file sounded only slightly clearer than the 16-kbps-encoded G2 file. The RealAudio 3.1 16-kbps-encoded file sounds clearer than the Xing MP3 16kbps-encoded file. Interestingly, a Xing MP3 32-kbps-encoded file sounds clearer then the 3.1 32-kbps file. And the G2 32-kbps-encoded file sounds better (good clarity, approaching FMquality) then the Xing MP3 32-kbps-encoded file (somewhat thin with slight high-end swooshiness). Each encoder has a unique sonic footprint. On a purely subjective note (is there any other kind?), the Xing MP3 has a more natural, warm sound. The RealAudio G2, however, has a more "digital," or colder, sound to it. The G2 sounds oddly enhanced; as if a virtual surround element has been introduced into the encoding process.

Bottom Line: Internet audio products are evolving quickly, and the quality of compressed audio streamed at low bit rates is improving dramatically. It's clear, however, that interface designers would benefit by involving people who actually use the product in their development process. This might provide perspective into how musicians or music-lovers actually think and interact with computers and software. It might improve the way tools are created. All things are possible.

[Note: as we went to press, Real-Networks introduced a "second beta" (gamma?) release of the G2 encoder. Go to: www.real.com/company/pressroom/pr/98/g2beta2.html. Of course, it's still Windows-only. Naturally, we will put it through the wringer as soon as we can.l

LETTERS

Dear FezGuys — Do you have any experience with Shockwave audio (SWA) streaming? While RealMedia is the de facto standard for audio streaming, there are some attractive media sync'ing features within the SWA model that we may wish to use. But I am concerned about the performance of SWA streaming of audio files [FezGuys note: SWA files are encoded using the MP3 codec and have an extra file header] longer than a few seconds or minutes in length. Thanks. -Glen J. Stephan

Dear Glen - Shockwave Audio's (SWA) ability to sync different events within a larger Shockwave interactive piece is a very nice capability. Real-Networks does have some ability in this as well, and, in fact, there are ties into it with the Shockwave architecture. Nonetheless, using SWA for streaming long clips is no different than streaming short clips. Encode the audio at the bit rate that suits your need (i.e., 16-kbps-encoded stream for 28.8k dialup users, etc.). Shockwave also features the ability to include sound clips in their entirety for downloading. Keep these nonstreaming files as small as possible in order to keep the download to the user short as well. Happy Encoding!

We welcome your comments. Send them by visiting www.fezguys.com.

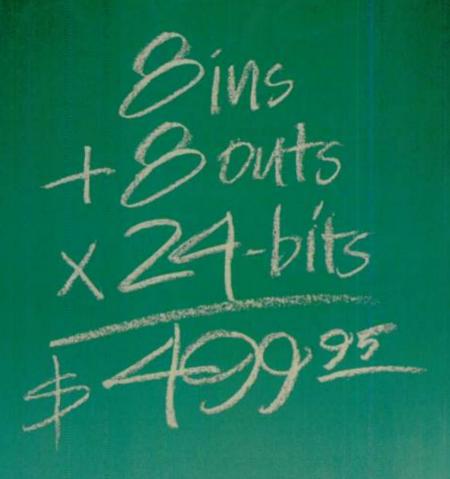
ANOTHER YEAR, ANOTHER TRADESHOW

The Audio Engineering Society (AES) hosted its 105th tradeshow, convention and handshake/business-card-exchange boot camp from September 26th-29th, deep underground in the cavernous Moscone Convention Center in earthquakeprone San Francisco. You could see it all, from 80-channel mixing boards that cost as much as a one-bedroom apartment on the Upper West Side of Manhattan, to tiny pieces of metal and plastic guaranteed to improve the quality of your listening experience.

It was mostly the usual suspects, but a couple of Internet-related companies were present. RealNetworks was seen pushing their G2 system from a small booth by the back wall. LiquidAudio, more centrally located and actively staffed. told us they're adding MP3 capability to their suite of tools and making plans to add the new AAC codec (sometimes nicknamed MPEG 4) as it matures. LiguidAudio products have previously been based solely on Dolby Laboratories' AC3 (now called Dolby Digital) codec. Over in the loud section, Waves (the audio software newcomer from Tel Aviv) was sharing info about upgrades of their live multistream encoder (soon to support RealAudio's G2), as well as new versions of EQ, limiting, and compression software.

At the end of an aisle, Telos (proud parent of Audioactive MP3-based products) displayed some bitchin' Real Time Audio Encoder hardware. Apparently we no longer need to route through a Windows computer for their encoder to stream audio over the Internet. This box attaches straight into the 'Net; plug and play all the way. Seems pretty cool: a player can open a connection to it directly, for single, point-to-point streaming and there are several interesting possibilities (other than the still-supported Netshow) to tie it into a multiplex for live broadcast to multiple listeners.

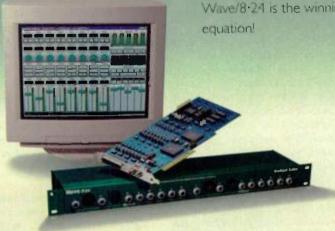
MP3 is an open standard; basic interface and other software apps could easily be written for it. There was also a new version of Telos's MP3 Encoder software. We're on it, we're on it...we'll do a follow-up later, we promise. Of course, at the rate this stuff is taking off, we may need to start our own magazine!



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STUDIO RENOVATION

continued from page 58

(this was in addition to the analog I/Os). Three AES/EBU interface cards accommodate the three Digidesign 888/24 interfaces.

Finishing off the digital routing is a standard Switchcraft TT96 patchbay used for patching and normalling of digital stereo pairs. Interestingly, the analog patchbay has no normal from the 02R master output to SV-3800 #1. That's because this normal takes place in the digital domain via the digital patchbay: AES/EBU master out of the 02R is normalled to the AES/EBU input of SV-3800 #1. The S/PDIF master out from the 02R is normalled to SV-3800 #2 S/PDIF in, allowing Mike to simultaneously mix to two DATs without patching. Two-track returns were handled similarly with SV-3800 #1's AES out normalled through the digital bay to master 02R's digital 2track return #1, SV-3800 #2's S/PDIF out normalled to digital 2-track return #2, and the S/PDIF out of the CD-R normalled to digital 2-track return #3.

Since this arrangement leaves the analog L/R output from the master 02R unused, it was normalled to the cassette deck inputs. Although one cassette deck would initially be installed (a TAS-CAM 122 Mk III), Mike anticipated adding a second, so the wiring is prepped for deck #2. Inside the bay, the master L/R out patch points were paralleled to a second pair of jacks, enabling us to normal the one set of master outs to the two cassette decks again to reduce patching. Output from the 122 Mk III was normalled to the +4 analog return of the 02R. CD out (from a Sony consumer CD player) was normalled to the -10 analog return of the 02R. It's interesting to note that Yamaha has built in gain compensation for the -10 input, so you don't have to lunge for the volume knob when switching between the various inputs in the monitor

Some of the extra goodies in the patchbay include four, four-point mults, two phase reverse pairs, breakout pairs to a rack panel in the control room for guest gear, video ties to a video monitor and video decks, eight ties to the studio shop, and a total of 20 ties to the separate MIDI suite area. In all, 18 02R analog aux outputs appear at the bay: six from each 02R. Although it's the six sends from 02R #3 that act as the master, we felt it'd be a good idea to have the option of connecting sends from any of

the consoles — just in case. (According to Mike, "The sends on the slave consoles have actually been quite the blessing and very, very useful during tracking, overdubbing, and mixing.")

NOW HEAR THIS!

Quite a few monitoring options were installed to accommodate Mike's choice and location of monitors - a tricky proposition since he's using a mix of active and passive monitors. The control room output of the master 02R goes to the bay and is normalled to the input of a line-level switch box. One output of this switch box is hardwired to the input of the (active) Genelec 1031A's. A second output of this box is hardwired to the input of a Bryston 4B power amp. Output from the Bryston amp comes back to a second (speaker-level) switchbox, which then routes the power amp to either the control room mains (Big Reds), nearfield #1 (Yamaha NS10M), or nearfield #2 (Auratone) monitors. A third output from the line-level control room switchbox is sent to a Yamaha P2200 power amp that is used to run another pair of NS10M's located at the synth workstation.

Similarly, the studio output from the master 02R is normalled to a second line-level switchbox, which outputs to two additional amplifiers: a Furman HA-6 headphone amp for cue purposes and a second Yamaha P2200 for the studio monitors (still under debate). All of the speakers and the headphone lines employ Monster Cable speaker cable. Intended to interface with Furman HR-6 remote headphone boxes, the Monster Cable speaker lines for the headphone feed terminate at male XLR receptacles in the studio and iso booths.

To be continued.... Next month we'll take a look at the clock synchronization and MIDI routing of SOS Productions.

Michael Sosna of SOS Enterprises Group is an independent engineer/ producer who (among others) has worked with Bebe and Cece Winans, Nile Rodgers, David Sanborn, Whitney Houston, Michael Bolton, Patti Austin, and Paul Schaeffer. He has also worked doing audio, music, sound design, or voiceover for companies such as Pepsi, Folgers, Visa, Coke, Gillette, McDonalds, Chevy, AT&T, General Motors, M&M'S, Cadillac, and HBO. Michael was recently appointed music producer and audio consultant of Cyberjam. He can be reached at 516-902-8111.

ALESIS FIRST LOOK

continued from page 36

section of the crossover enables the output of frequencies from the high and low drivers to occur in perfect synchronization. A 75-watt amp drives the woofer, while a 25-watt power source drives the tweeter.

Both the M1 Active's woofer and tweeter were designed to provide the most linear, low distortion response in powered monitoring applications. The speaker employs a 6.5-inch woofer cone formulated from a high tensile strength, low weight, non-woven carbon fiber. This material is said to be roughly 25 percent lighter than the polypropylene commonly found in many other drivers, and was chosen for its rapid transient response time in the low frequency range as well as its ability to accurately reproduce the detail of the critical upper-mid frequencies.

The speaker's 1-inch tweeter dome is made from pure silk and provides a natural response in addition to its ability to minimize ear fatigue during long mix sessions. The tweeter uses a dualmagnet shielded configuration and is ferrofluid cooled to maintain the optimum balance of transient response to power handling.

Housed in mirror-image, dual-port, charcoal gray cabinets with magnetically shielded drivers, the M1 Active monitors can be placed close to video or computer monitors without distorting the on-screen picture — making them ideal for multimedia or sound-for-picture environments. The speakers can be either vertically or horizontally mounted for the best possible placement in the studio.

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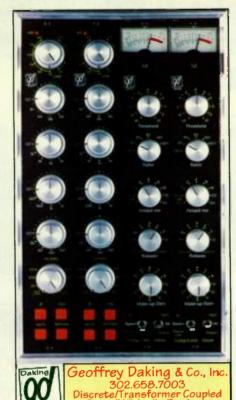
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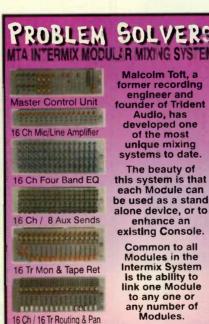


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- External redundant power available
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Bus Mixing Console

Everything you've been waiting for and more!!! The new digital 8 bus from Mackie features great sound quality, full recording and mixdown capabilities, motorized faders and an array of digital features geared to take you flying into the next century. See for yourself what the entire industry is raving about

- 48 channels of automated compression, gating, EQ and delay
 Built in 3-way meter display keeps you on top of your mix.

- Built-in meter bridge,
 Ultramix II automation for complete control, hook up an S-VGA monitor. and you'll feel like you spent a lot more money.

 All functions can be automated, not just level, and mutes. Store
- EQ, reverb, compression, gating and even Aux send information
- · Fast SCENE automation allows you to change parameter snapshots on every beat.
- Reads Standard MIDI tempo maps, displaying clock info on the built-in posit on counter.
- Truly the cutting edge of mixing technology



Panason

WR-DA7 Digital Mixing Console

Stop dreaming about your digital future, it's here! The Panasonic WR-DA7 digital mixer fea-Stures 32-bit internal processing combined with 24-bit A/D and D/A converters as well as moving faders, instant recall, surround sound capabilities, and much more. Best of all, it's from Panasonic.

FEATURES-

- · 32 Inputs/6 AUX send/returns
- · 24-bit converters · Large backlit LCD screen displays EQ, bus and aux
- assignments, and dynamic/delay settings.

 4-band parametric EQ
- · Choice of Gate/Compressor/Limiter or Expander on each channel
- . 5.1 channel surround sound in three modes on the bus outputs
- Output MME
- · Optional MIDI joystick



TASCAM

TMD 1000 Digital Mixing Console

You want to see what all the digital mixing buzz is about? The NEW TMD100 from Tascam will have you smilin' & automatin' in no time. It features fully automated EO, levels muting, panning and more in an attractive digital board with an analog 'feel'. Your digital future never looked, or sounded, so clear.

FEATURES-

- 4 XLR mic inputs, 8 1/4" balanced TRS inputs.
 20-bit A/D D/A conversion, 64x oversampling on
- input, 128x on output.

 Store all settings, fully MIDI compatible.
- Optional IF-TD1000 adds another 8 channels of TDIF and a
- 2-channel sample rate converter.
- · Optional FX-1000 Fx board adds another 4 cynamic piecesson and another pair of stereo effects.

Focusrite 3 "Voicebox MKII"



Vew

e Voicebox MKII provides a signal path of except onal clarity and smoothness for mic recording, combining an ultra-high quality mic amp, an all new Focusrite EQ section optimized for voice, and full Focusrite dynamics. The new MKII now includes a line input for recording and mixdown applications.

FEATURES-

- mic pre section as found on the Green Dual Mic Pre includes +48V phantom power, phase reverse, and a
- EQ section includes a mid parametric band with frequency and gais control as well as a gentle bell shape to bring out the character of the voice
- Dynamics section offers important voice processing functions of compression and de-essing combined with a ise reducing expander
- Single balanced Class A VCA delivers low distortion and a S/N ratio as low as -96dBu



Finalizer Plus



mproving on the multi-award winning Finalizer platform. The Finalizer Plus delivers an unprecedented level of clarity, harmth and punch to your mix. Inserted between the stereo output of your mixer or workstation and your master recording media, the Finalizer Plus dramatically rounds out your material, creating that "radio ready" sound.

FEATURES-

- · Balanced Analog as well as Digital outputs including AES/EBU, S PD F, & TOS.

 • 24-bit precision A/d & D/A Converters
- 5-hand 24-hit stereo FO.
- · Enhance · De-essing, stereo adjust or digital radiance
- · Real-time pain maximizer
- · Variable slope multi-band expander
- · Multi-band compressor · Word Clock Sync
- MIDI section uneful for controlling sequencer fades or any of the Final zer's parameters from a remote MIDI controller.



PCM81

Multi-Effects Processor



The PCM-81 has everything that made the PCM80 the top choice among studio effects processors, and more More effects, more algorithms, longer delay and full AES EBU I/O.

FFATURES-

- 300 Presets include pitch, reverb, ambience, sophisticated modulators 20 second stereo delays, and dynamic spatialization effects for 2-channel or sur round sound applications
- 2 digital processors including Lexicon's Lexchip for the reverb and a second DSP engine for the other effects
- 24-bit internal processing
 Dynamic patching matrix for maximum effects control. · PCM card slot



The Green 2 Focus EQ is suitable for a variety of applications combining a Focusrite equalizer section with a

I multi-source input section. Use it as a high-quality front end for recording applications or patch it into the send/return loop to upgrade a single channel of console eq. either way, it sounds great.

FEATURES-

- XLR & 1/4" inputs are similar to the Dual Mic Pre but have been adapted to cope with a wider range of levels.
- VU metering via a 10-LED bargraph
 EQ section derived from the Red and Blue range processors for superb audio quality

Studio Channel



The Joe Meek Studio Channel offers three pieces of studio gear in one. It features an excellent



transformer coupled mic preamp, a great compressor and an enhancer unit all in a 2U rackmount design. Find out why more and more studio owners can live without one.

FEATURES-

- 48V phantom power, Fully balanced operation
 Mic/Line input switch
- Mono photo-optical compressor
- High pass filter for large diaphragm mics
 Extra XLR input on front makes for easy patching
- · Compression In/Out and VU/compression meter Twin balanced XLR outputs with one DI XLR output
- for stage use
- Enhancer In/Out switch and enhance indicator
 Internal power supply 115/230V AC



The dbx 1605 combines the best features of all the great dbe compressors in a well-built unit where the crafts-



FEATURES-

- 127dB dynamic range Program dependent "Auto", or fully variable attack and release Hard knee/Over asy's itchable.



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VS1680 Digital Production Studio

The new VS-1i80 Digital Studio Workstation is a complete 16 track, 24-bit recording, editing, mixing and effects processing system in a compact tabletop workstation. With its advanced features, amazing sound quain ity and intuitive new user interface, the VS-1680 can satisty your wanderlust.

FEATURES-

- 16 tracks of hard disk recording, 256 virtual tracks.
 24-bit MT Pro Recording Mode for massive headroom and dynamic range
- Large 320 x 24D dot graphic LCD provides simultane ous level meters, playlist, EQ curves, EFX settings, waveforms and more.
- 20-bit A/D D/A converters
- · 2 optional 24-bit stereo effects processors (VS8F-2) provide up to 8 channels of independent effects pro-
- New EZ routing function allows users to create and

various recording, mixing, track bouncing, and other comprehensive mixer templates for instant recall.

- 10 audio inputs: 2 balanced XLR-type inputs w/ phartom power, 6 balanced 1/4" inputs, and 1 stered digital. input (optical/coaxial)
- · 12 audio outs: 8x RCA, 2x stereo digital & phones.
- Direct audio CD recording and data backup using optional VS-CDR-16 CD recorder.



16-Track HD Recorder

The Akai DR16 is a digital hard disk recorder with sophisticated non-destructive editing functions for near instant data access. Recording & playback is as straight forward as tape. The DR16HD ships with an internal 2GB drive for 24 minutes per track of record time.





- MT8 Mixer controller DL16 Remote control unit IB801S SCSI Interface board
- IB802T SMPTE interface board IB803M MIDI interface board IB804A ADAT interface board
- IB805R RS422 Interface board IB806B Bi-phase interface board
- IB807V VGS monitor interface board EQ16 16-channel digital EQ board ALX50 Remote Cable

DA-98 **Digital Audio Recorder**

ne DA-98 takes all the advantages offered by the DTRS format and significantly ups the ante for the profes sional and post-production professional alike. With enhanced A/D and D/A convertors, a comprehensive LCD display and full compatibility with the DA-88 and DA-38, the DA-98 delivers the absolute best in digital multitrack functionality



FEATURES-

- Confidence monitoring for playback and metering
 Individual input monitor select switch facilitates easier
- checking of Source/Tape levels

 Switchable reference levels for integration into a variety
- of recording environments with internal tone generator

 Digital track copy/electronic patch bay functionality
- Comprehensive LCD display for easy system navigation
- 200 system

· Dedicated function/numeric keys make operation easier Built-in sync with support for MMC and Sony P2
 D-sub connector (37-pin) for parallel interface with

Optional RM-98 rack-mount ear for use with Acouride

A standard digital multitrack for post-production and winner of the Emmy award for tech-nical excellence, the DA-88 delivers the best of Tascam's Hi-8 digital format. Its Shuttle/Jog wheel and track de ay function allow for precise queing and synchronization and the modular design allows for easy servicing and performance enhancements with third party options.

he DA-38 was designed for musicians. Using the same Hi-8 format as the highly act laimed DA-88, the DA-38 is an 8 track modular design that sounds great. It features an extremely fast transport, compatibility with Hi-8 tapes recorded on other machines, rugged construction

he New ADAT-XT20 provides a new The New ADAI-X12U 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 autologate system
- Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.
- Remote control
- · Servo-balanced 56-pin ELCO connector

ADAT XT20 Digital Audio Recorder

external controller

- · Built-in electronic patchbay
- · Copy/paste digital edits between machines or even within a single unit. Track Copy feature makes a digital clone of any track (or group of tracks) and copies it to any other track (or group) on the same recorder



SONIC FOUNDRY CD Architect & CD Factory

CD Architect is the perfect solution for designing professional audio CDs to Red Book spec on Windows NT and Windows 95. Sample audio from compact disks, record from DAT, or digitize material through a sound card. It comes complete with an editor including dozens of effects and tools to process sound files and can optionally operate as a Sound Forge plug-in. CD Factory adds a CD burner, SCSI card and cable for a complete production package

FEATURES-

- Multi file playlisting
- · Master volume taders (-96dB to +20dB)
- · Adjustable envelope levels for any region · Mix or crossfade overlapped regio
- Convert from mone to steree on the fly
- · Multiple levels of undo/redo Up to 99 tracks with 99 subindexes per track Make class-masters directly from burned COs

The SV-3800 & SV-4100 feature highly accurate and reliable transport mechanisms with search speeds of up to 400X normal. Both use 20-bit D/A converters to satisfy even the highest professional expectations. The SV-4100 adds features such as instant start program & cue assignment, enhanced system d'agnostics, multiple digital interfaces and more. Panasonic DATs are found in

- studios throughout the world and are widely recognized as the most reliable DAT machines available on the market today · Adjustable analog input attenuation, +4/-10dBu
- 64x Oversampling A/D converter for outstanding phase characteristics
- Search by start ID or program number · Single program play, handy for post.
- L/R independent record levels
- · Front panel hour meter display
- · 8-pin parallel remote terminal
- · 250x normal speed search

TASCA DA-30mkII

A great sounding DAT, the DA-30MKII is a Standard mastering deck used in post-pro-duction houses around the world. Among many other pro features, its DATA/SHUTTLE wheel allows for high-speed cueing, quick program entry and fast locating.

FEATURES-

- Mult ple sampling rates (48, 44.1, and 32kHz).
 Extended (4-hour) play at 32kHz.
- Digital I/O featuring both AES EBU and S PDIF.
 XLR balanced and RCA unbalanced connections
- - Full function wireless remote · Variable speed shuttle wheel.
 - SCMS-free recording with selectable ID.
 - · Parallel port for control I/O from external equipment

he 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 recording studio environ-ments 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

he D-15TC comes with the addition of optional The D-15TC comes with the addition of optimization 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)

PCM-R500

orating Sony's legendary high-reliability 4D.D. Mechanism, the PCM-R500 sets a new standard for profess onal DAT recorders. The Jog/Shuttle wheel offers outstanding operational ease while extensive interface options and multiple menu modes meet a wide range of application needs.

FEATURES-

- · Set-up menu far preference selection. Use this menu for setting ID6, level sync threshold, date & more Also selects error indicator.
- · Includes 8-pin parallel & wireless remote controls
- - SBM recording for improved S/N (Sounds like 20bit)
 - · Independent L/R recording levels
 - Equipped with auto head cleaning for improved

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FEATURES-

- Same unit works on both Mac & PC platforms
 8x8 MIDI me ge matrix, 128 MIDI channels.
- · Fully programmable from the front panel 128 scene, battery-backed memory
- · Fast 1x mode for high-speed MIDI data transfer.

Digital Time Piece™ Digital Interface

Think of it as the digital synchronization hub for your recording studio. The Digital Timepiece provides sta-Ale, centralized sync for most analog, digital audio, and video equipment. Lack together ADATs, DA-88's ProTools, worst clock, S/PDIF, viceo, SMPTE, and MMC computers and devices flawlessly. It ships with "Clockworks" software which gives you access to its many advanced features and remote control of some equipment settings such as record arm



Studio 64XTC Mac/PC MIDI Interface

'he Studio 64XTC takes the assorted, individual pieces The Studio 64XTC takes the assorted, morrouse digital of your studio-your computer, MIDI devices digital and analog multitracks and even pro video decks, and puts them all in sync

FEATURES-

- 4 h / 4 Out, 64 channel MIDI/SMPTE interface/patch bay with powerful multitrack & video sync features

 • AEIAT sync with MIDI machine control
- · Simultaneous wordclock and Superclock output 44 1kHz or 48kHz for perfect sync with ADAT, DA-88 and ProTools
- Vitieo and Blackburst in (NTSC and PAL)
- · Cross-platform Mac and Windows compatibility

SAMPLING



he e-6400 from EMU features an easy interface that makes sampling easy. Automated features like looping, normalizing and more allow you to flexibly create your own sound palettes or access any of the 400 sounds provided on 2 CDs for unlimiting sound creation. It is upgradeable to 128MB of RAM (4MB standard) and features 64 voice polyphony, 8 balanced analog outputs, SCSI, stereo phase-locked time compression, digital re-sampling and more. A dream machine

XP60 & XP80 Music Workstations

The XP-80 delivers everything you've ever wanted in a music workstation. An unprecedented collection of carefully integrated features provide instant response, maximum realt me control and incredible user expandability



The XP-80 features a pro-quali-ty 76-note weighted action keyboard while the NEW XP-60

XP80 FEATURES-

- 64-voice polyphory and 16-part multitimbral capability · 16 Mbytes of internal waveform memory; 80Mbytes
- when fully expanded (16-bit linear format) . 16-track MRC-pro sequencer with direct from disk
- playback. Sequencer holds approx, 60,000 notes
- New sequencer functions like "non-stop" loop recording and refined Groove Quantize template
- · Enhanced realtime performance capability with advanced Arpeggiator including MIDI sync and gui strum mode and Realtime Phrase Sequence (RPS) on-the-fly triggering of patterns
- · 40 insert effects in addition to reverb and chorus
- · 2 pairs of independent stereo outputs: click purput lack
- · Large backlit LCD display

SR-JV80 Series Expansion Boards

Roland's SR-JV80-Series wave expansion boards provide JV and XP instrument owners a great-sounding, cost-effective way to customize their instruments. Each board holds approx. 8Mb of entirely new waveforms, ready to be played or programmed as you desire.

Boards Include-

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KURZWEIL **K2500 Series** Music Workstations

The KZ500 series from Kurzweil utilizes the acclaimed V.A.S.T. technology for top-quality professional sound. Available in Rack mount, 76-key, and 88 weighted key keyboard configurations, these keyboards combine ROM based samples, on-board effects, V.A.S.T. synthesis technology and

full sampling capabilities on some units.

FEATURES-

- True 48-voice polypheny
- · Fluorescent 64 x 240 backlit dis
- Up to 128MB sample memory
- · Full MIDI controller capabilities • 32-track sequencer
- · Sampling option available
- Dual SCSI ports
 DMTi Digital Multitrack interface
- option for data format and sample rate conversion (Interfaces with ADATs or DA-88s)



Trinity Series Music Workstations DRS

Korg's Trinity Series represound synthesis and an incredible user interface. It's touch-screen display is like nothing else in the industry. allowing you to select and program patches with the touch of a finger. The 24MB of internal ROM are sampled



TRINITY

TRINITY

TRINITY

TRINITY 61-key

88 Weighted-key/Solo Synth

76-key/Solo Synth

61-key/Solo Synth

using ACCESS which fully digitizes sound production from source to filter to effects. Korg's CSP based Multi Oscillator Synthesis: System (MOSS) is capable of reproducing 5 different synthesis methods like Analog synthesis Physical Modeling, and variable Phase Modulation (VPM).

FEATURES-

- · 16 track, 80,00 note MICI sequencer Flexible, assignable controllers
- · DRS (Digital Recording System) features a hard disk recorder and various digital interfaces for networking a digital recording system configured with ADAT, DAT
- recorder and hard disk. 256 programs, 256 combinations
- Reads KORG sample DATA library and AKAI sample library using optional 8MB Flash ROM board

*(Digital IF, SCSI, Hard Disk Recorder, and sample Playback/Flash ROM functions are supplied by optional

Powered Studio Monitors

hese new powered studio monitors from KRK supply 130 watts of clean

performance. Their 8" woofer & 1" silk dome tweeter ensure crystal highs as well as the bass response needed for today's studio environments



FEATURES

- 49Hz 22kHz
 Magnetically shielded
- for use near video monitors

Hafler

Powered Studio Monitors

Winner of Pro Audio Review's PAR Excellence Award

in 1997, Hafler's TRM8s provide sonic clarity previously found only in much more expensive speakers. They feature built-in power, an act ve crossover, and Hafler's patented Trans-nova power amp circuitry.



FEATURES-

- 45Hz 21kHz, ±2dB
 75W HF, 150W LF
- · Electronically &
- Acoustically matched

MAC

HR824 hese new close-field

monitors from Mackie have made a big stir. They sound great, they're affordable, they're inter-nally 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

he latest playback monito from Tannoy, the Reveal has an extremely detailed, dynamic sound with a wide, flat frequen cy response

FEATURES-

- 1" soft dome high fre-
- quency unit Long throw 6.5" bass driver
- · Magnetic shielding for close use to video mor itors
- Hard-wired, low-loss crossover · Wide flat frequency response
- Gold plated 5-way binding post connectors

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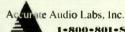
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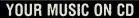
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PRO TOOLS TIPS

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that are write-enabled. Turn off Auto Suspend, and you can play back your automation snapshot. You can use variations of this technique to "pick up" a snapshot of automation that you want repeated in another section of your work, and write it in there as well. (For more tips on using these techniques, check the Pro Tools Reference Guide.)

4. Use The Takes Pop-up Menu

Many people are not aware that Pro Tools contains shortcuts for editing that make choosing the best take of a performance easy. Pro Tools will create a pop-up list of all regions that have the same start time, and you can easily select and audition takes from a particular pass. And later on, when you "chop it all up," this pop-up Takes List can let you choose the best portion of a performance when creating a comp:

· Command-click with the Selector tool

at the beginning of a loop record or punch-in location. A pop-up will appear containing a list of regions that share the same start time.

- Choose a region from the pop-up Takes List. It will appear in the target track at the cursor location.
- You can do this during playback, and DAE will change which take is playing (updating after a short delay).
- There are additional preferences having to do with this function that you can choose in the Pro Tools Preferences dialog that will allow you to limit the regions to ones that come from the track you're working on, match length, and allow the Separate Region function to work on all "related takes." Check these out in the User Guide. They'll really make comping vocals, etc., a breeze!

Got some Tech Tips for us? How 'bout a piece of gear that you'd like to see explored? Send your tips and suggestions our way at EQMagazine@aol.com or fax them to 516-767-1745. Please mark them attention Tech Tips.

REAMP REVIEW

continued from page 118

signal only. After the drums have been recorded, "reamp" the guitar signal through an amp and record the amplified sound, sans leakage. And of course, you can crank the trim control up all the way to overload the guitar amp and obtain a heavily overdriven sound...you get the idea.

Of course, the concept isn't perfect; many guitar players would rather play through the amp that will create the final sound, as they like the interaction obtained by playing through an amp in real time. However, that doesn't mean you can't have the guitarist play through a favorite amp, but also slip a direct out into a spare track in case you want to REAMP the track later with a different amp.

Overall, this is a clever little box; either you "get" what it does, or you don't. If this sounds like the kind of device that belongs in your bag of tricks, rest assured that it does what it sets out to do very well.

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ACROSS THE BOARD

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verse levels, marks for chorus levels, marks to remind you which marks to use.... If the mix was simple enough, you could make it all the way through by changing the knob positions when you got to each section of the song.

Each guy would have a few knobs to deal with. They wouldn't always be the ones right next to each other, either. If there was one guy in the middle of the console working on vocals throughout the mix, another guy could move the drums up for the chorus, then run around to the other side of the console to catch a move on a guitar, and then run back around to change the drums at the next verse.

The producer usually became the choreographer during the mix. If there were any mistakes, you would try the mix again. Sometimes you would record a bunch of mix attempts on the 2-track machine, and then later listen to the playback and decide that you liked some things about each attempt. Out came the razor blade and editing block, and the pieces of each mix were edited together to form the final master.

Sometimes the mix was too complex to do with the above method. Then what?

Well, we would set all of the levels and effects for the intro, and mix the intro onto the 2-track machine. We would then set the levels for the first verse, and mix the verse to the 2-track machine. Before we went any further, we would edit the intro onto the verse and make sure everything was OK. If not, we would make a correction, put it on the 2-track, and edit it on again. After the intro/first verse was satisfactory, we would mix the first chorus and edit it onto our master mix. Each time we would check the edit and not move on until the transitions were seamless. Sometimes we would have to edit one-bar pieces to get a solo or a transition just right. By the time we got finished with the mix, it looked like the master 2-track tape had more edits than the Monica Lewinsky phone tapes.

EARLY AUTOMATION

The earliest console automation was the Allison Engineering 64k automation system. Forget about moving faders, it was VCA based. A complex signal was recorded on the analog tape that contained the position data of each fader on the console during each automation frame. To update the data, you had to play back the information on one track and record the modified data on another track. This left you with a 22-track machine, and you were asking for trouble if you recorded a vocal next to the automation track because of the crosstalk inherent in analog tape machines. If you recorded the two automation tracks next to each other, you could end up with unusable garbage for automation.

The first moving fader automation system was Neve's Necam automation system. The mixes were stored on 8-inch floppy disks and you could do some offline editing and merging of mixes. The faders weren't fast. As a matter of fact, studios that still have this system call them "crawling faders." It did sound better than VCA-based automation, and if you wanted to change something, you just grabbed the knob and the old fader data was instantly updated.

FINALLY

OK, so enough whining already. No matter which hard-disk recorder, or 8-track disk/tape recorder, or digital audio workstation you buy, remember that it will be thousands of times better than anything we used to make all of the Steely Dan records. If we had this new stuff back then, we would have really produced some good records. And when you are frustrated about performing all of those edits with a mouse while staring at a teeny tiny video monitor, think about what you might have done after hundreds of edits to a piece of analog tape with a nice sharp razor blade so closely poised near your wrists! Someday I'll show you the scars.

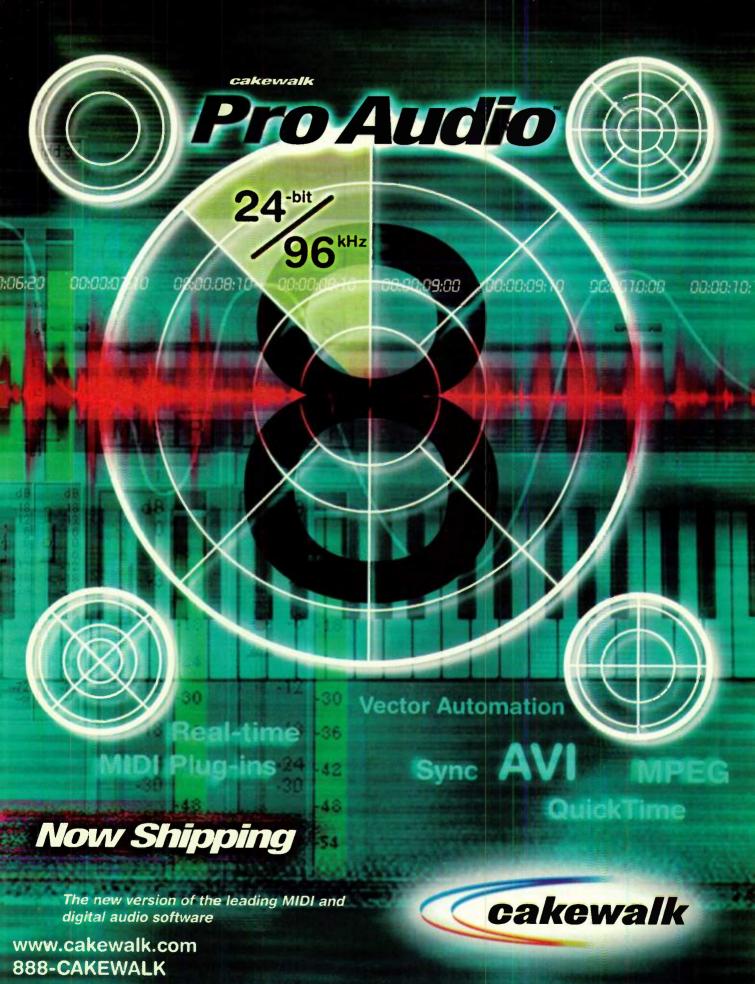
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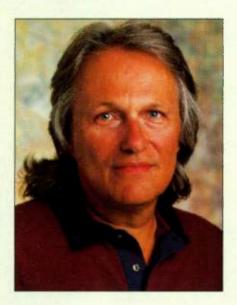
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Another Bad Flashback



You kids have got it way too easy today

BY ROGER NICHOLS

I just got back from the 1998 AES show that was held in San Francisco. As I meandered from display to display, ogling all of the new digital recorders, digital consoles, and digital workstations, I often heard someone whining about not having enough features on their whiz-bang digital system. The audio industry has given them wings with which to soar, and they want to soar higher. Well, I remember the days when I had to walk 40 miles to school in snow up to my neck, and it was uphill - both ways.

For just a minute, I am going to flash back (it's not just Vietnam vets who have horrible flashbacks) to the days long ago. before digital recording, when the reigning tape machines were the 24-track and 16track recorder that used 2-inch-wide analog tape recorded at 15 or 30 inches per second. Performing overdubs on these machines went well, unless you wanted to

record multiple passes of, let's say, a vocal, and then combine them to make a master track. When you copy a vocal from one track to another on a piece of analog tape, you lose the transients and add additional tape noise and harmonic distortion to the signal. This is not acceptable if you are striving for the best possible sound quality.

If you would not accept the generation loss, then you only had two choices. The first choice was to "punch in" on the original track if you wanted to change any-

thing in the vocal. There was a very high "pucker factor" if the performance was very good but the vocalist insisted on an attempt at a better performance. You would roll the tape, punch in on the vocal line to be replaced, and... whoops, it wasn't as good. Too late! The only thing left to do was try the punch over and over until the vocalist got a take that was up to par with the one you erased. There was no "undo" in analog recording.

To make matters even worse, there was no "auto-punch" on analog machines. You had to perform the punch-in and punchout over and over each time manually, without making a mistake. Analog punches were not clean, perfect punches, either. Analog machines

would erase a little spot where you punched in and leave a little hole where you punched out, so you had to be good at it to replace short vocal phrases, or even words, on the master vocal track. If you screwed up, it was like trimming your sideburns. Each time you missed the punch you would have to punch in a little earlier or punch out a little later to fix the botched attempt. The "punch on the lead vocal track" was the method we used for Steely Dan vocals, and more than once my sideburns met at the top of my head.

The second method was to record

multiple passes on the tape and then leave them where they were, without bouncing, and select between the tracks during the mix. This is the way we did guitar and sax solos. Let's say that we just recorded three great guitar solos on three separate tracks. After microscopic appraisal, we would decide on the pieces of each track that would comprise the final solo. We would then erase all of the pieces that were not going to be used, so that during routine playbacks we would hear a com-

> plete solo without having to make switches on the console during each playback. There was only one problem with this method - you very quickly ran out of tracks. I must remind you that Murphy's law applied to analog recording as well, and you always needed one more track than you actually had available.

> On one occasion, we had a guitar part that spanned three or four tracks as outlined above, and we needed to overdub a saxophone over the same section of the song. We had no more open tracks. We ended up recording in the holes on the guitar tracks. The first few bars of the sax on one track, the next few bars on another track, and so on. Talk about pucker factor. If the sax player was playing a line that would go past the

start of the guitar, you would have to punch out regardless in order to save the master guitar track. I, uh, uh, I can't go on.

There was no "auto-punch" on analog machines. You had to perform the punch-in and punch-out over and over each time manually, without making a mistake.

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continued on page 160

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